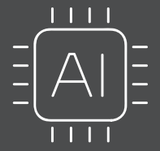
FCM

# Mega-trends:

THE FORCES AT PLAY THAT WILL SHAPE
THE FUTURE OF BUSINESS TRAVEL

# Mega-trends: the forces at play that will shape the future of business travel

The world is changing fast. Keeping up with the key mega-trends shaping our world is critical for piloting the future of business and travel. This is primarily taking shape within the realms of technology and AI, society, globalization, and the environment. Let's examine these trends and advancements, looking at how they impact corporate travel, and analyzing the new opportunities and challenges they represent for our industry.




## Technology & AI

Rapid advancements in artificial intelligence (AI) are reshaping the world and the global economy. AI's potential extends from improving customer interactions to revolutionizing data analysis. The future may see AI providing more efficient distribution of travel content and augmenting travel advisors, enhancing the overall travel experience. As AI evolves, the emphasis should be on augmented intelligence, where human oversight remains essential.

## Demographics & Society

The influence of behavioral economics and the rise of digital media are impacting society in new and important ways. Understanding cognitive biases and social norms can help businesses and policymakers design better strategies. Meanwhile, the digitally native Generation Z is driving change with their focus on diversity, inclusivity, and sustainability.

Embracing behavioral economics to nudge travelers towards better decision-making and understanding the diverse needs of the next generation of business travelers can set companies up for long-term business travel success and help to re-shape policies to better meet the needs of this changing workforce.

## Globalization

The blurring lines between work and personal life, facilitated by advanced technology and remote capabilities, are redefining the workplace. This shift offers flexibility but also poses challenges for maintaining work-life balance. Corporate travel policies must adapt to support a global, diverse workforce, prioritizing well-being and balance.

## The Environment

Addressing the climate crisis remains a critical challenge. Innovations in synthetic biology and microbiomes, carbon capture, sustainable urban planning, and the development of sustainable aviation fuels (SAF) are essential steps towards reducing emissions. Embracing sustainable practices and new technologies in travel can significantly contribute to global environmental goals.

Understanding and actively leveraging these mega-trends will help the business travel industry adapt to change and drive innovation.

# About the Author

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As a marketer for more than 15 years, it's always been important for Scott to stay in-tune with macro trends. After all, it's our society and changing world that forces the advertising and marketing worlds to adapt and thrive in the future.

After a decade in the business travel industry, Scott wanted to research mega-trends to start a conversation on the bigger topics affecting our industry, and how they might play out in corporate travel. The result is this whitepaper, a culmination of research and insights.

# I. Technology & AI

## AI and the role of the human – reshaping knowledge

AI is everywhere. Most companies are either considering or actively using AI tools in some way. The technology is continuously improving in areas ranging from generative text and images, to audio and video, to software development. Service industry companies from dining, to banking, to travel are finding new applications for AI technology.

But to what end? What is the ultimate goal of AI development?

The evolution of AI has been marked by significant milestones. Initial advances have been around the area of predictive or generative intelligence, where systems are trained on vast amounts of data, and then probability is used to predict what to generate based on that data. This graphic defines some of the most commonly used AI terms.

### Is AGI on the horizon?

Though there are disagreements over whether this will even be possible, the stated goal of some organizations like Google and OpenAI is the pursuit of artificial general intelligence (AGI). AGI aims to create machines capable of performing any intellectual task that a human could – at far greater speed and capacity.

These systems will not simply derive probabilities from existing data like current AI systems do. AGI systems will possess their own independent intelligence, and agency to carry out tasks without the need for human involvement. Whether AGI is actually possible remains a question.[1]

Even without AGI, the current state of AI technology offers immense potential for augmenting human capabilities. Perhaps this should be the goal we are building toward: rather than striving for autonomous systems that operate without human input, the focus should be on augmented intelligence – a relationship where humans and machines work together to achieve more efficient and creative outcomes.[2]

**72%**

AI adoption has surged in 2024

MCKINSEY STATE OF AI REPORT (MAY 2024)[3]

# AI Defined

### ARTIFICIAL INTELLIGENCE (AI)

The simulation of human intelligence in machines that can think, learn, and perform tasks autonomously

### GENERATIVE AI

Creates new content, such as text, images, and audio, by learning patterns from existing data and producing predictive outcomes.

### ARTIFICIAL GENERAL INTELLIGENCE (AGI)

Theoretical AI advancement that understands, learns and applies knowledge across a wide range of tasks at a human-like pace.

### AUGMENTED INTELLIGENCE

Enhancing human capabilities by combining AI-driven insights with human decision-making and oversight.

1. https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-artificial-general-intelligence-agi
2.https://hbr.org/2021/03/ai-should-augment-human-intelligence-not-replace-it
3. https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai

# Augmented intelligence: a “human in the loop”

As AI systems become more sophisticated and deeply integrated into various aspects of our lives, human oversight becomes increasingly critical.[1] Augmented intelligence is a two-way street. AI systems should augment human knowledge, expertise, and action, but humans should also provide oversight and governance to AI systems.

**Ethics**
Ethical decision-making is a key area where human oversight is crucial. While AI algorithms can process vast amounts of data and identify patterns, they sometimes miss the nuance of human values and moral considerations.

By ensuring that AI systems are designed, developed, and deployed with human oversight, we can ensure that they align with our ethical principles and do not perpetuate biases or cause unintended harm.

**Accountability**
Accountability is another critical aspect of human oversight in AI. When AI systems make decisions or take actions, it is essential to have clear lines of responsibility and accountability. Human oversight ensures that there is always a person or team responsible for the outcomes of AI systems and that concerns can be addressed.

**Context**
Adaptability, nuance, and context are areas where humans should play a vital role. AI systems need to be able to adapt and evolve to meet those challenges. Human experts can provide the context, creativity, and strategic thinking necessary to guide the development and refinement of AI systems over time.

