Exploring multi-sector perspectives on AI with industry and NASA Goddard

nashtechglobal.com

Delivering technology **excellence**

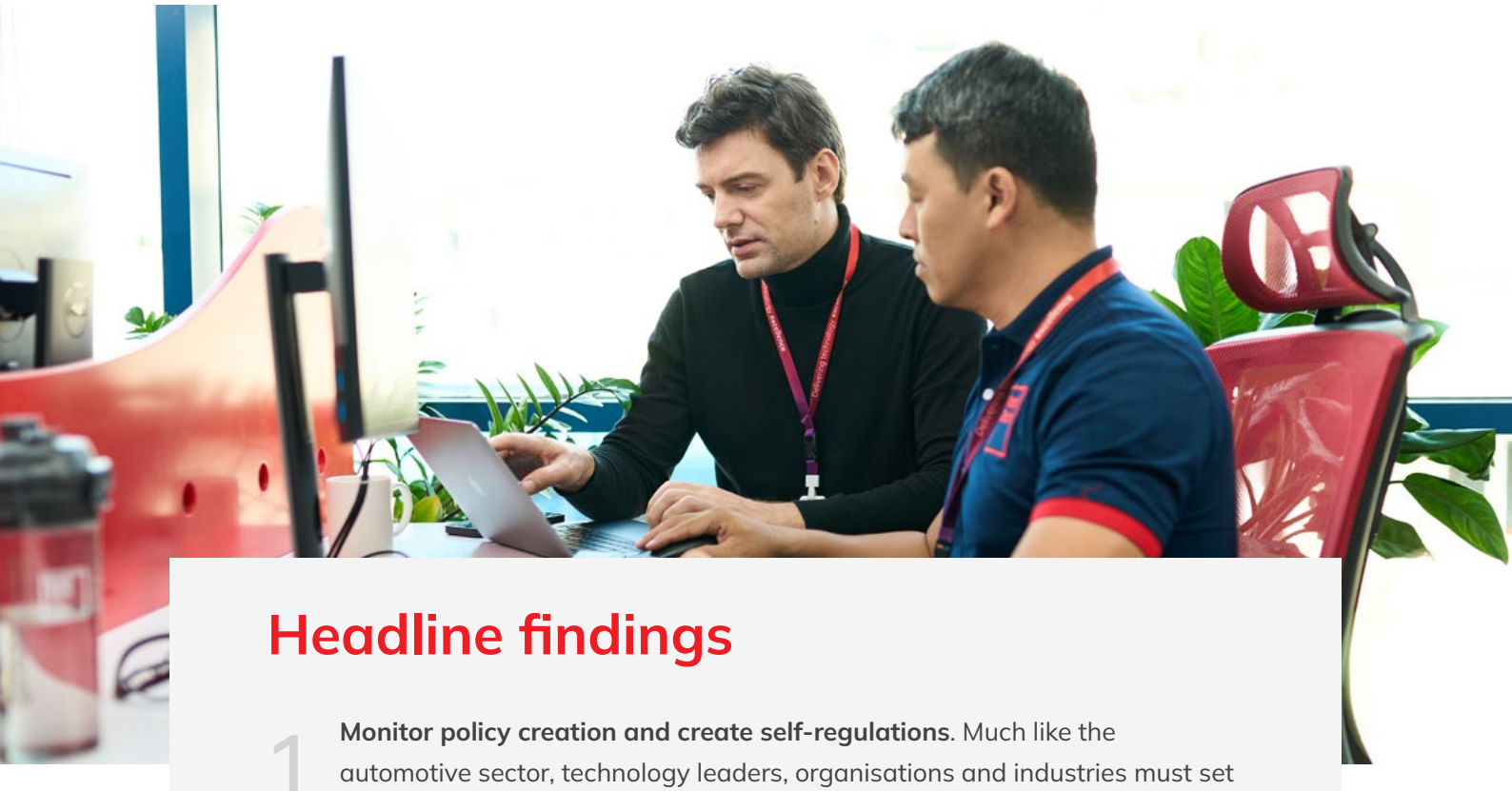
Nash Tech.

