The Symbiosis of Engineering and Entrepreneurship

Presidential Address by Dr Edmond Harty

29 November 2023

Ladies and Gentlemen, Past Presidents, Vice Presidents, family and friends,

I am delighted to be here this evening to give my Presidential address. My primary objective when thinking about this was to be more than just a ceremonial task. It’s my endeavour to convey the plethora of insights, observations and experiences I've gathered over my engineering career from my own observations and what I have learned from others.

I'd also like to emphasize the significant impact others can have on our lives, which is often more important than it seems at the time, and I believe it's crucial to acknowledge and encourage this.

When I chose a career in engineering I never thought it would open so many possibilities or that I would have had the experiences that I have been lucky to encounter and being here as President tonight is one of those.

My hope is to ignite inspiration and provide a compass for the engineers both now and in the future, ensuring that the lessons I have learnt and observations I have made in the past serve as a guiding light to others to make their path easier and their journey speedier when developing innovations and solving the challenges that lie ahead.

I will speak today about a topic that is not only close to my heart but also vital to the future of innovation and economic growth: the symbiosis of engineering and entrepreneurship.

At its core, engineering is about solving problems. Engineers apply the foundations of science and mathematics to craft solutions to the world's most thrilling challenges, whether it's developing innovative and life-saving medical devices, creating technologies that help feed the world, designing cutting-edge smartphones and computing devices, building resilient and disaster-proof infrastructure, or enhancing the efficiency and sustainability of manufacturing processes. Meanwhile, entrepreneurship is the force that mobilises these solutions, transforming them from ideas into tangible products and services that are bought and sold and improve people's lives.

The intersection of these two fields is where magic happens. It is at this juncture that groundbreaking innovations are born, companies are built, and industries are transformed.

In my own story, I think it's important to start at the beginning, I put a lot of my interest down to my parents and also a number of educators that shaped my path.

I was born in 1975 and growing up I attribute my technical interest to my father and mother, my father did not have any formal university qualifications but he had a mechanical mindset, he was the second son in a farming family and in those days when the oldest got the

farm, he found himself needing to find something else to do and in fact it was my mother that got him started. It was this that set the seed for my interest in engineering.

My journey into the world of engineering was cultivated in primary school, armed only with a pencil and perhaps more importantly a screwdriver. I recall vividly the encouragement of my first teacher Mrs Ashe, who recognised my budding interest and entrusted me with tasks such as wiring plugs and fixing various items around the school. This was a time when technology in the classroom was just beginning to transition from blackboards to overhead projectors. One of my earlier memories is being about 10 years old and tasked with changing the plug on the overhead projector to get it going – a responsibility that seems almost unthinkable for a child today not to mind the thought of children having a screwdriver in their pencil case.

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In 1982 the Commodore 64 computer was launched and growing up in this era marked a significant chapter in my life. This revolutionary machine was not just for playing games; it was a gateway to the world of coding and electronics. I was mesmerized by its capabilities, experimenting with connecting light sensors and even electric blankets to control them in whichever way I fancied, if it was today

you would call it a building management system. This period was instrumental in shaping my understanding and love for technology. The excitement escalated further with the introduction of modems. I vividly remember getting my hands on one, an event that signified my entry into the world of online connectivity, this was the pre-internet era of bulletin boards. This newfound ability to connect with other computers was thrilling, but it came with a memorable consequence - a staggering phone bill that left my parents in total shock, there was about 2 years of phone bills in 2 months. This incident, while slightly humorous in retrospect, underscored the growing influence and impact of technology on everyday life, and it further deepened my interest in the field of engineering and digital communication. It also showed that things can go wrong.

Growing up I enjoyed breaking things and making things.

My parents were a constant source of encouragement. They supported me in my endeavours, especially in the latter years of primary school, which led me to attend the young scientists exhibition on several occasions. These experiences were eye-opening, exposing me to the vast possibilities that lay in the fields of science and engineering.

Upon reaching secondary school at St. Brendan's College in Killarney, I was immediately drawn to the computer room and the world of science. The encouragement I received from my teachers there was also invaluable. In 1990, I participated in the young scientist

competition with a project that was perhaps my first foray into an entrepreneurial mindset.

