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April/May 2025

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CONTENTS

APRIL/MAY 2025

6 COVER STORY

ArmCoil: A bold new era in power solutions

8 SECURITY

The Deepfake dilemma: how business leaders can safeguard against AI-driven deception

10 AUTOMATION

Smart, simple, and sanitised: control at your fingertips

11 INFRASTRUCTURE

Bridging the connectivity gap: what really works in low-infrastructure areas?

12 TELECOMMUNICATIONS

World Telephone Day: six milestones that revolutionised telephony

14 SUSTAINABILITY

Africa launches coalition to tackle the hidden crisis of medical equipment waste

16 INDUSTRY

Take control with flow technology that adapts to you

16 INDUSTRY

Smarter detection starts here

17 WORK-LIFE BALANCE

The hidden cost of always-on: tech burnout in the age of instant response

18 OPINION

Seven decades of technological evolution: a new generational framework (1960–2030)

21 AUTOMATION

The next multi-touch panel generation in a smart design

23 SCIENCE

The impact of radio frequency noise on communication is like climate change on weather

25 ICYM: SNIPPETS FROM OUR WEEKLY NEWSLETTERS

PUBLISHED BY EIA (Pty) Ltd

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www.eiapublishing.co.za

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A VOICE FOR:



FROM THE EDITOR'S DESK

We open this issue with a transformation story grounded in focus and intent. ArmCoil, our cover feature, enters a new chapter that blends legacy with technical precision, marking a shift toward deeper specialisation and future-ready power systems.

This month's edition explores the crossroads between innovation and responsibility. We examine the rise of deepfake threats and what they mean for leadership credibility. We spotlight the ADMiRe Coalition's effort to address Africa's growing stockpile of medical equipment waste. And we reflect on the generational shifts in how we engage with technology – from rotary dials to cloud ecosystems.



Hans van de Groenendaal brings his signature clarity to the increasingly urgent issue of RF noise, drawing a

compelling line between electromagnetic interference and environmental impact. And on a lighter but no less meaningful note, we revisit the milestones of modern telephony – a reminder that connection, in all its forms, remains central.

These are stories of adaptation, foresight, and clarity in motion.

Glad to have you with us.



Justin Render
Editor, *EngineerIT*

Quark's Corner

with *EngineerIT's* Hack of all Trades

Beep beep! It's me, Quark. Your friendly, slightly over-caFFEinated (and fully electric) companion here at *EngineerIT*. I've been patching cables, scanning press releases, and accidentally downloading a lasagne recipe while checking the state of local automation. Here's what's buzzing on the circuit this month:

The big one? #AATF2025

The Africa Automation Technology Fair is charging up for 6–8 May at Gallagher Convention Centre, and it's looking like a full voltage event. Expect everything from next-gen control systems to robotics that can probably beat me at chess (don't tell them I said that). If you're even remotely into smart manufacturing, this is the place to plug in.

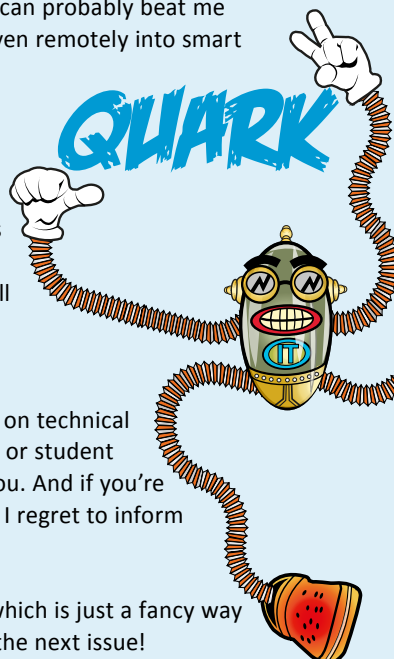
Broadband rollout gains momentum

Word on the wire is that SA's broadband infrastructure projects are speeding up, with rural and township deployments expanding. It's a big leap for digital access — and a small step closer to getting fibre to that one uncle who still thinks "streaming" means fishing.