Executive summary

Society has reached a tipping point. AI is expanding human knowledge and capability across every field imaginable, reducing operating costs through to diagnosing cancer and enabling space exploration. Leaders are juggling its fast adoption and potential against equally devastating implications, spotlighting challenges such as regulation, public policy and ethics.

But how do we balance its incredible potential with its catastrophic possibilities?

This whitepaper takes you through unique insights and strategic perspectives from the world's greatest leaders and AI visionaries, including experts from NASA Goddard Space Flight Center, Google, Keystone Space Collaborative and Columbia University.



Headline findings

1 **Monitor policy creation and create self-regulations**. Much like the automotive sector, technology leaders, organisations and industries must set up their own regulations to encourage responsible AI.

2 **Strategic consideration before action**. AI implementation can affect society positively and negatively. Critically evaluate business use cases and long-term implications before executing AI programmes.

3 **Handle data correctly from the get-go**. Data reflects societal values and can be used as a temperament for social biases. Caution must be taken when feeding AI algorithms data.

4 **AI is advancing Earth science and sustainability**. NASA scientists can leverage AI to build sophisticated climate models that reveal data about the largest contributors to climate change.

Introduction

AI is steaming through its hype cycle. The introduction of Large Language Models (LLMs) in 2022 has made AI accessible to the general population for the first time. Now, those without technical expertise can use AI to complete tasks deemed impossible just ten years ago.

AI is projected to grow at an annual rate of

*(**Source:** UpCity)*

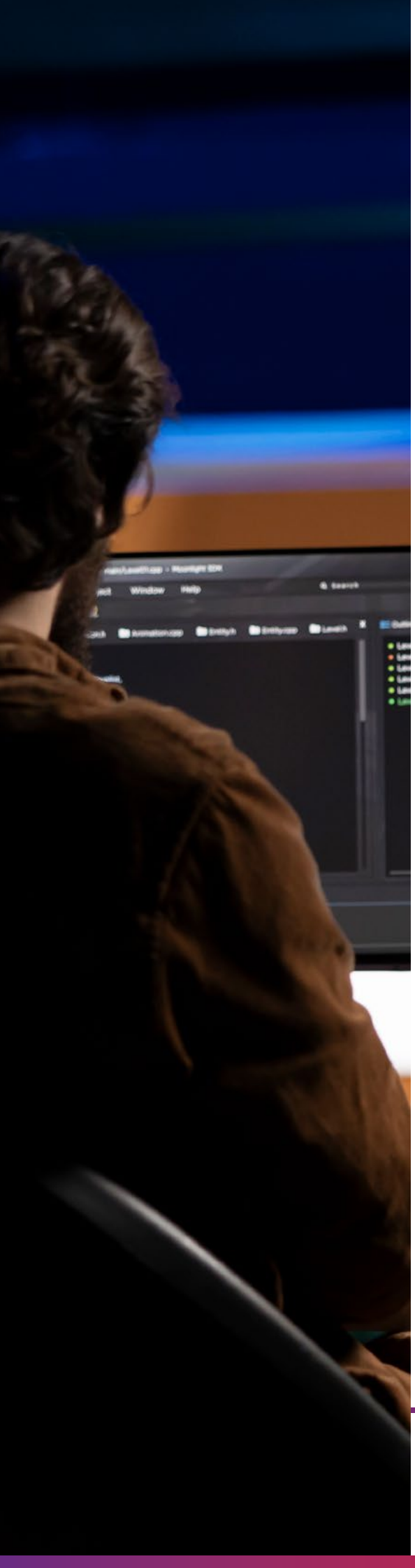
37.3%
from 2023 to 2030

Over the next several years AI will increasingly integrate into our lives, driving transformational change across medicine, business and Earth Science, among others. The speed of its adoption is raising warning signs for business leaders, policymakers and governments worldwide, stirring debates like:

What regulation is needed? What will be the impact on employment and people? And where do AI and robotics fit into society?