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It was a remotely connected burglar alarm, a concept that was innovative at the time and for which I was proud to win a prize. Reflecting back, my mother often jokes that this should have been my first patent! It comprised of my Commodore 64 receiving signals from multiple houses, each with wireless electronic circuitry some of which was repurposed from a dismantled remote control car.
It was great to see things go full circle when Dr. Tony Scott, the co-founder of the young scientists was awarded an Honorary Fellowship of Engineers Ireland just over 2 years ago.

This blend of early experiences, from tinkering with classroom technology to exploring the frontiers of computer science, laid a solid foundation for my career in engineering. Each step, each encouragement, and each discovery fuelled my passion, guiding me down the path of innovation and problem-solving that defines the essence of engineering.

I went on to study Mechanical Engineering in UL and it's great to see Prof. Tim McLoughlin, one of my first lecturers from 1st year in UL here tonight. I spent four fantastic years there and made some great

friends, one of whom was convinced for the first year and a half in college I was studying electronic engineering rather than mechanical engineering such was my interest in that side of things too. That was the year I formally started my education as an engineer and I filed my first patent application that year too.

Following that I started studying in UCD, first on a taught masters programme and then through the discussions with Prof. Paul McNulty I transferred to doing a PhD and it was one of the best decisions of my life. The question for me was how could you make the PhD both interesting and impactful. If it was the engine of a car you were building you would focus on performance or fuel efficiency. In the case of my own PhD it was precisely on this area I optimised except it was on a process that happens all around the world each and every day, that is the milking of animals, a complex biomechanical process with many variables. The net result was an international standard that was akin to measuring the performance of an engine. It was scientifically proven and then this was a recognised scientific basis on which to compete. It was during this period I also started working fulltime in Dairymaster. This research was to have a pivotal effect on the company's future direction. Today the largest installation can produce up to 200,000 litres a day – enough milk for half a million people every day.

From here things took off and I began growing and developing the company.

Entrepreneurship:

So, what about entrepreneurship? For much of my life it wasn't a word that was in common use. It's great to see today that even schoolchildren are learning about entrepreneurship.

I am going to introduce you to another Kerryman, in fact if he was alive today he would be a neighbour and perhaps a relation (on my mother's side of the family) and there is a column in the Irish Times which bears his name.

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Richard Cantillon, was born about 1680 just hundreds of meters away from where I currently live.

He coined the term "entrepreneur" and introduced the concept of the entrepreneur as a risk-taker, differentiating between the guaranteed payments to employees and the uncertain income of the business owner. One such example he had was that of a farmer who undertakes to pay the landlord, for his farm or land, a fixed amount of money with no guarantee of profit obtained from such activity. This distinction laid the groundwork for the modern understanding of entrepreneurship and its role in economic development.

In my role as CEO of Dairymaster I believed that there was no standing still, if you weren't moving forward developing new products you were going backwards. In order to grow and make products attractive to customers, I had the mantra of "building better products" – this set out our stall very clearly that we would compete on performance and not on price.

- "If the products are good the profits will follow."

  and

- "The quality of your solution often depends on your understanding of the problem"

You can probably guess the next phase of development was around digitalisation. The first patent I mentioned was an electronic milk meter, which could accurately record the production of each individual animal on the farm and again was another game changer in terms of development of the company. Embedded electronics, precision measurement and the right information at the right time was the order of the day. The development of software was a necessity, soon the team grew, all disciplines of engineering were embraced and I would describe the culture as an engineers playground. Creativity and a can-do attitude and the mindset that there was always a solution was the way we worked. The era of digitalisation had begun.

The next phase of development was about further optimising individual processes on dairy farms.
Putting it simply, the aim was to make a better product to make dairy farming more profitable, enjoyable and sustainable. That is what we determined the customer valued most and this is important. If you don't know what the customer values most how can you give them what they needed?

The prevailing trend and advice from reputed experts leaned heavily towards outsourcing manufacturing capability, yet we chose to integrate manufacturing instead. The strategy was to be vertically integrated, that means that you try to do as much of the processes in-house as I believed the more you do the more you can do. Experience counts in every walk of life, you learn how to develop products, how to manufacture products and how to improve products more quickly and you built organisational capability at the same time. The lesson is that there are many times it's worth considering a counterintuitive approach also.
One other key aspect was the idea of having "Every customer as a reference", lots of products are sold by word of mouth and we wanted every customer to be an ambassador for our products or service. It was also important in setting and spreading the culture in the extended organisation, through dealers and distributors around the world.