**Governance**
It is crucial to address the potential impact of AI systems on safety, security, disinformation, and human rights. Nations around the world are considering legislation that would place important guardrails around AI technologies. Achieving a positive outcome from rapidly developing emerging tech requires cooperation between the government and the global tech community.

**AI’s potential**
The true potential of AI lies in its ability to work alongside human experts, combining the speed and accuracy of machines with the creativity, intuition, and contextual understanding of humans.[2]
A collaborative relationship between humans and machines lets us advance a world where technology doesn’t replace, but enhances, human capabilities.

1. https://www.cornerstoneondemand.com/resources/article/the-crucial-role-of-humans-in-ai-oversight/
2. https://www.weforum.org/agenda/2023/04/ai-helps-humans-make-informed-decisions/
3. https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai

**Double**
Use of generative AI tools in 2024 vs 2023

MCKINSEY STATE OF AI REPORT (MAY 2024) [3]

# Business travel lens: AI

Currently, AI is used in business travel for tasks such as online chatbots and customer communication. It also helps with data analysis and interpretation. Looking ahead to the future of business travel management, it's clear that AI will reshape the industry in many more important ways.

**Distribution –** The industry has been working towards better, more efficient, and consistent distribution of airline, hotel, and transportation content for years. Could AI technology finally bridge those gaps and deliver a better booking experience?

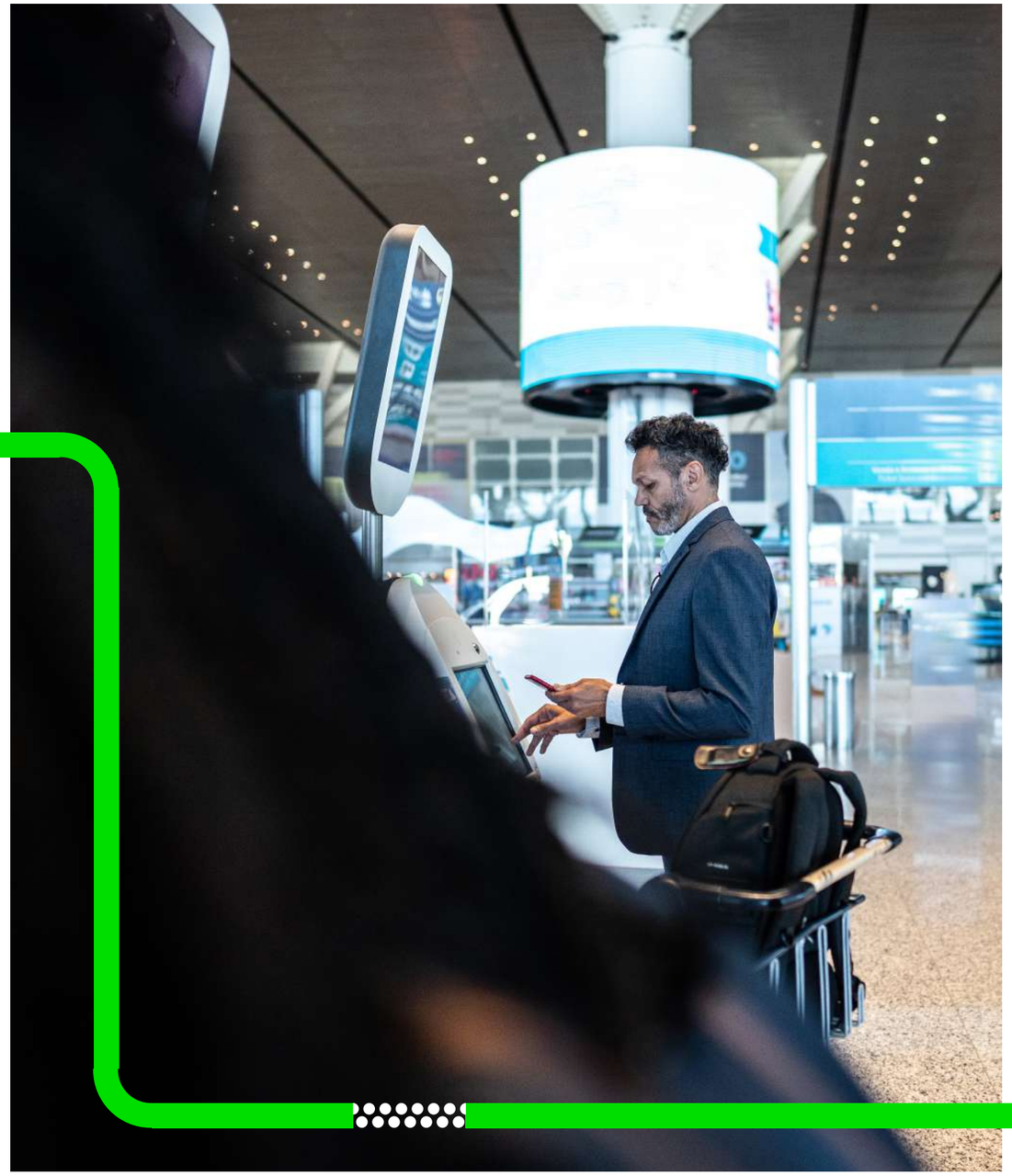
**Travel suppliers –** AI is set to transform air travel through more efficient and accurate routing, crew scheduling, security screenings, baggage handling and more.[1] The hotel and hospitality industry will benefit from AI with the ability to quickly and efficiently offer personalized service and recommendations to travelers.[2] Car rental companies will use AI for traveler personalization as well as more efficient fleet and rate management.[3]

**Reframing the business travel experience –** will AI replace, or simply augment travel advisors? Will travelers turn to an AI agent for instant support while on the road?