These questions were answered at the NashTech and Harvey Nash event in New York, where global leaders discussed insights from the latest Nash Squared Tech Flix documentary, 'AI and robotics: a near future you're not prepared for'.

Watch the event playback here



Regulations to balance innovation and responsibility

88% of technology leaders agree that greater AI regulation is needed, and fast.

*(**Source:** Nash Squared Digital Leadership Report 2023)*

The unpredictability of newer technologies, like generative AI, highlights the need for stricter regulations and thought-out policy. For governments and lawmakers, the challenge is to build a regulatory framework that can adapt with AI's advancements over time. But we are far from this today.

Existing regulatory frameworks and their limitations

Global leaders are struggling to find the right balance between overly lax and prescriptive approaches to building AI frameworks. Few guidelines that exist today provide a generic approach to provisioning guardrails. This will soon change. Policymakers are already considering sector-specific regulations because of the risks that certain sectors pose. Hyper-regulated industries for example, may be the first to meet these requirements, such as healthcare, financial services and automotive.

Policymakers will need to evaluate how AI impacts existing regulations that are already embedded into society (GDPR, cyber-security, etc). Former regulations such as the General Data Protection Regulation are also under revision to accommodate the new advancements in AI.

Underlying principles that shape lawmaking are also creating challenges in policy building.

Law is reactive and unaccommodating to innovation

The fundamental premise of law is reactive. It addresses existing societal challenges rather than predicting future innovations. Because AI is predominately in its development phase, (many organisations are in a proof-of-concept phase), technology leaders are yet to ascertain how it will impact society in the long run. This challenges lawyers and policymakers to think outside the box to draft legislations that account for every future possibility. Turning the entire legal system on its head. Is this the beginning of a legal reform?

> *We need to be mindful that our regulations are reactive, not prescriptive and visionary. When drafting rules, we need to find a balance between establishing guardrails which are critical for developers, while at the same time not putting too many constraints that stifle innovation. Which you see a lot.*
>
> **Justine Kasznica**, Board Chair and Founder, Keystone Space Collaborative.

International cooperation and harmonisation

Lack of consensus and a common global baseline is fragmenting policy creation. Therefore, complicating compliance for organisations operating across borders:

- EUAI Act's effectiveness remains uncertain
- US faces a patchwork of state regulations
- OSTP AI Bill of Rights lacks enforcement

61% of technology leaders are pessimistic that regulations will solve the challenges associated with AI

*(**Source:** Nash Squared Digital Leadership Report 2023)*

Policymakers and lawyers have little understanding of AI

> *Expecting a lawyer to understand AI is like asking a teacher to build a car.*
>
> **George Lynch,** Head of Technology Advisory at NashTech.

It may sound silly, but it's not far from the challenges faced today. Lawyers and policymakers are under pressure to create comprehensive AI frameworks but lack essential critical technical expertise. This gap can lead to policies that are either too restrictive or fail to address the entire risk landscape. Concerns about over-regulation are also increasing. Innovators caution that too many rules will squash innovation and creativity, hindering the very advancements that AI promises.

> *It's critical that any policy is written in collaboration with the technologists developing these tools.*
>
> **Justine Kasznica,** Board Chair and Founder, Keystone Space Collaborative

Advice for business leaders

Review of preliminary AI guidelines, such as the AI Bill of Rights and EUAI Act 2024, is a strong starting point for ensuring future business compliance. Though jurisdictions may differ slightly in rulemaking, the sentiment will likely be the same.