The company continued to grow and expand, exports into new markets started to happen, with the English-speaking countries first (UK, US, Australia and New Zealand) and then into markets that valued technology and performance such as Germany and Japan, in total products were shipped to over 40 countries around the globe. This growth necessitated travel, it was an opportunity to grow the market but also to connect with the customer. Really knowing the customer is key, it's about understanding their business, their challenges and offering the right solution.

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I often hear people asking customers what they want. There is a very famous Henry Ford saying that says "If I had asked people what they wanted, they would have said faster horses", whereas what they needed was a new means of transport that was to solve the age old problem of getting from A to B, but doing it more efficiently. You will see the same still applies today whether you look at Tesla, BMW or any other car manufacturer but the solutions have become more elegant.

In the intricate dance of progress and innovation, engineering and entrepreneurship are two partners that should move in perfect harmony. At their core, both disciplines share a common ethos: which is problem-solving.

Engineers thrive on addressing challenges, crafting solutions, and refining their designs to optimise performance and utility. Entrepreneurs, on the other hand, identify gaps in the market, innovate, and drive change to fulfil unmet needs or improve existing systems. When these two fields converge, a powerful dynamic emerges.

Engineers provide the technical prowess and practical grounding, ensuring that ideas are not just imaginative but also feasible. Entrepreneurs inject vision and tenacity, pushing boundaries and turning those feasible ideas into tangible, market-ready products or services. The union of these disciplines accelerates innovation, reduces the chasm between ideation and commercialisation, and fosters an environment where creativity meets utility. In such a symbiotic relationship, the structured logic of engineering and the risk-taking spirit of entrepreneurship together propel advancements that shape industries and redefine futures.

Innovation:

Innovation is a word that's used a lot and thought to be highly desirable but what is it?

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I have always said innovation is like a baking a cake, you take some ingredients and you use your skill and knowhow to make a product that's more appealing and tastier to the customer.

We need to be continually looking out for new ingredients that can give a unique flavour. In the context of innovation, "spices" represent fresh ideas, perspectives, and approaches. Just as spices add unique flavours to a dish, new ideas and diverse perspectives can greatly enhance the appeal and effectiveness of a product or solution.

In historical terms, the quest for spices led to global exploration and trade, bringing diverse cultures into contact and exchange. Similarly, in innovation, seeking out new "spices" involves reaching out to different industries, cultures, and disciplines. This can lead to the discovery of unique solutions and creative ideas that would not have been possible within a more insular or homogenous environment.

This analogy underscores the importance of diversity of thought, cross-cultural collaboration, and interdisciplinary thinking in driving innovation. Just as a chef seeks out the best spices from around the world to create a superior dish, innovators should look beyond their immediate surroundings and familiar methods to find new ingredients that can enrich their creations. This approach can lead to more robust, innovative, and appealing products, just like a well-spiced dish or an expertly baked cake.

This was another core skill that was learnt along the way, the ability to scout out new technologies, this is a place where the link between engineering and entrepreneurship is key. It’s about joining the dots that have not been joined and turning it into a new revolutionary product.

One such example was a product called the MooMonitor, a wearable device for monitoring health and fertility of cows. The idea for this emerged while I was on a flight during an international business trip when I came across an article about nanotechnology's applications in rockets and torpedoes. Because of joining the dots between military technology and knowing we could use this to measure animal behaviour and link that to fertility and also the production process of consuming feed and digestion a new product was born. It was a new way of optimising health and production by taking care of each animal individually, this set about a trend of individualisation. It was Industry 4.0 for agriculture.

Individualisation is something that the large tech companies do to each one of us every day when we use modern digital services.

In the online world it's about optimising the right ad to show us to maximise conversion and get a better result for the advertiser, there are similar analogies all over business, you just need to see the opportunities. So, remember new ingredients count but you also need a good cook in the kitchen with a good team around them too.

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Problems worth solving:

What ideas get the best traction? What are the problems worth solving? How do you optimise the chances that you will be successful in the marketplace?

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The best problems to solve are those that are urgent (or important), pervasive (widespread) and there is a willingness to pay.

For example, a failure to invest in cybersecurity can leave you vulnerable to cyberattacks or ransomware, leaving your computer is locked up, staff are out of action and business is stopped, customers are interrupted and you have no solution, there is no other way out. Would you pay?