**The evolving role of TMCs and travel managers –** AI may automate tasks that previously required human oversight. This prospect can be scary, but AI support has the potential to free up human expertise and resources to be used in many more important and significant ways.

1. https://www.forbes.com/sites/cognitiveworld/2024/04/17/how-ai-is-set-to-transform-airports-and-air-travel/
2. https://www.forbes.com/councils/forbesbusinesscouncil/2023/09/11/revolutionizing-the-hospitality-industry-with-artificial-intelligence/
3. https://www.autorentalnews.com/10206598/the-future-of-car-rentals-big-data-and-game-changing-ai-inspection-technology

# The techno arms race – human by design



As we move through 2024 and beyond, corporate leaders are turning to emerging technologies such as artificial intelligence (AI) and robotics to gain an edge.

### Pursuing competitive advantage through emerging technologies

Forward-thinking businesses are seeking to innovate around these rapidly growing technologies with the goal of better meeting customer needs, improving efficiency, saving money, and capturing competitive market share in their industry.[1]

Scientific and healthcare institutions are exploring emerging tech to advance science and medical research, improve patient access to important services, and better serve the public.

This is also true of nations around the world, who are searching for ways to use new innovation to bolster government systems, security, defense, and efficiency.[2]

### Competitive advantage?

It is important to note that as these technologies advance and become more widespread, advantages gained through their adoption are likely short-lived. As rivals quickly develop comparable capabilities, the playing field will level out, and the focus will shift from gaining a temporary advantage to continuously innovating and improving upon existing technologies.

## Business travel lens: the techno arms race

The digital transformation in corporate travel is driving a competitive race among travel tech companies and travel management companies (TMCs) to develop superior tech platforms with the focus on winning business through the latest innovations. This leads to insular systems tailored for travel-specific needs.

To truly add value, the industry must integrate broader technological advancements. By embracing API connections and future-proofing technologies, travel platforms can become more adaptable and user-friendly. TMC tech should be used to provide consistent, reliable, and efficient communication to both travel buyers and business travelers to be sure they stay informed and educated. The aim should be to enhance the travel experience, ensuring technology serves people, not the other way around.

1. https://www.emerald.com/insight/content/doi/10.1108/EOR-04-2023-0001/full/pdf?title=the-impact-of-emerging-technologies-on-work-a-review-of-the-evidence-and-implications-for-the-human-resource-function
2. https://europeanleadershipnetwork.org/commentary/the-arms-race-in-emerging-technologies-a-critical-perspective/

# Data ownership: a new global currency?

It’s no secret that the world now runs on data. In fact, most of the technologies and trends discussed throughout this document need data to grow and advance – particularly AI. For that reason, data has gone from being looked at as something businesses keep in their back-office systems, to a valuable asset and resource.

## The increasing value of data

The concept of data as an asset is growing. Data is viewed by some as a new currency, with the potential to drive true innovation, improve decision-making, and create new business opportunities.

To fully realize the value of data, it is important to have clear standards and frameworks for data ownership and sharing.[1] Governments play a critical role in establishing these standards and ensuring they are enforced consistently across industries and jurisdictions. This is particularly relevant to multinational corporations that may need to access and share data across borders.

## Business travel lens: data

Data will continue to be a valuable asset for travel program optimization. Leveraging the right data at the right time in the right context lets companies gain insight into travel patterns, preferences, and behaviors, enabling them to make data-driven decisions. This focus on data will continue as the business travel industry evolves. As the value of data grows, it will be vital to select travel management services that offer agile, interactive, and scalable reporting and data analysis tools.
By embracing the value of data and implementing robust data protection measures, companies can position themselves for success in the data-driven economy of the future.

1. https://www.deloitte.com/uk/en/services/risk-advisory/blogs/2021/data-ownership-whats-in-a-name.html