Skills development in focus

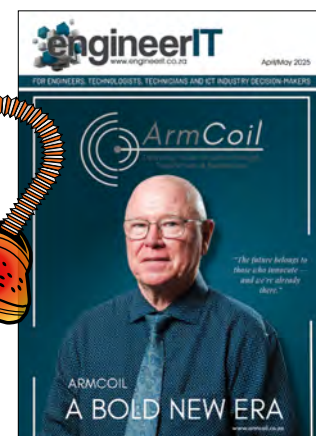
Several industry bodies are turning up the heat on technical skills development. If you're a young technician or student wondering where you fit in, the sector needs you. And if you're an older engineer wondering what a TikTok is... I regret to inform you it's not a timing relay.

That's it from me for now. Time to go reboot (which is just a fancy way of saying I need a snack and a nap). See you in the next issue! — Quark



Highlights in this edition

- **Cover Feature: ArmCoil's next chapter** – Focused transformation and renewed specialisation in power infrastructure.
- **The deepfake dilemma** – How AI-generated deception is becoming a real threat to executive security.
- **Medical waste in the spotlight** – The ADMiRe Coalition tackles Africa's silent crisis of obsolete diagnostic equipment.
- **Generational tech shifts** – A fresh lens on how different age groups navigate digital evolution.
- **RF noise and the spectrum challenge** – A call to protect our airwaves before interference becomes irreversible.
- **World Telephone Day tribute** – Celebrating the tech milestones that shaped a century of connection.



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ArmCoil: A bold new era in power solutions

Over two decades ago, in 2002, ArmCoil was born from a vision to provide dependable electrical engineering solutions to industries across Southern Africa. What started as a focused motor repair facility steadily grew into a multifaceted organisation, proudly offering motor repairs, transformer services, site-based operations and eventually our own line of locally manufactured power and distribution transformers under the ACEM brand.

In 2025, ArmCoil has taken a strategic leap forward, undertaking a comprehensive restructure that signals the beginning of a bold new chapter. With our sights set firmly on the future, we have streamlined our operations to focus exclusively on **Transformer and Substation Manufacturing** and **Transformer Repairs**. This deliberate shift allows us to channel our energy, skills, and innovation into the areas where we have proven to be industry leaders.

As part of this transformation, two key decisions were made: the closure of our **Motor Repairs Division** and the **phasing out of broader Field Services**. Moving forward, ArmCoil will only offer **on-site assistance, installations, and commissioning**, narrowing our scope to specialised, high-value site services that align with our refined expertise.

These changes were not made lightly. They come after extensive planning, market analysis,

and internal discussions. We recognised that to thrive in a fast-changing industry—one where technology, quality standards, and client expectations are constantly evolving – we had to sharpen our focus. By concentrating our resources on transformer-related services and manufacturing, we are better equipped to deliver the power solutions that our clients demand in today's competitive market/industry.

One of the most remarkable aspects of this restructure is that **no employee was retrenched**. Instead, our talented workforce has been **fully retained and seamlessly redeployed** into roles within our existing departments. For us, people are not just employees – they are the heart of ArmCoil. Many have been with us since the very beginning, working their way from shopfloor apprenticeships to skilled artisans, supervisors, and members of senior management. Others have joined along the way and carved their own paths through commitment and training. Their stories are deeply woven into the fabric of ArmCoil, and it was essential to us that this transition honoured their loyalty and contribution.



From Left: Renier, Janine, Raymond, Morne B, Chantel and Morne N



Peter Flint,
Managing Director



Tinus Van Wyk,
Operations Manager



Clinton du Plessis,
Quality Manager



Norman Mapimela,
Engineering Manager



Morne Bosch,
General Manager

This transformation also marks the launch of a **refreshed corporate identity**. Our visual evolution includes a **revamped ArmCoil logo** and an **updated ACEM logo**, both designed to reflect the innovation, reliability, and forward-thinking that define this new era. Additionally, our slogan has been updated from “*Your Solution Partner for Transformers & Motors*” to “*Delivering Power Solutions Through Transformers & Substations*.” It’s more than just a tagline – it’s a renewed promise to our customers, industry partners, and employees.

As industries across the continent face increasing demands for sustainable, efficient, and reliable power infrastructure, ArmCoil is positioning itself to meet those needs head-on. With our state-of-the-art transformer manufacturing plant, stringent quality assurance systems, and a skilled technical team, we remain committed to delivering solutions that not only meet but exceed client expectations.