To avoid the AI retrofit, there are protective strategies that businesses can follow:

Collaborate with AI policymaking bodies

- Monitor global AI regulations
- Partner with regulatory bodies
- Explore regulatory sandboxes (e.g., EU, Singapore, UK)

Analyse and document AI risks

- Categorise risks based on severity
- Document AI usage, goals and processes
- Refer to examples like the 2023 US Executive Order

Self-regulate and build internal policies

- Enforce guidelines and educate staff
- Prioritise reputation and security
- Learn from examples like Microsoft's Tya and court hallucination cases
- Define use cases, train staff and identify risks

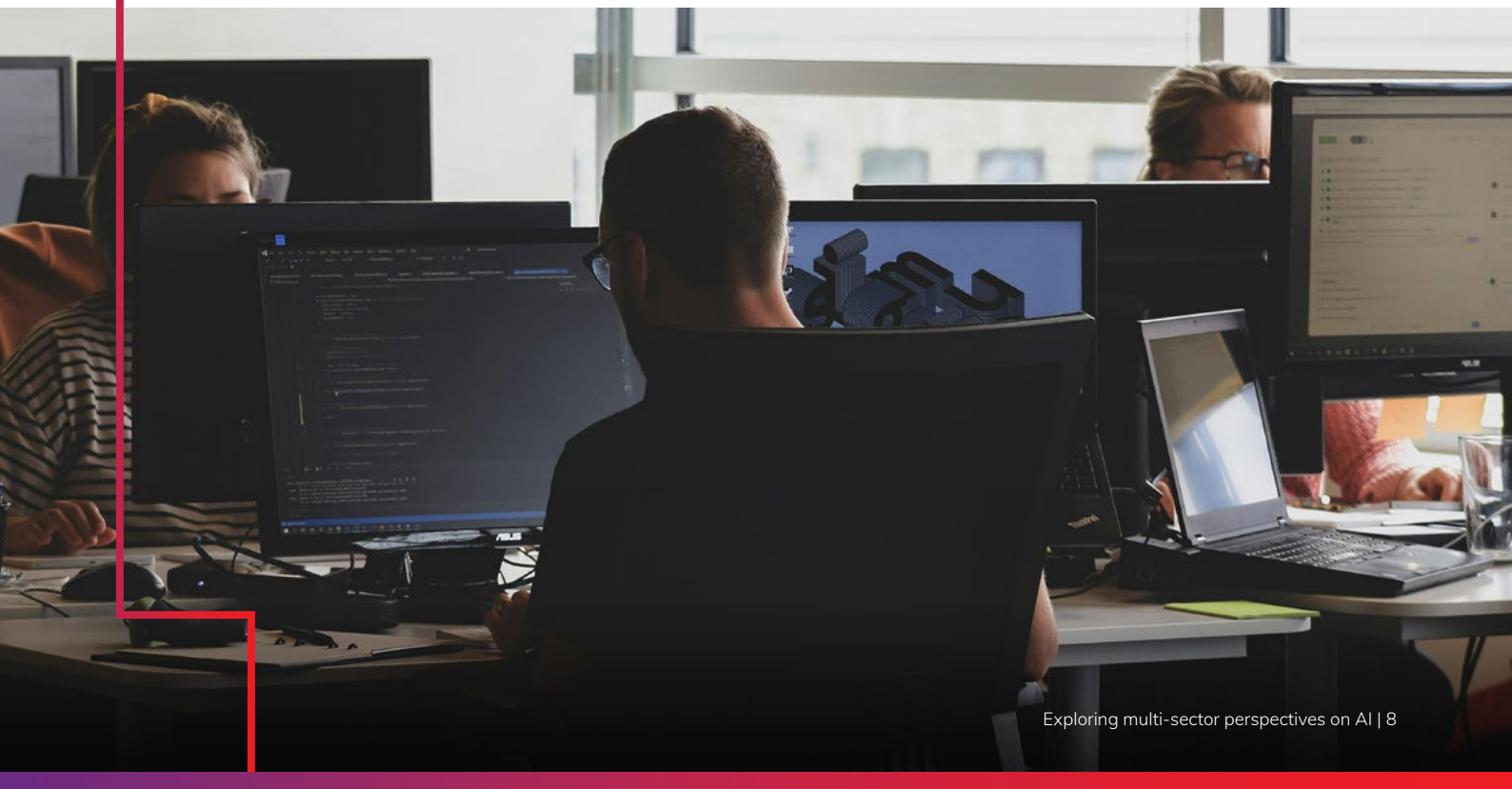
The impact of AI on employment and the workforce

> *Predictions show that AI could replace up to 300 million jobs.*
>
> Goldman Sachs

Efficiency gains, top-line growth and greater productivity are cited as the top priorities for business leaders, all of which AI enables. Medicine is one industry where AI will have transformative effects. Just recently, researchers reached a remarkable scientific breakthrough where a chip implant and AI language tools enabled a man with Amyotrophic Lateral Sclerosis (ALS) to 'speak' through brain-computer interfaces.