# II. Demographics & society

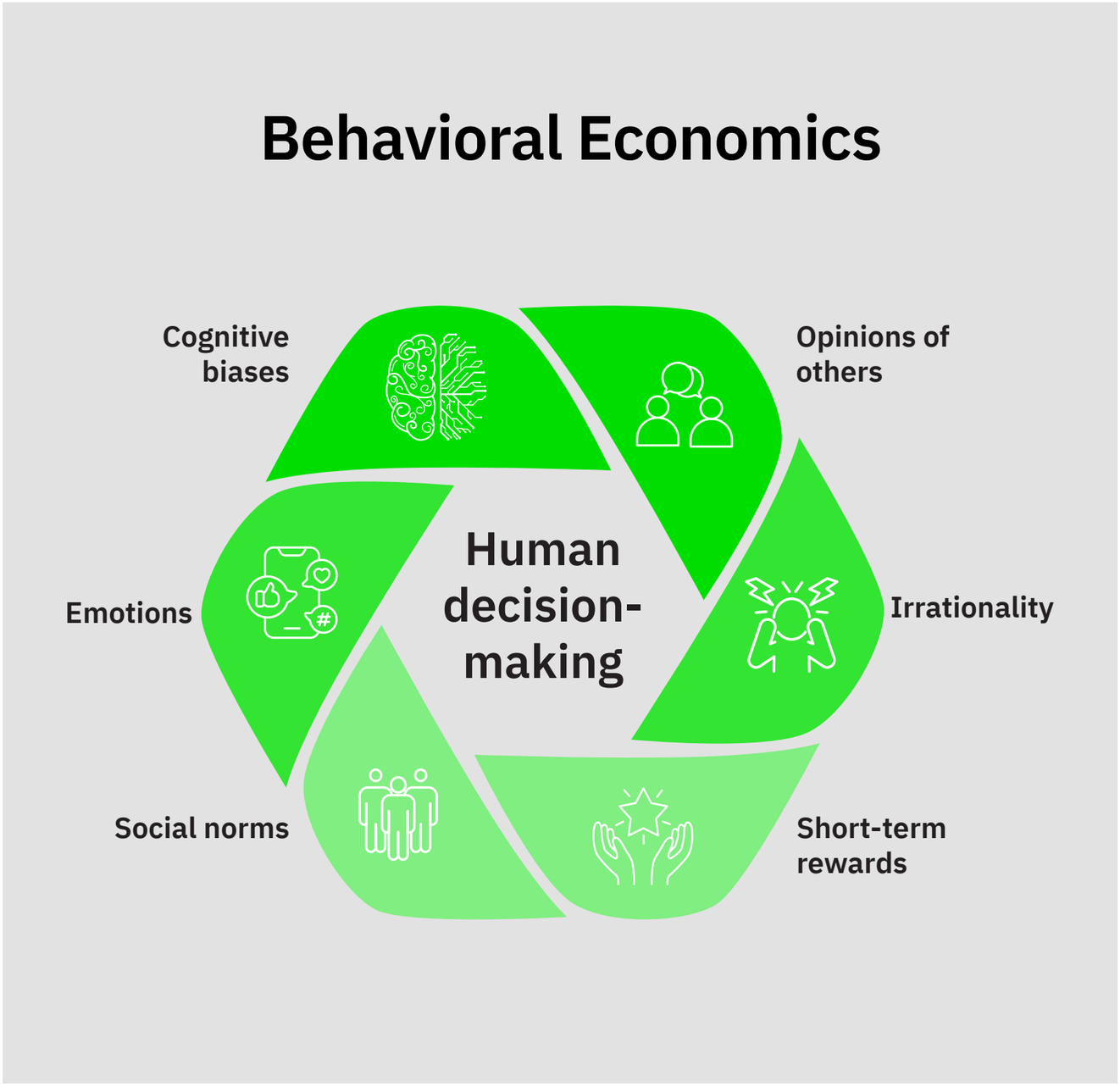
Previously we discussed the importance of bringing humanity into technological innovation. In this section we explore the human element more directly and the evolving mega-trends shaping how we live, work, and travel.

## The behavioral economy – why we can't have nice things

People aren't rational, which is the equally beautiful and challenging aspect of humanity. Behavioral economics, a theory popularized by noted economists such as Gary Becker, Herbert Simon, Daniel Kahneman, George Akerlof, and Richard H. Thaler, attempts to measure this irrationality by combining insights from psychology, economics, and other social sciences to study how individuals and institutions make economic decisions.[1]

Unlike traditional economic models, behavioral economics recognizes that human decision-making is often influenced by psychological factors such as cognitive biases, emotions, and social norms. The accompanying graphic shows the factors that influence human behavior and decision-making.

For example, people may be more influenced by short-term rewards than long-term consequences or may be swayed by the opinions of others rather than objective facts. By recognizing these tendencies, businesses and policymakers can develop strategies to nudge people towards better decisions without restricting their freedom of choice.




## The impact of behavioral economics on society

The insights of behavioral economics have had a profound impact on many aspects of society, from business and marketing to public policy and social welfare.

In the business world, companies are increasingly using behavioral economics to inform their pricing strategies, product packaging, marketing campaigns, and promotional deals. Here are some examples:

- Traditional and online retailers use the concept of "scarcity" to create a sense of urgency around a limited-time offer.
- Netflix uses behavioral insights to personalize its content recommendations and keep users engaged.
- Amazon's "one-click" ordering system reduces friction in the buying process, making it easier for customers to make impulsive purchases.

1. https://www.investopedia.com/terms/m/mentalaccounting.asp

# Business travel lens: behavioral economics

In the business travel world, concepts like behavioral economics are actively used to nudge travelers into making optimal decisions. Airports and airlines employ psychological strategies to manage passenger queuing, going so far as to alter the shape and number of queues to more efficiently handle large groups of people.[1]

Using technology and even for better, more personalized booking and communication improves the experience for travelers and travel arrangers, making them more likely to book within the managed travel program. IATA's New Distribution Capability (NDC) is a good example of this, providing a standard and framework for managing airline content that's goal is to offer frictionless booking as well as the ability to easily add on ancillary items such as in-flight wi-fi.

Loyalty programs are strategically used by travel suppliers to influence buyer behavior and maintain long-term traveler connection and affinity. Airlines are also starting to pilot subscription services designed to keep buyers in their ecosystem by charging a regular fee in return for flights and ancillary offerings.[2]

