What is the Industrial Metaverse?

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Discussions about the 'Metaverse' mostly focus on the 'Consumer Metaverse'. It is a form of virtual reality with digital representations of people and objects. With the help of virtual reality headsets, users are catapulted into a digital reality where they can meet as avatars, hold meetings or go shopping – completely detached from the offline world. But why do we want to block out reality? Wouldn't it be desirable that the Metaverse enriches our reality instead of replaces it? In my opinion, this is precisely the great opportunity of the 'Industrial Metaverse'.

The Industrial Metaverse enables the blue-collar worker

While the Metaverse aimed at consumers places people in a virtual world, the Industrial Metaverse digitalizes information and data. These are displayed to industry workers using augmented reality (AR) and mixed reality (MR) smart glasses in the immediate field of view via small screens placed directly in front of the eye. However, the full potential of the Industrial Metaverse is unlocked through software. With AR and MR solutions, you can show the workers workflows and holograms as if they were part of reality and without blocking their field of view. The software uses real-time data from back-end systems and displays immersive training workflows or step-by-step instructions. This results in almost boundless application areas, including but not limited to logistics, assembly, service, training or maintenance. The technology can thus be used along the entire industrial value chain. The central advantages are:

- Hands-free working with simultaneous digital support in the field of view and thus better ergonomics
- Direct documentation of work processes
- Fewer errors and better performance

The Industrial Metaverse is reality

For many, it may sound futuristic. But companies are already using AR and MR solutions today. They serve to reduce errors and improve the daily work of workers. The trend shows that, in addition to processes, entire value chains are being digitalized. Let's use the automotive industry as an example: For the production of cars, employees must be trained, logistics must be managed, parts must be assembled, and quality checks must be carried out. All these processes can be digitally supported and mapped in the Industrial Metaverse.

Nonetheless, the Industrial Metaverse still receives nowhere near the same attention as its consumer counterpart. TeamViewer has commissioned a survey to find out how well the general public can assess the Industrial Metaverse at this stage.

I hope you enjoy reading all about it.

Hendrik Witt

Industrial Metaverse_ Perception and Assessment by the General Public

How Do the Respondents Assess the Potential of the Metaverse for Application Scenarios in Industrial Settings

Background

The Metaverse is more present than ever in public discourse - for many as a virtual space in which users move with the help of avatars. However, the concept is not new: Already 1992, Neal Stephenson wrote about the Metaverse in his sci-fi novel Snow Crash. Current reports have so far been limited to applications such as shopping, entertainment, virtual meetings and video games. The influence of the Metaverse on industrial processes and products is often overlooked.

Objective

The aim of the study is to determine the current level of knowledge of the respondents on the use of Metaverse technologies in an industrial context. TeamViewer shows which areas of application and impact on the industrial world are already being anticipated today.

Method

TeamViewer commissioned the market research company Civey from Berlin to conduct a representative online survey. 2,500 randomly selected people familiar with the term Metaverse were surveyed. The survey was conducted between 7 and 18 July 2022 with participants of the Civey panel in Germany.

In addition to asking about the understanding of the Metaverse, the questionnaire included insights into potential areas of use and possible applications as well as an assessment of the possible impact on the industry. In addition, personal experiences with augmented or mixed reality were identified.

List of questions

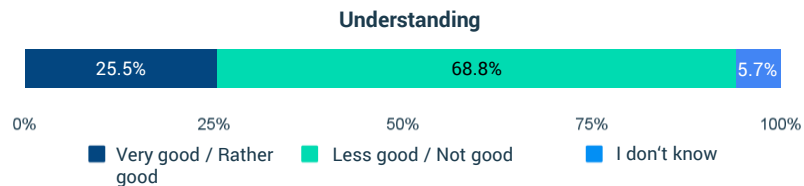|	
Understanding	How good would you rate your understanding of the Metaverse?
Areas of use	In which of these areas do you think the Metaverse will play a major role?
Application options	Which of these possible applications of technologies in the Metaverse could you most likely imagine in industrial companies?
Assessment	In your opinion, will the Metaverse revolutionize the industry in a similar way to assembly lines and robots?
Personal experiences with Metaverse technologies	Have you ever used technologies (e.g. smart glasses, smartphone apps) that overlay virtual content on the camera image (e.g. a kitchen planner)?