Despite its benefits, concerns are increasing that AI will replace human professionals. Experts predict that AI will match human intelligence by the end of the decade, meaning that **we are no longer competing only in manual labour, but also intellect**.

However, history tells us a different story. Think back to the Industrial Revolution, when textile manufacturers were replaced by machinery. An influx of roles and industries were also created and these form the bedrock of our economy today. The Chief AI Officer is one example of an emerging job role, driven by the rapid advancement of AI technology. As AI infrastructures become more complex, there will be a growing demand for technical professionals to oversee and manage these systems.



The net-effect of AI on the economy

If human labour is being replaced by AI, how will this impact the economy?

The shift in the global labour market towards AI-driven processes is raising questions about the existing economic model. While overall productivity in society may increase, individual productivity will decrease. Requiring changes in fundamental systems that exist today, such as taxes.

In the US, individual income taxes accounted for 50% of federal total revenue in FY 2024. If we replace manual and skilled labour with AI, those individuals paying taxes will be affected. Therefore, disrupting the current tax systems.

For high-income economies, it's predicted that AI will have a greater impact on jobs over the next few decades. However, for low-income countries and emerging markets (the International Monetary Fund predicts that 26% and 40% of jobs will be affected), AI utilisation is expected to be lower due to the lack of skilled workers and infrastructure that impacts readiness for implementation. Eventually this may lead to greater inequalities across nations as stronger economies jumpstart AI initiatives.

Increasing demand in technical skills

As AI continues to replace repetitive and manual tasks, (e.g., administrative tasks are likely to be the first to go), the demand for skilled labour will increase. Finding technical talent and upskilling existing employees will become critical for organisations and individuals in the workforce. Jobs related to data science, legal, AI and machine learning, cyber-security and project management will become more important than ever. Of course, skilled technology expertise will also be needed to maintain these new AI systems that are created.

Human rights and democratic values in the age of AI

The 1942 Asimov laws, (albeit science fiction), highlight the complexities of integrating robots into society without compromising humanity's fundamental values. The theoretical laws govern that robots cannot harm humans, will follow orders and protect their own existence. We can already see the conflict that these laws and AI introduce, particularly surrounding ethical scenarios. Let's take the example of surgery. To operate, robots must make incisions on their patients. But doesn't this contradict the law that robots cannot harm humans? Or imagine the scenario that a robot security guard needs to harm two individuals to protect another fifty. Again, it juxtaposes these rules.

Society needs to re-evaluate the basic laws of which it operates and how AI robots can adhere to them. Especially since **AI holds the key to a new society**.

An individualistic society

Though we possess a tool that can advance progress in every manner of life, there is an ambiguity around how we envision society's future.

> *For every action there is an equal and opposite reaction.*
>
> **Newton's Third Law**

The advantages of AI can be offset by its potential downsides, depending on individual viewpoints. AI-driven relationships could undermine the importance of genuine human interactions, creating a dependence on technology and a more isolated society.

But who should make these final decisions? Technologists undoubtedly should be involved. But what role should greater entities like governments and institutions play?

> *In maybe 50-60 years it will be very difficult to distinguish between a human and a robot with these incredibly advanced AI systems.*
>
> **Pilar Manchón,** Senior Director of AI, Google.

Only **50%** of those surveyed trust companies that use AI as much as they trust other companies.

*(**Source:** World Economic Forum Report)*

The current attitude towards AI underscores the need for human adaptation. Establishing trust in AI will necessitate transparency, public education and a substantial investment of time.