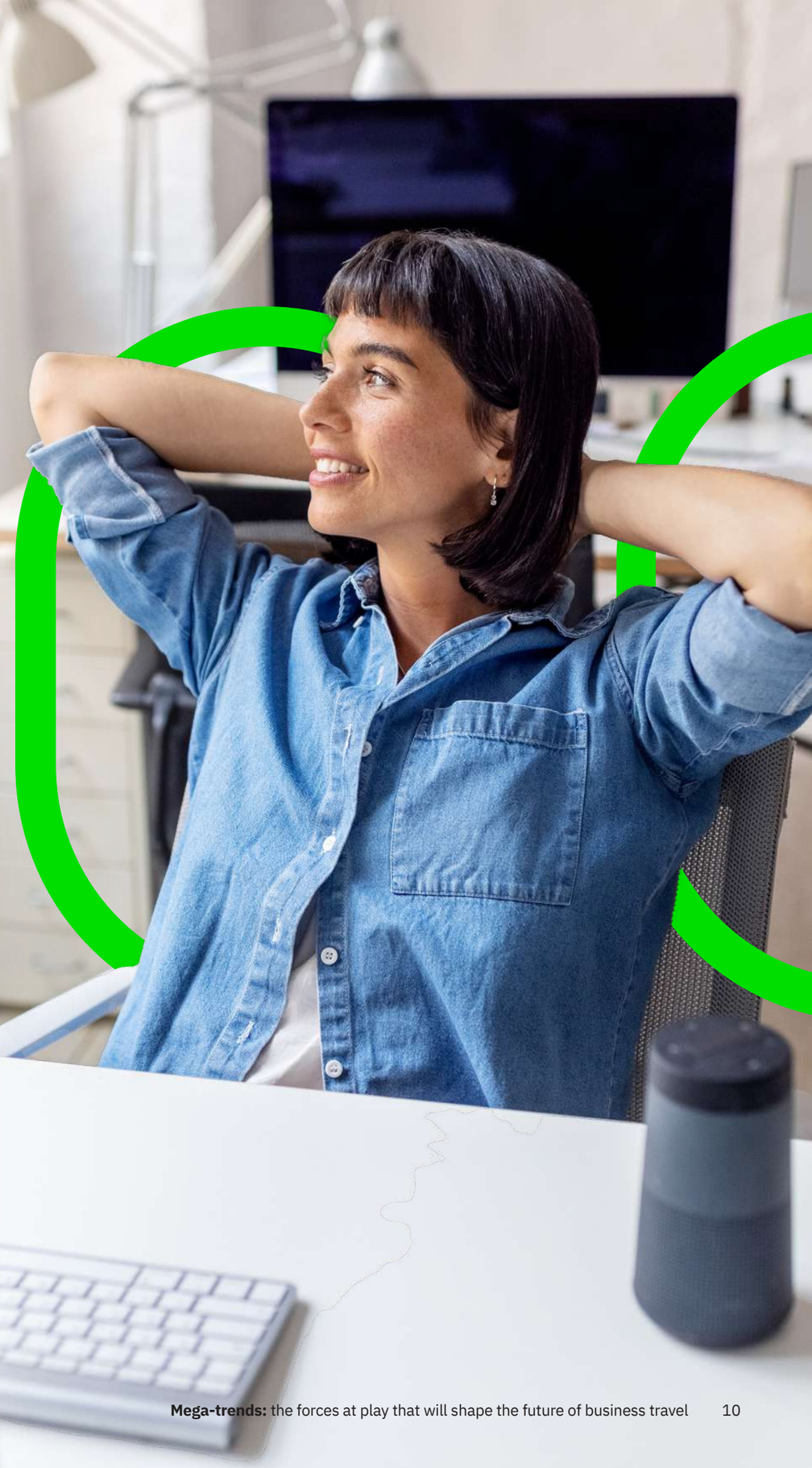
Corporate travel managers may introduce behavioral concepts like "social proof" and "visual guilt" into their communications, policies, and booking tools to nudge travelers into making choices that benefit the business and its supplier strategy.

For example, using default options that prioritize preferred suppliers or eco-friendly travel modes can significantly impact traveler behavior without restricting choice. Similarly, framing travel policies in terms of the benefits to the individual and the organization, rather than as a set of rules and restrictions, can increase buy-in and adherence.

## Ethical concerns

The use of behavioral economics by business also raises important ethical questions.[3] There is a fine line between nudging people towards better decisions and manipulating them for commercial or political gain. It is important for businesses and policymakers to use behavioral insights responsibly and transparently, with the goal of benefiting individuals and society as a whole.

Ethical considerations aside, behavioral economics will play an important role in shaping the future of business, policy, and society. Combining the rational principles of economics with the realistic insights of psychology gives us a more nuanced understanding of human behavior and helps us design solutions that truly work for people.



1. https://airtraveldesign.guide/Queues
2. https://www.phocuswire.com/flight-subscriptions-caravelo-airasia-wizz-air-alaska-airlines
3. https://www.nytimes.com/2023/11/30/opinion/human-behavior-nudge.html

# The future of thinking – waves of human opinion, acceptance, inclusivity, re-establishment of what is acceptable

## The influence of digital media on learning and thinking

Digital media has become an integral part of modern education and learning, transforming the way we acquire knowledge and skills. From online courses and educational apps to interactive simulations and virtual reality experiences, digital tools offer unprecedented opportunities for engaging, personalized, inclusive, and accessible learning.

When used effectively, digital media can foster inclusive and future-oriented thinking.[1] By providing access to a wide range of perspectives, experiences, and resources, digital tools can help learners develop empathy, critical thinking, and global awareness. They can also prepare learners for the rapidly changing world of work, where digital literacy and adaptability are essential skills.

**53%**

**Gen Z valued learning for career growth and developments vs 37% of other generations**

LINKEDIN'S 2024 WORKPLACE LEARNING REPORT [2]

### A generational shift

Despite the many challenges and uncertainties facing the world today, there is reason for optimism about the future of education and society. Generation Z, born between the mid-1990s and early 2010s, is a diverse, digitally native, and socially conscious group that is poised to drive change.

Studies have shown that Gen Z is more likely than previous generations to prioritize issues such as diversity, inclusion, and environmental sustainability.[3] They are also more entrepreneurial and innovation-minded, with a strong desire to make a difference in the world.

To harness the potential of this generation, education will move beyond "one-size-fits-all "approaches and towards more personalized, experiential, and purpose-driven learning.

## Business travel lens: the next generation of business travel pros

In the context of business travel, embracing diversity, inclusivity, and future-oriented thinking is essential for creating a welcoming and supportive environment. Training should be personalized, experiential, and inclusive. Travel policies and programs should be designed with the needs and preferences of diverse travelers in mind, considering factors such as accessibility, dietary restrictions, and culture.

Supplier partnerships may need to be evaluated and adjusted to account for potential ethical concerns or environmental practices that new travelers may not support. This may even extend to decisions and policy changes regarding when to travel and forms of travel with regard to environmental impact.

This evolution not only improves the traveler experience but also attracts and retains top talent from diverse backgrounds. It may lead to more innovative and effective solutions for the challenges facing corporate travel.