This milestone also offers a moment of reflection. Looking back, we are proud of what we have built – an organisation rooted in technical excellence, ethical business practices, and a deep sense of community. We have been privileged to grow alongside our clients, adapting to their needs and finding solutions to some of their toughest electrical engineering challenges.



From Left: Nthombi, Melissa, Elize and Francinah

But just as importantly, we look forward. Our sharpened focus allows us to pursue strategic innovation, invest in the latest transformer technologies, and expand our footprint throughout Africa. As we strengthen relationships with our clients, we bring with us a proven track record, a team of exceptional people, and a product offering that is built for the future.

This is not an ending – it’s an evolution.

We remain as committed as ever to powering progress across the continent, delivering custom-engineered solutions for transformers and substations that keep the lights on, the gears turning, and the future bright.

Together with our clients, our dedicated staff, and our trusted suppliers, we enter this new chapter with optimism, confidence, and the courage to lead.

Because at the end of the day, **ArmCoil isn’t just a brand – it’s a legacy in motion.**



Michelle and Dapney



Rhiana and Charmaine

The Deepfake dilemma: how business leaders can safeguard against AI-driven deception



By **Kumar Vaibhav**, Lead Senior Solution Architect – Cybersecurity at [In2IT](#)

Social media and online news platforms are filled with dynamic video and audio content designed to captivate audiences. But can we truly trust what we see and hear? Deepfake technology's quick development has made it harder to distinguish between fact and fiction, endangering companies, executives, and financial stability.

Understanding deepfake technology

Artificial Intelligence (AI) and deep learning algorithms, especially Generative Adversarial Networks (GANs), drive deepfake technology. These AI systems create hyper-realistic audio and video forgeries that convincingly mimic individuals' voices and facial expressions.

Originally designed to help in fields like entertainment and language localisation in movies, deepfakes are now a weapon used by scammers and cybercriminals.

The accessibility of deepfake software has expanded beyond skilled programmers. Digital content may now be altered by anyone with a computer and an internet connection, making it more challenging to tell authentic content from fake. For companies and leaders that depend on digital communication to uphold credibility and trust, this increasing sophistication has significant ramifications.

The rising threat to business executives

Deepfake-driven fraud primarily targets corporate executives.

In one concerning instance, fraudsters pretended to be the CEO and used AI-generated audio to tell a financial officer to transfer millions of dollars into fictitious accounts. The employee obeyed without hesitation because the artificial voice seemed so convincing. The enormous financial hazards connected to deepfake technology are highlighted by this instance.



The use of deepfake films to propagate false information about corporate executives is another issue that is becoming increasingly concerning. Within hours, a modified video clip showing a contentious executive's remarks can undermine consumer trust, cause stock price volatility, and harm a company's brand. These hazards are increased by social media's viral nature, forcing businesses to take preventative action.

Political and economic implications

Beyond corporate threats, deepfake technology has far-reaching consequences for national security and political stability. Fabricated speeches by world leaders can incite geopolitical tensions, manipulate election outcomes, and fuel misinformation campaigns. The ability to create plausible but wholly untrue narratives poses a risky challenge for both governments and corporations in a time when market action is driven by public perception.

Defending against the deepfake threat

As deepfake technology develops, companies can reduce risks by implementing strategic countermeasures. Here's how:

1. Making authentication procedures stronger

Deepfake-driven impersonation attempts can be thwarted by implementing Multi-Factor Authentication (MFA) and biometric verification. Executive orders and financial transactions should also require secondary verification, including real-time video authentication or encrypted digital signatures.

2. Investing in AI detection tools

AI-driven detection methods are developing at the same rate as deepfake technologies. Forensic tools that evaluate digital fingerprints and discrepancies in audio and video footage should be used by businesses. Additionally, blockchain-based authentication can confirm that important business communications are authentic.

3. Awareness and education of employees

In cybersecurity, people continue to be the weakest link. Employees should receive regular training on identifying deepfake risks, confirming odd requests, and adhering to stringent authentication procedures. It is crucial to create a culture of mistrust regarding unexpected digital communications.

4. Collaborating with cybersecurity professionals

Because AI-generated threats are evolving quickly, companies should partner with cybersecurity specialists specialising in deepfake detection. Professional partners can execute security frameworks, offer real-time threat intelligence, and guarantee that businesses remain ahead of new threats.