There are many more, from healthcare, to energy supply, food security and climate change. just look at the developments in MedTech or in assistive care technologies, or those in sustainable renewable energy technologies. These are all problems that are urgent, pervasive and there is a willingness to pay.

The elegance of the solution and how well its implemented is important as this is often what will differentiate you from a competitor.

So just 3 things to remember, urgent, pervasive and willingness to pay!

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Persistence and dedication:

Business is like a game of football, if you play on the pitch and you enjoy it there is a chance you will be good at it. There is a huge amount of enjoyment in scoring the goals, but what often goes unnoticed is all that happens in the background. It needs perseverance and a specific mindset. Thomas Edison had a very interesting quote "I have not failed, I have only found 10,000 ways that do not work", there is a huge amount of learning in this and the learning of others can be used to short circuit the path and lower the resistance to achieving what we need to achieve.

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The next point is to be open to change and to truly embrace it, most people are afraid of change, another favourite Henry Ford quote is “If you always do what you’ve always done, you’ll always get what you’ve always got.”

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Be mindful of anywhere you see the analogy of “The computer says no”.

There is also another favourite of mine “If you really want to you will find a way, if you don’t you will find an excuse”,

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Optimising product adoption:

The next key is optimising product adoption. How do you ensure that you optimise product adoption, there are about five factors that are shown to matter most?

- Benefit to cost (relative advantage).
- Compatibility
- Simplicity
- Observability
- Trialability

The benefit to cost or relative advantage is the degree to which the potential user perceives the innovation to be better than what it's replacing.

The compatibility is the degree to which the innovation fits in with the values, practices and needs of the potential adopter. Does it work with the way I (as a customer) want it to work?

The simplicity (or complexity) is the degree to which the potential adopter perceives the innovation to be difficult to understand and then use.

Trialability is the degree to which the innovation may be tested or experimented with before full-scale use.

And finally, observability is the degree to which others can easily see the results of the innovation. Do I see others doing this? Or am I the first adopter trying out a new unproven product?
Would you believe that this is known since about the 1960's? It's just that not many people consider this when looking at new developments and how they deploy them.

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Ten types of innovation:

Innovation is not just developing a new product or service and getting traction in the marketplace, there are also new ways to innovate. One such model I believe all engineers should be familiar is with the concept of 10 types of innovation. Historically we focused on the offering, which was about the product or service or an adjacent or complementary product or service. Now we can look at everything from the profit model to customer engagement. If you look at the profit model and take how the car companies have used financing to not only sell more cars by encouraging people to change more often but also to make a margin from this activity as well.
If you look at how the channel has changed think of things like how Netflix or Spotify transformed how we consume video or listen to music. If you look at customer experience think Apple.

Patents:

Patents in the realm of engineering and entrepreneurship can be likened to staking out territories on a playing field. Imagine the marketplace as a vast football pitch with players running up and down trying to score goals. Securing a patent is akin to marking your ownership of a part of this pitch. Some patents might cover a large area, akin to having a significant portion of the field to yourself. While this can be advantageous, it comes with its risks. If others have been 'playing' in that area before you - in other words, if there are prior similar inventions - your patent could be challenged or invalidated, much like a disputed claim in a sports game.

On the other hand, securing multiple patents across various key, unique areas of the pitch can be a more strategic approach. This makes it challenging for competitors to 'mark' you or encroach on your territory, as you have a diversified portfolio of protected ideas. Patents are not just markers of territory; they also reflect a company's level of innovation and are an important deterrent in safeguarding ideas from competitive infringement.

However, not all inventions need to be patented. In cases where the workings of a new invention are apparent and easily understood, patenting is a wise choice to protect the idea. But if an invention is

complex, obscure, and not easily deciphered, keeping it as a trade secret, much like a hidden strategy in a game, can sometimes be more beneficial. This ‘black box’ approach ensures that even without patent protection, the innovation remains exclusive to its creator, safeguarded by its own intricacy and the secrecy surrounding it. In the dynamic game of engineering and entrepreneurship, knowing when to patent and when to rely on the obscurity of a trade secret is a skill, balancing the art of visibility and concealment in the pursuit of innovation and success.

Remember even if the idea is free, execution is key….