1. https://www.researchgate.net/publication/329654277_The_Future_of_Thinking_Learning_Institutions_in_a_Digital_Age
2. https://learning.linkedin.com/resources/workplace-learning-report
3. https://www.the74million.org/article/4-ways-gen-z-is-thinking-about-their-education-and-future/

# Synthetic media – “not alive stream”

Synthetic media refers to AI-generated or digitally-altered content. The progression from traditional to synthetic media has been rapid, with AI-generated content playing an increasingly significant role in the content we consume. As the technology advances, it becomes more challenging to distinguish human-created from synthetic media, blurring the lines between reality and artificiality.

## Examples and applications

As you’ll find in the accompanying graphic, synthetic media typically comes in two categories.[1] Deep fakes are highly realistic video, audio, or image impersonations of an existing person. Other synthetic media uses generative AI tools to create entirely new content. This content may not replicate an existing person, but the viewer or listener may not realize that it’s artificial.

In the entertainment industry, synthetic media is used to create hyper-realistic visual effects, virtual actors, and even entire films. In journalism, AI-generated articles and news reports are becoming more common, raising questions about the role of human journalists in the future. New technologies allow brands to market products and services via “spokespeople” who are entirely synthetic.[2] Some virtual, AI-generated influencers have even garnered massive followings on social media platforms.

**59%**

Concerned about distinguishing between real and synthetic content

UNIVERSITY OF OXFORD’S REUTERS INSTITUTE FOR THE STUDY OF JOURNALISM[3]

Mixed reality technologies such as new releases from Apple and Meta, combine virtual and augmented reality, further expanding the possibilities of synthetic media.[4] As these technologies mature, they may reshape how we interact with and experience digital content.

## Synthetic Media

**Content created or altered by AI, including images, videos, audio, and text that appears to be real.**

### Generative synthetic media

New and original AI-created content that appears real.

### Deep fakes

Realistic, AI-generated or altered videos, images, or audio that replicate real people and events.

### Travel applications

- Chatbots & virtual assistants
- Personalized experiences
- Immersive, virtual events

## Ethical considerations and societal impact

The misuse of synthetic media has sparked a heated debate about its societal implications. Deep fakes, in particular, have been used to create non-consensual images and videos, spread misinformation, and manipulate public opinion. The potential for synthetic media to deceive and mislead raises significant concerns about the erosion of trust in media and the challenges of navigating media authenticity.[5]

As synthetic media becomes more sophisticated and accessible, it is crucial to develop ethical guidelines and regulations to prevent its malicious use. This includes establishing standards for transparency and disclosure, as well as investing in research and development of detection technologies.

## Business travel lens: synthetic media

Synthetic media has already transformed the way business travelers interact and collaborate. AI-driven customer service tools such as chatbots and virtual assistants provide 24/7 support to business travelers. Immersive, lifelike virtual environments help to facilitate engaging and productive remote meetings, reducing the need for travel.

Moving forward, this presents both opportunities and challenges. AI-generated content could be used to create personalized travel experiences. On the other hand, the proliferation of synthetic media and deep fake technology could make it more difficult for travelers to trust online recommendations and travel content. As this technology develops it will be important for companies to prioritize transparency, authenticity, and human connection.

1. https://elai.io/synthetic-media
2. https://www.synthesia.io/post/the-future-of-synthetic-media
3. https://reutersinstitute.politics.ox.ac.uk/digital-news-report/2024/dnr-executive-summary
4. https://player.me/vr-showdown-between-meta-quest-3-vs-apple-vision-pro/
5. https://thelogic.co/news/generative-ai-content-is-flooding-the-internet-how-do-tech-firms-show-whats-real/

# III. Globalization

## Work and life: fading lines

Advanced technology and remote capabilities combined with increasing globalization have eroded the boundaries between work and personal life.[1] The rise of flexible work arrangements, such as telecommuting and flexible hours, has enabled employees to work from anywhere at any time.

## Always on

While this shift offers many benefits, such as increased autonomy and reduced commute times, it also presents challenges for maintaining a healthy work-life balance.[2] Without clear boundaries, workers may find themselves always “on,” leading to increased stress and burnout. Some governments are starting to implement laws to stop this. In Australia and in some European countries, for example, there is a ‘right to disconnect’ law that prohibits employers contacting workers after hours.

## Everyone in the pool

The rise of remote work has widened the talent pool available to organizations, allowing access to skilled workers worldwide. This offers many advantages, such as increased diversity, fresh perspectives, and access to specialized expertise.

**23%**

Global workforce were hired in 2023, costing an estimated US$8.9 trillion in global GDP.

GALLUP’S 2024 STATE OF THE GLOBAL WORKPLACE REPORT[3]

## Challenges and solutions

To address these challenges, organizations must develop new workplace models and support systems that prioritize employee well-being and work-life balance.

- **Employee burnout –** flexible time off, and time and productivity management tools, wellness and mental health prioritization
- **Time zone disparities –** needed investments in communication tools and protocols, and looking at asynchronous work models
- **Cultural, language and regulatory barriers –** requires investment in cross-cultural training and legal expertise to effectively manage and support a global team

## Business travel lens: work/life balance

The blurring of work-life boundaries and the rise of global teams have significant implications. On one hand, remote work may reduce the need for certain types of business travel, such as in-person meetings and conferences. On the other hand, it may increase the importance of travel for team building, cultural immersion, and face-to-face collaboration.

It’s also important to consider work and travel rules by country. For instance, the EU Schengen Area’s rules permit visitors on a visa to spend a total of 90 days within the region within any 180-day period. This is a big adjustment, particularly for UK travelers, resulting from Brexit.

There also may be tax implications of a global workforce, both for the worker/traveler and their employer. The impact of these rules can depend on your global travel footprint, but they could have a significant impact on your program.