Knowledge_ about the Metaverse Still in the Early Stages

The Majority of People Who Have Heard about the Metaverse Describe Their Level of Information as Not Good

Around 70% Have (Rather) Poor Understanding of the Metaverse

As expected, the fact that the Metaverse is still in its early stages - in the perception of the respondents - is also reflected in the general level of knowledge. Even those people who have a basic association with the Metaverse rate their knowledge as less or not at all good.

How good would you rate your understanding of the Metaverse?

Understanding

25.5%	68.8%	5.7%

0%   25%   50%   75%   100%

- ■ Very good / Rather good
- ■ Less good / Not good
- ■ I don't know

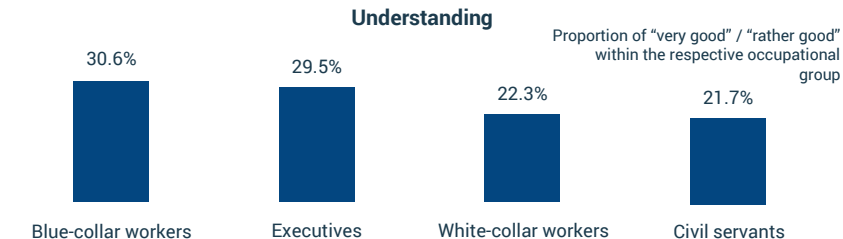## Blue-collar workers and executives consider themselves best informed

Within certain target groups, there are clear differences regarding their own assessment of the understanding of the Metaverse. With increasing age, knowledge is rated as lower. While every third person in the 18-29 age group considers their own knowledge to be rather good or very good, only every fourth person in the 40-49 age group does so.

In the 50-64 age group, on the other hand, only one in five. In the group of people over 65, only 16% still say that they would describe their knowledge of the Metaverse as rather good or very good.
A closer look at those who rate their knowledge of the Metaverse as rather good or very good reveals a distinguishing feature in the professional context. Blue-collar workers and executives rate their level of knowledge as above average which may be due to the direct implications of the Metaverse on their respective work environments. The following analysis highlights this further.

How good would you rate your understanding of the Metaverse?

Understanding

Proportion of "very good" / "rather good" within the respective occupational group

Blue-collar workers	Executives	White-collar workers	Civil servants
30.6%	29.5%	22.3%	21.7%

Definition: White-collar workers are those who predominantly carry out activities in an office context, whilst blue-collar workers are defined as persons who predominantly carry out activities outside of office contexts (e.g. service technicians).
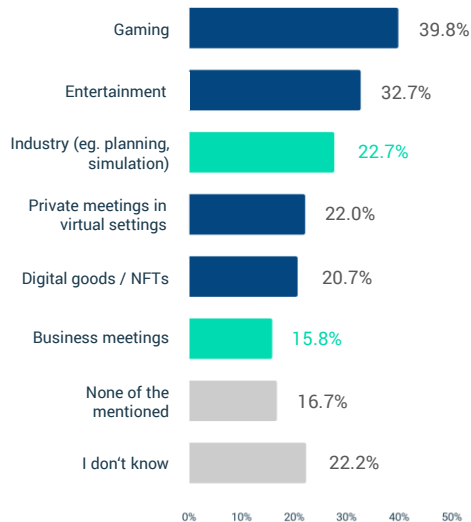
Industry Applications_ in the Metaverse Are Identified as an Opportunity

Even Though the Metaverse Is Primarily Associated with Entertainment, Industrial and Business Applications Are Also Present

Industrial Use More Important Than Private Virtual Meetings

Significant areas of the Metaverse

Gaming	39.8%
Entertainment	32.7%
Industry (eg. planning, simulation)	22.7%
Private meetings in virtual settings	22.0%
Digital goods / NFTs	20.7%
Business meetings	15.8%
None of the mentioned	16.7%
I don't know	22.2%