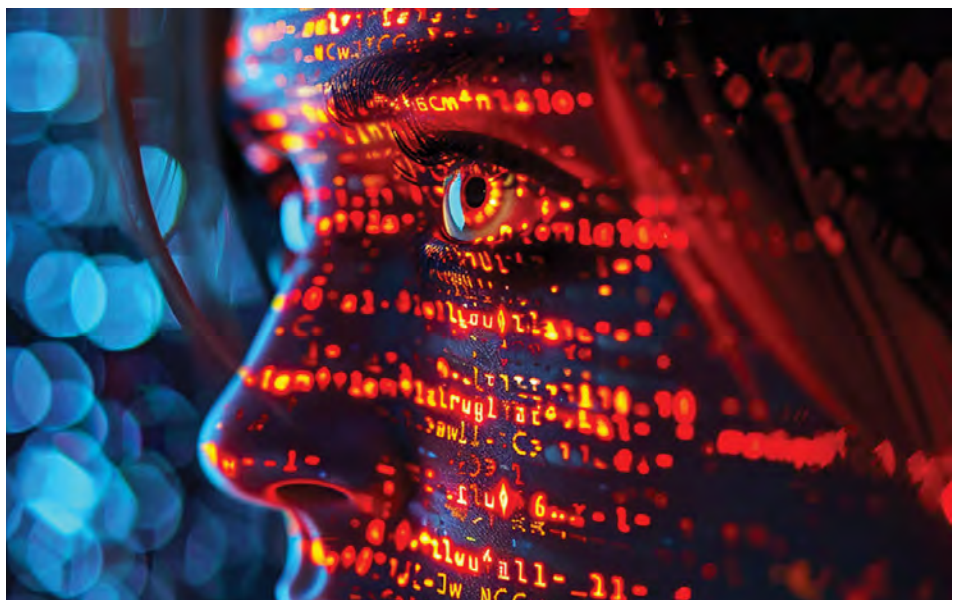
5. Putting in place stringent verification procedures

To stop illegal transactions, executives and financial teams need to implement strict internal controls. Before being carried out, any unique or valuable request should be independently confirmed through several channels, mainly if it is delivered by voice or video.

The way forward: alertness in the age of deepfake

Businesses need to continue being proactive rather than reactive as deepfake technology advances. To create regulations, invest in AI-powered security solutions, and promote digital literacy, governments, tech companies, and business executives must collaborate.

In the end, awareness, verification, and the ongoing development of defensive tactics are crucial for reducing deepfake dangers. Businesses can defend themselves against one of the most difficult cybersecurity issues of the digital era by adopting a multi-layered security approach and remaining informed.



Smart, simple, and sanitised: control at your fingertips

When precision and hygiene meet, the result is **Bürkert's Type 8681** – a universal control head designed to take the hassle out of decentralised process automation in food, beverage, pharmaceutical, and cosmetic industries.

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With its clean, chemically resistant housing and smart feedback features, it's built to handle the rigours of modern plant environments without compromising on safety or hygiene.

Features include:

- Universal attachment for hygienic process valves
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- Coloured status display
- Manual override operative with closed housing
- AS-Interface, IO-Link, bus/CANopen
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Decentralised automation completed

The universally adaptable **Control Head 8681 completes the ELEMENT valve** product range with an integrated automation function for the control of auxiliary circuits like steam, pressurised air or cleaning agents.

With this, all the advantages of a decentral automation as an alternative to cabinet solutions can be used for all armatures. Process monitoring, minimal installation effort for electrical wiring and pneumatic tubing when using the AS-interface. Flexibility during planning and clear plant construction for plant hygienic, energy saving by minimal compressed air consumption and shortest switching times.

Easy parameterisation via PC interface

Parametrisation and configuration of the Control Head are done via a USB interface. A device remote control, teach-in and activation of the autotune function is possible. Furthermore, diagnostic functions are read and edited, or device data as software version and bus-specific parameters, are shown.

Industries

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- Cosmetics
- Pharmaceuticals, Biotechnology

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Contact:

André Nel - 083 282 8629

Mail: andre.nel@burkert.com

<https://www.burkert.com/en/type/8681>

Bridging the connectivity gap: what really works in low-infrastructure areas?