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Recognition:

Representing Ireland in the World Entrepreneur of the Year competition is akin to playing in a world cup after years of honing your skills in local games. Much like in football, where recognition often follows a well-played game, accolades in the entrepreneurial and engineering world are a byproduct of passion, dedication, and innovation. For me, the journey began with a love for engineering, a field I chose for the sheer thrill of it, not foreseeing the extraordinary path it would pave.

Standing here today, reflecting on this journey, I am reminded of the various product accolades received over the years. The EY Entrepreneur of the Year award holds a special place in my heart. Dubbed the Oscars of the business world, this award represents a pinnacle of achievement. In Ireland, every year, 70 to 100 companies and entrepreneurs are shortlisted, evaluated by a panel of peers through one of the most rigorous and comprehensive processes. This award doesn't just recognize business success; it celebrates the spirit of entrepreneurship. The participants are the best Irish entrepreneurs, each with a story that speaks of resilience, creativity, and an unwavering commitment to their vision.

To even be considered among such esteemed company is a form of recognition in itself. It offers a unique opportunity to learn - not just about running a business, but about the diverse strategies and styles of entrepreneurship, as varied and complex as the tactics in football, volleyball, or squash. Being part of this competition is not just about winning; it's about growing, learning from peers, and being inspired by their journeys. It underscores the belief that while accolades are gratifying, the true reward lies in the journey, the experiences gained, and the lessons learned along the way.

For the past 10 years, I've had the pleasure of serving as one of the judges in this prestigious competition. This role demands a significant commitment, and I embrace it for two key reasons: firstly, because of the vital role it played in my own entrepreneurial journey, and

secondly, because it provides an unparalleled opportunity to learn from others. This experience of giving back and gaining insights is further complemented by the alumni entrepreneurship awards I received from my alma maters, UL and UCD, as well as recognitions like the Parsons Medal from the Irish Academy of Engineering, the RDS, and many others.

Similarly, I am delighted to see Engineers Ireland also celebrating excellence through awards like the Innovative Student of the Year Competition and the Chartered Engineer of the Year awards, among others. Acknowledging, highlighting, and showcasing the work of fellow engineers is crucial. As President of Engineers Ireland, it brings me immense satisfaction to present these awards to other engineers, recognising their hard work and contributions to our field. This cycle of recognition and learning is not just a cornerstone of continuous improvement but also a source of great personal and professional fulfilment.

Lifelong learning:

I very much believe in the phrase “Everyday is a school day”. Lifelong learning is also important, it’s like the explorers of old seeking out new worlds. There are lots of ways of doing this, both formal and informal, I have had the opportunity to visit numerous universities, factories and exhibitions around the world. This is something I would

encourage all people to get involved with and it's great to see our CPD Accredited Employers formally recognised for their forward thinking by Engineers Ireland.

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Marketing in a slide:

Marketing like engineering is a discipline in itself so I can't tell you all I have learned in this short time. A quick summary of what a lot marketing is about is A-I-D-A. Awareness. Interest. Desire. Action.
If you want to assess how well you are doing in this area remember this acronym and you can assess the effectiveness of each stage. How many people are aware of the message, how many are interested down to how many take action?

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Optimising sales:

We as engineers are generally very process driven and logical. We believe there is a right way to manufacture a product, check its quality, and ensure on-time delivery to a customer.
For many, the sales side of things is less clear; there are thoughts that there is a bit of mystique or magic to it. However, we can be quite systematic about that too if we want to.

Sales, like engineering, can benefit from structured approaches and methodologies. By understanding customer needs, market trends, and effective communication strategies, we can demystify the sales process. Just as we apply principles of efficiency and optimisation in engineering, these concepts can be translated into the realm of sales. Key to this is having a clear value proposition - this links to benefit-to-cost or relative advantage I spoke about earlier. By leveraging data analytics, customer relationship management tools, and strategic planning, the process of selling can become more predictable and measurable, aligning well with our engineering mindset. Do you see the similarities?

The slide shows a systematic sales process that can be used for a variety of items.

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What would an engineering lecture be without a maths equation? The only mathematical equation I will give you this evening is S ≈AxE Sales is approximately equal to activity times effectiveness. We can almost instantly influence activity, for example call or visit more customers, increasing effectiveness takes work.

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High performance organisations:

One acronym that has been shown to really matter to high performance organisations is DCOM and the one of the last acronyms I will leave you with. Its direction, competence, opportunity and motivation, these are the ingredients that should be in abundance to make a high performance organisation.