More than one in four see the importance for industry

The respondents assign the greatest importance to the Metaverse in the gaming and entertainment sector. Almost 40% can imagine video games in the Metaverse, and one in three general entertainment applications. As many as 28% of the respondents rate the influence of the Metaverse highly in industrial settings as well, which means that the industrial application area is perceived as more significant than the use of AR and MR applications for private virtual meetings.
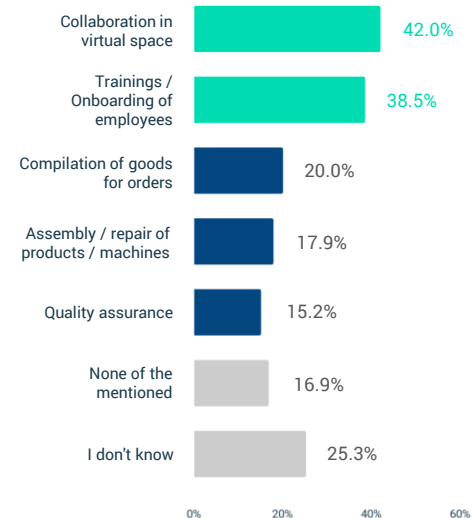
Here, trainees in particular display strong approval (40%). This could possibly be attributed to points of contact within the framework of the training program. Virtual business meetings have so far been perceived as relevant by very few (16%).

Virtual collaboration and training conceivable

In the survey of possible areas of application in industrial settings, collaboration in the virtual space (42%) and use for training and onboarding (39%) are the most common answers. One in five can also imagine the compilation of goods for orders. In order to see more use for quality control (15%) or assembly / repair (18%), concrete practical examples are obviously needed. Already today, however, the majority of blue-collar workers and executives (over 56% each) see potential for the industry in virtual collaboration.
With 42% of mentions expressing no choice or indecision, the lack of imagination and knowledge about the Industrial Metaverse is revealed.

Possible industrial areas of use

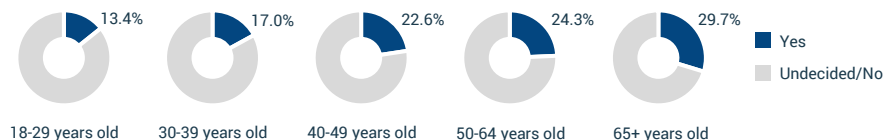|	
Collaboration in virtual space	42.0%
Trainings / Onboarding of employees	38.5%
Compilation of goods for orders	20.0%
Assembly / repair of products / machines	17.9%
Quality assurance	15.2%
None of the mentioned	16.9%
I don't know	25.3%

An Industrial Revolution_ Due to the Metaverse Is Conceivable for Every Fifth Respondent

However, a Lack of Usage Examples and Experiences Limits the Perceived Disruption Potential

Potential for Industrial Revolution

Whether the Metaverse will influence the industry in a similar way to assembly lines and robots is difficult for the respondents to weigh up because of their limited level of knowledge. But one in five can imagine an industrial revolution initiated by the Metaverse. Agreement correlates with age - while only 13% of 18-29 year-olds expect such a strong impact, the figure is almost 30% for the 65+ group, which has personally experienced the impact of disruptive technologies on the world of work.
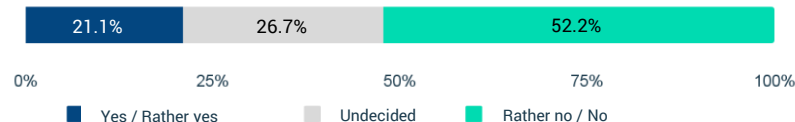
Same revolutionary impact on the industry as assembly lines and robots

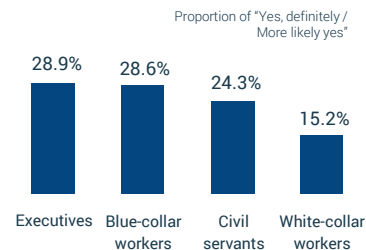|				
13.4%	17.0%	22.6%	24.3%	29.7%
18-29 years old	30-39 years old	40-49 years old	50-64 years old	65+ years old