By Justin Render

Talk about digital transformation all you like — but if a learner in rural Limpopo has no power, no signal, and no way to charge a tablet, the conversation is theoretical. Across South Africa, and much of the continent, the true challenge of digital inclusion isn't cost alone — it's access. Not everyone lives near a tower. Not everyone has reliable electricity. Not every community has the infrastructure to support real-time, always-on connectivity.

Making it work despite everything

In places like the Eastern Cape and northern KZN, engineers have quietly pioneered practical, community-based solutions: solar-powered Wi-Fi routers, mesh networks using old routers and open-source firmware, small-batch data hubs, and offline-first applications. They aren't flashy — but they work. And they work because they're built with the constraints in mind.

This is the real lesson for the sector: sustainable tech in low-resource environments need contextual design, not imported assumptions.

We need to think “offline-first.” Build for intermittent access. Design apps and platforms that sync when able but function without constant signal. Provide APIs for

low-tech ecosystems. Where possible, create systems that can be maintained locally with minimal proprietary knowledge.

Most importantly, partner with communities. Don't assume you know what's needed. Ask.

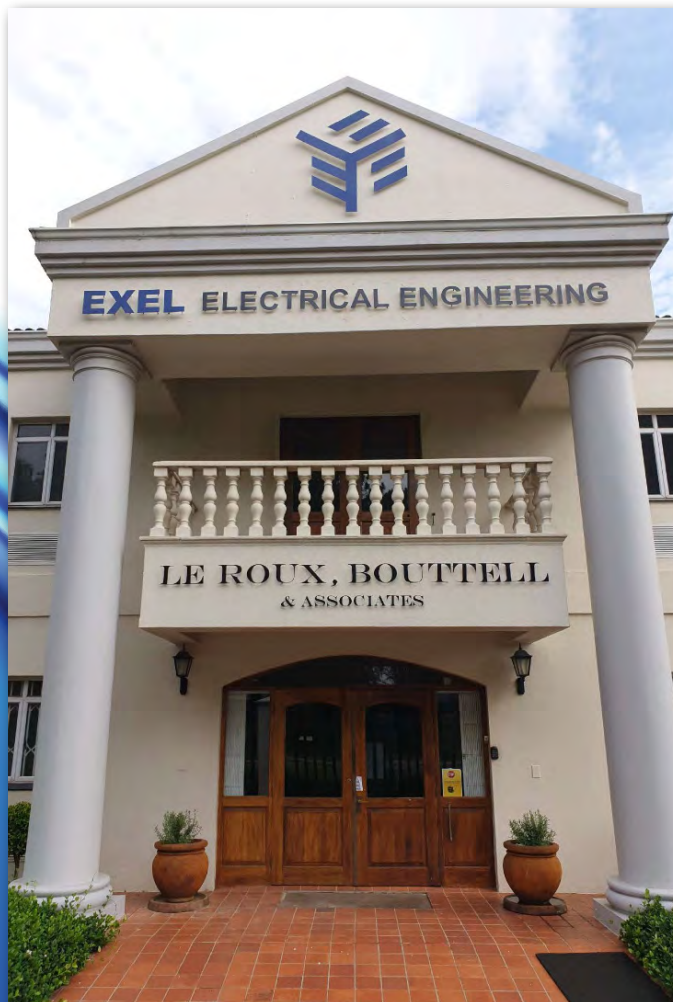
Connectivity is no longer a luxury. It's essential infrastructure — the gateway to education, healthcare, security, and economic opportunity. But bridging the divide means letting go of polished, urban assumptions. It means designing for grit, not gloss.

And in doing so, we might just find that the most innovative engineering isn't happening in labs — it's happening on dusty roads, in containers, on rooftops, and under trees.



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World Telephone Day: six milestones that revolutionised telephony



By **Warren Hawkins**, MD of Euphoria Telecom

"Come here Mr Watson, I want to see you," might not seem like the most awe-inspiring sentence, but it sparked a communications revolution when Alexander Graham Bell made the first telephone call. Since then, telephony has evolved spectacularly, allowing people to form connections between countries, continents and even in space.