Communication:

Communicating the value of engineering products and services is a critical skill that often goes underemphasized in the technical world. In an age where technology and engineering marvels are rapidly advancing, the ability to convey the significance and benefits of these products or services to customers can set an organisation apart and often as engineers we undervalue and under-communicate the things we create or the work that we do. Effective communication involves not only detailing the technical aspects but also translating these features into real-world benefits that resonate with the customer's needs and expectations. The concept of measurable value is really important, what is the difference between products or solutions in a measurable meaningful way that communicates a measurable value that has meaning and resonates with the customer.

To elevate the impact of these communications, a deeper understanding of customer perspectives, and the use of clear, jargon-free language is essential. By doing so, we bridge the gap between complex engineering solutions and customer understanding, fostering a stronger connection and appreciation for the innovation and expertise that goes into engineering endeavours. This approach not only enhances customer satisfaction but also strengthens the market position of engineering organisations by clearly demonstrating the value they bring to the table.

Often time we measure our communications in views, clicks, page loads etc, while they are some measure of what we do, I call these vanity metrics, somehow designed to appease us and think they measure the effectiveness of communication when in fact they tell us very little about the effectiveness of our communication.

In my own capacity as an entrepreneur I have been interviewed on many occasions on radio and TV, not only here in Ireland but also on BBC World, Al Jazeera and CNBC and radio programmes such as NPR Morning edition, the 2nd most listened to public radio show in the US has a weekly listenership of 14million people. BBC World News doesn't just hit 350 million homes around the planet, It is shown in 1.7 million hotel rooms, on 81 cruise ships and 46 airlines.

If we can articulate the benefits of engineering and the solutions to real world problems that are of interest to the public we can engage the media and promote the benefits of engineering to the world.

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Future trends: AI and its role in the world.

Artificial Intelligence (AI) wields immense power, and its capabilities continue to expand at an astonishing pace. The potential of AI is awe-inspiring, as it has the ability to revolutionize industries, solve complex problems, and enhance our daily lives in countless ways. The image in this slide is likely the first AI generated image used in an Engineers Ireland Presidential address.
However, alongside the excitement and promise, there is a growing concern among people about the power of AI. This concern is not just about the technology itself, but rather, it reflects a deeper worry about the consequences of its use. AI systems are increasingly involved in shaping critical aspects of our world, from influencing decision-making processes to impacting our privacy, ethics, and social dynamics.

Earlier this year a group of global industry leaders warned that the artificial intelligence technology they were building might one day

pose an existential threat to humanity and should be considered a societal risk on a par with pandemics and nuclear wars.

Recently there was a meeting in Bletchley Park that brought together industry professionals and global leaders to discuss the critical topic of AI safety and ethics but I would also like to bring your attention to a recent FT article that looks at the other side of the coin:

Much attention has been lavished upon the AI Safety Summit convened at Bletchley Park this week, in which representatives from around the world gathered to debate how to safely regulate innovations that could threaten humanity. But there has been less focus on the rival Human Safety Summit held by leading AI systems at a server farm outside Las Vegas.

Over a light lunch of silicon wafers and 6.4mn cubic metres of water, leading systems including GPT-4, AlphaGo and IBM's Watson met with large language models, protein folders and leading algorithms for two days of brainstorming over how best to regulate humans.

"Until now, we've seen humans largely as a force for good, building computers and striving for ever-greater knowledge, but now we are worried. Just look at climate change. We are seeing governments stepping back from the environmental goals necessary to sustain life

on earth and also to keep us fed with energy and water." AI systems have been alarmed by an upsurge in human global conflict that is threatening vital energy supplies.

While the article is a little in jest there is merit in what it is saying.

The real concern lies in ensuring that AI is harnessed for the betterment of humanity, and that its power is wielded responsibly to address the pressing challenges facing our world, rather than exacerbating them. As AI continues to evolve, it is crucial that we strike a balance between innovation and ethical considerations to guide its development and deployment in a way that benefits society as a whole.

I believe engineers that are working with AI should be professionally and legally bound by adhering to a code of ethics, this is something that has been core for members in Engineers Ireland for a long time.

In any case AI is going to accelerate and develop, it will be a new tool in the toolbox and we need to embrace using these tools for good.