- Yes
- Undecided/No

Furthermore, it is noticeable that blue-collar workers and executives attribute an above-average creative power to the Metaverse. White-collar workers are more reserved here. Looking at the different personal experiences, it becomes apparent that almost as many blue-collar workers who have personal experiences with Metaverse technologies also see disruptive potential in them. White-collar workers, on the other hand, have already had more frequent experiences with Metaverse technologies, but estimate the disruptive potential to be lower. This can be explained by the fact that the Metaverse will not become disruptive for white-collar workers to the same extent as for blue-collar workers. The reason for this is the advanced level of digitalization of office activities.

However, blue-collar workers have fewer digital tools at their disposal, so the potential for digitalization and disruption through the Industrial Metaverse is greater.
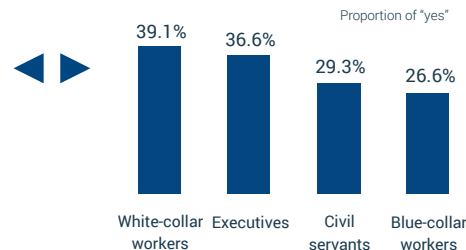
Same revolutionary impact on the industry as assembly lines and robots

21.1%	26.7%	52.2%

0%	25%	50%	75%	100%

- Yes / Rather yes
- Undecided
- Rather no / No

Revolutionary impact on the industry

Proportion of "Yes, definitely / More likely yes"

Executives	Blue-collar workers	Civil servants	White-collar workers
28.9%	28.6%	24.3%	15.2%

Metaverse technologies used at least once

Proportion of "yes"

White-collar workers	Executives	Civil servants	Blue-collar workers
39.1%	36.6%	29.3%	26.6%

The Industrial Metaverse_ Is Already Relevant for Blue-Collar Workers and Managers

- The wider population does not yet have a good knowledge of the Metaverse

- Blue-collar workers and executives consider themselves best informed and are probably also most likely to be affected professionally

- More than one in four already see the importance of the Metaverse for the industry

- Whilst people already have a good idea of how the Metaverse can be used for virtual collaboration, training and onboarding, corresponding experiences are apparently still lacking for other industrial application areas of the Metaverse

- One in five already sees the disruptive potential of the Metaverse for the industry as being similar to the introduction of assembly lines and robotics

Successes of TeamViewer Customers from the Industrial Metaverse

Training and onboarding

Wendy's

Together with NSF, TeamViewer developed an augmented reality solution specifically tailored to the hospitality, retail and food supply chains. **TeamViewer Frontline** (in this case also called "NSF EyeSucceed, powered by TeamViewer") can be used for livestreaming, staff training, onboarding and intelligent troubleshooting. It can record deviations in existing processes and suggest next steps for improvement. Learn more here.

Compilation of goods for orders

Coca-Cola HBC

Coca-Cola HBC optimizes its logistics processes with the augmented reality solution **TeamViewer Frontline**. The positions, locations and quantities of the good orders are displayed directly in the field of vision of the order pickers via smart glasses. This keeps the picker's hands free for the actual task. It has greatly improved the quality and the accuracy of order processing in the warehouses. Learn more here.

Repair

Kemper

Kemper GmbH, technology leader for extraction and filter systems in the metalworking industry, uses augmented reality-based remote support for direct communication in customer service. With **TeamViewer Frontline**, Kemper offers an on-site service without being physically present. Experts communicate live with the customers via smart glasses and thus guide them quickly and easily through the problem-solving process. Learn more here.

Quality control

Airbus

Airbus Helicopters Inc. uses **TeamViewer Frontline** in quality assurance and documentation to improve their operations. With the help of smart glasses equipped with a camera and microphone, important data, for example during the maintenance of gearboxes, is documented easily and quickly. Images and voice recordings can be uploaded and saved directly in the SAP system via TeamViewer's solution. Learn more here.

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