To mark World Telephone Day, Warren Hawkins, MD of Euphoria Telecom, delves into some of the major milestones that have revolutionised telephony in the intervening years.

1. The first telephone call:

On **7 March 1876**, Alexander Graham Bell registered the telephone patent. Three days later, he made the first call to his assistant. The first telephone in South Africa was installed two years later, having been imported by Adolf Boettger, the owner of a Cape Town watch shop.

"The technology today might be light years away from those early phones, but the intention remains the same - connecting people in a way that is quick and simple, without losing that personal touch," Hawkins says.

2. The switchboard and the switchboard operator:

Early telephone operators were teenage boys, but Graham Bell realised that they weren't equipped to handle the frustrating technology

and the resulting irate customers. He consequently hired Emma Nutt as the first woman telephone operator – and her sister Stella a few hours later.

When the first private switchboard, a large, pyramid shaped device, was installed in a Virginia law firm in 1882, that was also staffed by women.

"Women have been at the coalface of telephony since its inception. Those earliest switchboard operators, hired for their calm demeanour, set the standard for professional business communications and customer service which endures to this day," adds Hawkins.

3. Long-distance telephone calls:

Graham Bell tinkered with larger distances for telephone calls until 1915, when he and Watson conducted the first transcontinental call between New York and San Francisco. The call required five intermediary telephone operators, taking 23 minutes to connect.

Nearly 50 years later, the first transcontinental satellite telephone call took place. Then, in a giant feat for mankind, American President Richard Nixon made the first call to the moon in 1969 when he spoke to astronauts Neil Armstrong and Buzz Aldrin.

4. Mobile phones:

The arrival of mobile operators Vodacom and MTN in 1994 started a revolution in telephony in South Africa. Since then, we've seen the invention of text messages, feature phones and smart phones – putting the internet into people's pockets. While costs were originally extremely prohibitive, mobile phone penetration has exploded in South Africa.

Comments Hawkins: *"The power of the smartphone is that millions of people now have access to voice and text communications tools, all the world's information and critical services like banking. This is the real power of connection."*

5. The internet and the phone call:

"The internet has changed how we communicate, bringing with it email, social media, instant messaging and cloud telephony," Hawkins says.

South Africa's first internet connection, created by researchers at Rhodes University in 1988, paved the way for these changes which included the launch of the country's first social media and instant messaging service Mxit in 2005.

Business communication took a major leap forward that same year, when VoIP was legalised in South Africa.

"The flexibility, scalability, and cost savings that VoIP introduced have been a game changer in business telecommunications," says Hawkins.

6. The cloud:

Another game-changer for business communication - the shift from



on-premises to cloud technology is modernising the way businesses operate.

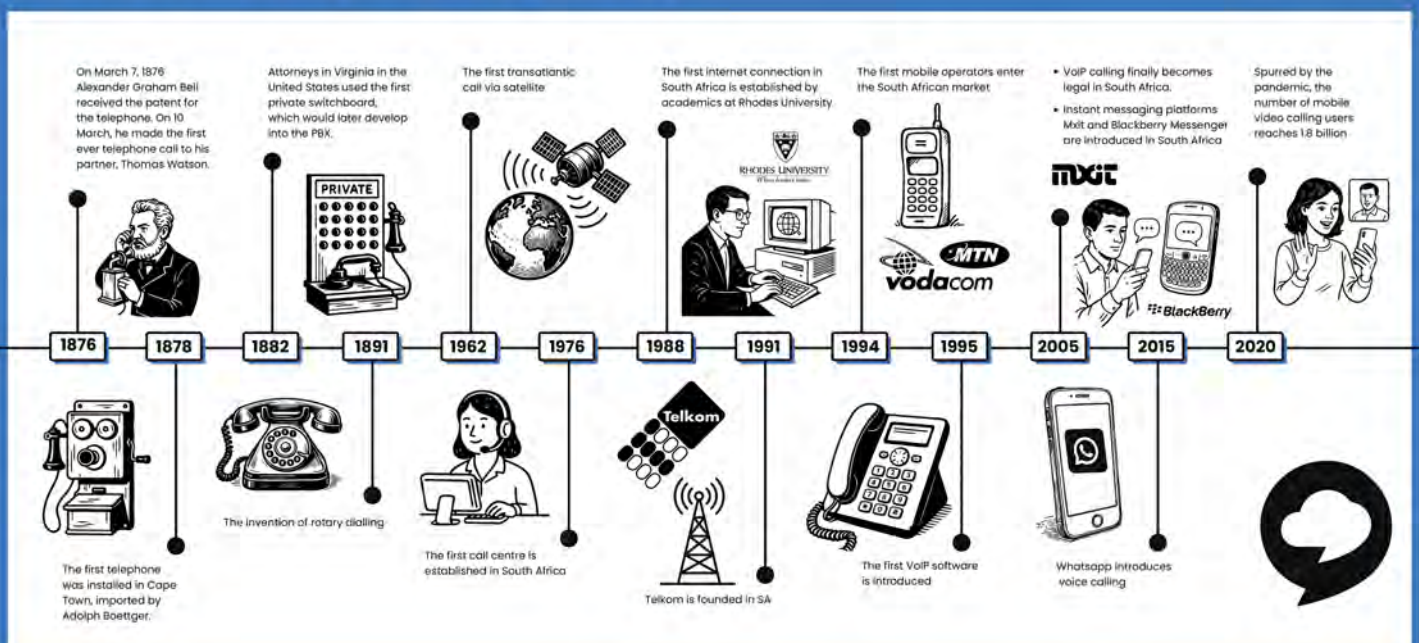
"Cloud has allowed businesses to support remote work and distributed teams, literally changing how people work. The integration of cloud telephony with other tools like CRMs, productivity software and the invaluable data it provides,