AI in addressing climate change and environmental challenges

Building advanced climate models for enhanced predictions

Climate change has reached a dangerous point, now named a global emergency and existential risk to humanity. The World Meteorological Organization (WMO) has reported that greenhouse gas concentrations are continuing to climb at alarming rates, with January 2024 reported as the warmest on record.

Though significant progress has been made over the years, the window to prevent catastrophic effects of climate change is closing, and the forecasts tell a grim story. Advancements in AI create an opportunity for scientists at NASA to accelerate their experimentation and research facilities. Leveraging AI, NASA scientists can build complex surrogate climate models using internal equations to test multiple assumptions, models and factors through simulations of sophisticated climate scenarios. And **all at the same time**.

As a result, scientists can investigate and verify their hypotheses, such as the dominant factors that are contributing to the climate crisis. This is a critical development that allows us to revisit current prevention strategies and optimise them accordingly. And these findings will only strengthen as AI gains maturity.

Data has the utmost importance

> *Feedback is the most important factor in the climate system.*
>
> **Dr. Greg Elsaesser**, Research Scientist, NASA Goddard Institute for Space Studies and Columbia University.

Accurate data is needed to improve global climate models. But how do you collect data while avoiding biases? For example, if scientists overtrain new equations based on data collected among certain communities, this can lead to global biases in its outputs.

Data reflects our values

When building AI models, it's essential to feed AI algorithms the right data that reflects the society we wish to build. To adhere to ethical standards, vendors must take active steps to eliminate bias from all AI tools. And organisations must build the right foundations, data governance programmes and strategies from the start.

But is the goal of eradicating bias realistic?

Data reflects our inherent values and surrounding environment. If the data that developers are feeding into AI systems reflect our real society, how can bias be eradicated? For example, when asking AI tools to 'generate an image of a CEO', outputs seen are predominantly men, reflecting the true state of our society.

But this doesn't align with our modern human values. So how do we balance the existing data we have against ethics and the vision we have of a more balanced society?

Conclusion

AI has introduced society to endless possibilities, increasing productivity and creating new developments across medicine, business and Earth Science. Advancements in climate modelling will be key to combating major global issues like climate change and later, policies.

Human value alignment and policy creation are the largest concerns for technologists and country leaders today. Leaders, lawmakers and technologists will need to join forces to create regulations that can adapt with the pace of technological change.

The questions cannot be answered today, and the debate is still ongoing. Yet, there's one thing we do know: **we must all take an active part in shaping the future of our society**. And this begins with safe AI usage.

> *AI is like a grand chessboard, where every piece represents a potential move in the hands of a more strategic player. But unlike chess, in this game the rules are still being written and that stakes our humanity's future.*
>
> **Dr. Omar Hatamleh**
> Chief AI Officer, NASA Goddard Space Flight Center

Acknowledgements

Arguments drawn in this paper are credited to the leading specialists who contributed during the NashTech and Harvey Nash event: Dr. Omar Hatamleh (Moderator), Chief AI Officer, NASA Goddard Space Flight Center, Pilar Manchón, Senior Director of AI, Google, Justine Kasznica, Board Chair and Founder, Keystone Space Collaborative and Dr. Greg Elsaesser, Research Scientist, NASA Goddard Institute for Space Studies and Columbia University.

Thanks to David Savage, Technology Evangelist at Nash Squared, who produced the Tech Flix documentary 'AI and robotics: a near future you're not prepared for' from which this debate originated.

About Tech Flix

Produced by Nash Squared Technology Evangelist, David Savage, Tech Flix documentaries focus on the big issues of our time. Its partner podcast, Tech Talks, features in iTunes' top 2% most recommended. In the latest documentary, 'AI and robotics: a near future you're not prepared for', leading experts like the Estonian Government's Chief Data Officer and academics discuss the impact of AI on society and the workplace.

We are experts in technology, delivering smart solutions that solve business challenges and create value. Our award-winning teams apply deep expertise and passion to deliver complex IT projects globally.

@NashTechHN

NashTech

For more details, please send your enquiry to **info@nashtechglobal.com**
or visit our website **www.nashtechglobal.com**

Nash Tech.