Organizations must develop travel policies that are flexible, inclusive, and responsive to the needs of a diverse global workforce. This may include offering different types of travel options, providing support for remote work while traveling, and prioritizing employee well-being and work-life balance.

By embracing the opportunities and challenges of this new era of work, organizations can create a more dynamic, innovative, and sustainable future for their employees and their business.

1. https://www.forbes.com/sites/adigaskell/2020/05/11/is-a-blurred-work-life-balance-the-new-normal/?sh=2d133c8b1813
2. https://www.hcamag.com/ca/specialization/corporate-wellness/blurred-lines-the-dangers-of-work-life-imbalance/254466
3. https://www.gallup.com/workplace/349484/state-of-the-global-workplace.aspx

# IV. The environment

## Synthetic Biology & Microbiomes

Synthetic biology and microbiome research are rapidly advancing fields[1] that have the potential to revolutionize various aspects of our lives[2]:

- Medicine: Development of new drugs, vaccines, and diagnostic tools by engineering microorganisms to produce specific compounds or perform targeted functions. Researchers can create more effective and personalized treatments.
- Food production: Creating new crop varieties that are more resilient, nutritious, sustainable, disease resistant, and reduce the need for added chemicals.
- Environment: Developing new approaches to bioremediation, engineering microorganisms to clean up polluted sites and developing new conservation strategies.

## Business travel lens: microbiomes

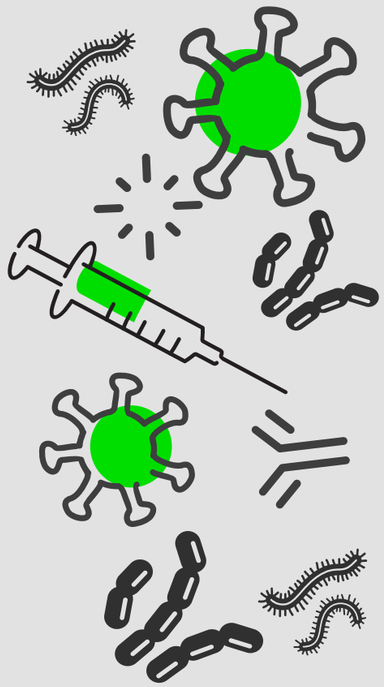
Advances in synthetic biology and microbiome research have significant implications for the travel industry, particularly in the areas of health and sustainability.

- New, more effective vaccines and therapies for infectious diseases could make travel safer and more accessible.
- Integration of synthetic microbiomes into air cabin filtration systems and surface treatments could potentially trap and neutralise harmful pathogens, creating a safer environment for passengers.
- Microbiome research could lead to new probiotics that help travelers boost immunity and reduce the negative effects of jet lag, stress, and dietary changes during travel.

1. https://www.weforum.org/communities/gfc-on-synthetic-biology/
2. https://www.gov.uk/government/news/government-publishes-2-billion-vision-for-engineering-biology-to-revolutionise-medicine-food-and-environmental-protection



# Synthetic Biology

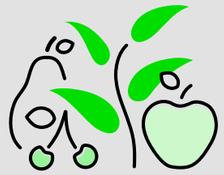


**Microbiomes**
Scientists are engineering complex communities of microorganisms to accomplish specific tasks that improve our world.

**Applications in**
Health & Medicine

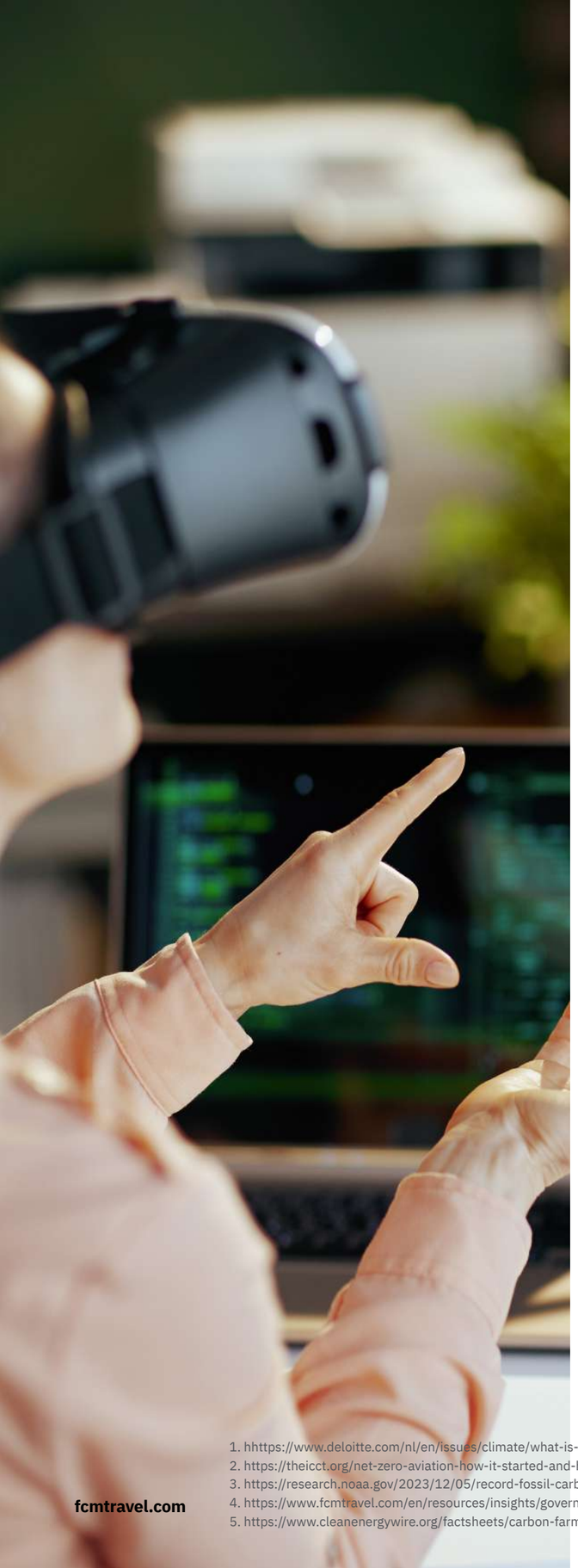
Environment, Decarbonization, & Waste

Food production



Potential business travel breakthroughs:

- Traveler health
- Pandemic control
- Sustainable air travel



## Solving the carbon problem

For decades, the goal of much of the world in response to the climate crisis has been decarbonization, which aims to reduce carbon dioxide (CO2) emissions from human activities to net-zero.[1] The process has been seen as essential for mitigating the impact of climate change and protecting the planet for future generations. But is it having an impact?

**US$5 trillion**

**Estimated amount needed to invest in sustainable aviation fuels and clean aircraft to meet 2050 aviation net zero goals**

INTERNATIONAL COUNCIL ON CLEAN TRANSPORTATION[2]

Despite efforts, greenhouse gas emissions from fossil fuels continue to rise.[3] This raises the question of whether decarbonization is the right approach or if we need to find new ways to solve the problem. Global government initiatives like 2015's Paris Agreement have led to new goals, targets, and strategies to reduce emissions through various tactics including transitioning away from fossil fuels for power generation as well as EV (electric vehicle) mandate targets.[4] The government plays a big part in the moving and changing of suppliers in all sectors, including travel.

Innovations and new technologies are emerging to address this challenge and find new ways to solve the carbon problem:

- Carbon farming, which are sustainable agricultural practices that promote increased storage of carbon in the soil and a reduction of carbon released into the atmosphere.[5]
- Technology advancements for carbon capture and waste management.[6]
- Improved urban planning and sustainable public transport to develop more sustainable cities.[7]

## Business travel lens: sustainability

The aviation industry accounts for more than 2% of global energy-related CO2 emissions.[8] One key solution is the development and adoption of sustainable aviation fuels (SAF).[9] SAF can be produced from biological materials such as agricultural waste, algae, and even captured CO2. Synthetic biology and microbiomes have a part to play here too, leading to the development of new biofuels. These fuels have the potential to reduce aviation emissions by up to 80% compared to traditional jet fuel.

Other strategies have been employed around the world to help contribute to the reduction of emissions. France recently placed a ban on short haul flights on any route where a rail alternative exists with the goal of reducing pollution and lowering emissions.

New waste management and water treatment technology could harness the power of microbial communities to break down waste and purify water – something that could become very beneficial to hotels and other travel providers.

Earlier we talked about behavioral economics and the changing demographics in business travel. Could this have an even more positive impact on the environment, with younger generations opting out of travel in favor of digital connection?

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2. https://theicct.org/net-zero-aviation-how-it-started-and-how-its-going-apr24/
3. https://research.noaa.gov/2023/12/05/record-fossil-carbon-dioxide-emissions-impeding-progress-on-meeting-climate-goals-report/
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## The Earth/space connection

The Earth's climate and weather patterns are certainly impacted by carbon emissions and greenhouse gases. Did you know that they may also be influenced by conditions beyond our planet, such as solar wind and cosmic rays?[1] Understanding the complex interactions between Earth and space is crucial for predicting and mitigating the impacts of climate change on our resources and way of life. Continued study and technology advancement in space sciences and exploration is key to understanding the balance between our planet and the universe that surrounds it.

## Are we moving to Mars?

This question may seem like something out of a movie, but several space agencies and private companies are making plans for human missions to Mars.[2]

To make this happen, solutions must be developed for transportation, habitation, food, water, power, managing extreme conditions, spacesuits, and communications. The challenges are significant, but ongoing research and technological advancements are bringing us closer to turning science fiction into reality.

Sending humans to Mars will answer fundamental questions about the planet's potential as a future home for our species. Despite this, the best solution remains to prioritize solving climate change and resource depletion here on Earth before seriously considering Mars colonization.[3]

# Unprecedented opportunity awaits us

Considering the massive changes to our world and economy due to the mega-trends we have discussed, the business travel industry stands at the cusp of unprecedented opportunity for innovation, evolution, and growth.

Technology continues to revolutionize how we operate, with AI leading the charge in enhancing efficiencies, personalizing experiences, and augmenting human capabilities. We can create smarter, more responsive travel solutions lower costs and improve travel experiences.

Demographic and societal changes are reshaping workplace dynamics and travel preferences. Adapting to these shifts let us build inclusive, personalized travel experiences that cater to the modern workforce.

Globalization has blurred the lines between work and personal life, introducing flexibility and complexity. Adjusting travel policies and leveraging global talent will help us to foster a more dynamic and connected work environment across geographical borders.

The business travel industry has a unique opportunity to lead in the adoption of microbiomes and new sustainable technologies. Perhaps it's time to rethink the goal of decarbonization and look to new solutions for solving the climate crisis.

The future of business travel is filled with opportunities to innovate, adapt, and thrive. Embracing these mega-trends and focusing on creating value-driven, sustainable, and inclusive travel experiences ensure that business travel continues to be a vital component of the global economy.

1. https://www.esa.int/Science_Exploration/Space_Science/Our_environment_in_the_context_of_space
2. https://www.nasa.gov/humans-in-space/humans-to-mars/#:~:text=NASA%20is%20advancing%20many%20technologies,to%20the%20Red%20Planet%20possiblecine-food-and-environmental-protection
3. https://www.forbes.com/sites/brucedorminey/2018/06/15/why-we-should-save-earth-before-colonizing-mars/?sh=60898ebc319f