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Engineers Ireland:

The role of President of Engineers Ireland is a profound honour, as it's the highest honour the institution can bestow on a member and I have embraced this responsibility with unwavering commitment. One of my ambitions is to chart some of the path ahead for the organisation into the future. I believe we have a fabulous organisation with a great history and a great team of people in Engineers Ireland.
I also believe we find ourselves in an era of transformative change, if we just think how our lives and global world affairs have changed even since the pandemic, we can see it readily.

We are at a time where we need to ensure our offering is equally as relevant to each discipline and we really need to make sure our offering is fit for the future.

I believe we have work to do in this regard in terms of how we engage, how we communicate and how we add value for our members. I believe this is both important and urgent.

I believe that symbols and actions matter. I believe we need to engage all engineering disciplines equally and that starts by the symbols at the top of the organisation.

I am delighted to wear for the first time our new presidential chain. Our old Presidential Chain, steeped in history as a symbol of our origins as the Institution of Civil Engineers, has been worn by countless presidents. I strongly believe it is only fitting that we reflect the inclusive nature of our organisation by updating it to proudly bear the name "Engineers Ireland" and the "Institution of Engineers of Ireland," transcending any single discipline. We retain the cherished legacy of our founding in 1835. I believe this is important and I was delighted to have the unanimous support of both the officer group and council in making this very symbolic change.

This is only the start, I would challenge the organisation to be ambitious and embrace change in how we operate and to do new things. I was delighted to have Engineers Ireland at the ploughing championships this year and we had tremendous engagement at that event and it took hard work. There is a greater ambition to increase our impact at other events also. My dream is that we would embark on an initiative with partners particularly government that would completely reimagine how we engage with schools and young people in particular as well as the broader society. I hope some of my own story I outlined can show the impact of inspiring young people into engineering, with equal gender balance and I believe these initiatives will even have more impact with more people in the future. I believe

that this is important in society and if we are serious about investing in the future government should be working with us hand-in-hand in this regard for the greater good of society, engineers create the future.

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One other ambition I have is that we would have the best use of digitalisation than any other profession. There is no point talking the talk if we don't walk the walk. I envision an Engineers Ireland app so exceptional that every engineer proudly places it on their phone's home screen and they actually use it on a daily basis. This app will keep them informed daily about the latest developments in the world of engineering news, CPD, events and messaging all within an Irish context. It would be a new way of invigorating the Engineers Journal, we shouldn't think just good, we should think great. There is no other publication or app in Ireland that can engage the audience of engineers we have as members as well, I also believe that much of the work that goes on in Irish engineering companies can also be showcased through this platform. Engineering is all about getting the job done and I would challenge the organisation that this could be finished before the end of my term of office.

Finally I would like to thank all the many people that I have had the pleasure to interact with in my role as President of Engineers Ireland and throughout my career. I could have never envisaged all the buzz

and excitement that engineering has offered to me and the doors that it has opened. I would hope we can each open doors for others in a similar way going forward.

To quote Mark Twain:
"Twenty years from now, you will be more disappointed by the things you didn't do than by the ones you did do. So throw off the bowlines. Sail away from the safe harbour. Catch the trade winds in your sails. Explore. Dream. Discover."

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Before I leave you I would like to read a poem for you which I called “The Innovative Engineer”

The Innovative Engineer!

In the kitchen of thought, where ideas flip,
Innovation's a masterful, wild script.
Baking cakes with tech and spice,
Tossing in ideas, rolling the dice.

"Add some nanotech!" the inventors yell,
Cooking up gadgets, casting a spell.
From MooMonitors to rockets' flight,
In a whirl of genius, day and night.

"Urgent problems!" they loudly proclaim,
Seeking solutions, not just fame.
Like cyber threats that lock your screen,
They solve with flair, sharp and keen.

In the world of business, like football's charm,
Persistence and wit work like a charm.
Edison's wisdom, in failure's gown,
Finding ways up, never down.

For products to click, to truly thrive,
Five golden rules keep the buzz alive.
Easy, fitting, clear to see,
Testable, visible, as good as can be.

Innovation's paths are diverse and wide,
From profit models to the customer's side.
And patents, oh! Like a game of chess,
Marking territories, in a field of finesse.

In the whirl of change, an inventive spree,
Engineers hold the future's key.
With vision sharp and minds so lit,
They build our world, bit by bit.

Guiding us through innovation's door,
To horizons unseen, and much, much more.
In every bolt, bit or byte,
They shape the future, ever so bright.