are also driving personalisation and customer-centric business forward," notes Hawkins.

From the very first call to today's cloud-powered communication ecosystems, telephony has always been about one thing - bringing people closer together. The technology will keep evolving, but its purpose will not: connection, anytime and anywhere.

A brief history of telephony

Euphoria
Business Phone Solutions



Africa launches coalition to tackle the hidden crisis of medical equipment waste



By Giulio Airaga, Managing Director of Desco Electronic Recyclers

A new pan-African coalition has officially launched to address the mounting challenge of end-of-life diagnostic and medical equipment piling up across laboratories and healthcare facilities on the continent.

The African Diagnostics and Medical Instrument Recycling (ADMIRE) Coalition brings together global leaders, healthcare stakeholders, and sustainability experts with a shared mission: to build a circular future for Africa's diagnostic healthcare sector.

Across the continent, thousands of medical laboratories are grappling with a largely overlooked problem – the growing number of “equipment graveyards”. These are stockpiles of obsolete, broken, or expired diagnostic and medical instruments abandoned in back rooms, basements, and warehouses. In many cases, this equipment ends up in landfills – posing serious environmental and health risks.

“Procurement and waste management systems are not integrated,” explains Giulio Airaga, Managing Director of **Desco Electronic Recyclers**, a participating e-waste service provider. “Public hospitals often

receive new devices without any strategy for removing old ones. That means outdated or contaminated equipment is left to gather dust – or worse, it's unsafely disposed of.”

The **World Health Organization (WHO)** has flagged the improper disposal of medical waste as a high-risk issue, warning of potential exposure to blood-borne pathogens, harmful emissions, and illegal resale of instruments.

The ADMIRE Coalition was conceived during ongoing discussions between **Roche Diagnostics** and **The Global Fund**, later joined by **Becton, Dickinson and Company (BD)** and supported by the **African Circular Economy Network (ACEN)**. Together, these partners aim to close a critical gap in Africa's medical infrastructure by creating scalable, sustainable pathways for recycling complex diagnostic and medical instruments.



SUSTAINABILITY

ADMIRE's initial focus is on diagnostic instruments, which are in increasingly high demand due to global health goals to eliminate HIV, tuberculosis, and malaria by 2030. As laboratories expand to meet these needs, the volume of equipment reaching its end-of-life will only grow, making it more urgent than ever to ensure proper disposal, recovery, and reuse of valuable components.

ADMIRE's goal is to empower African countries with the tools, skills, and infrastructure needed to manage medical e-waste responsibly. This isn't just about waste—it's about jobs, economic growth, public health, and innovation.

By 2030, ADMIRE aims for all major diagnostic and medical instrument manufacturers to utilise specialised

e-waste recycling facilities and regional hubs in at least 10 African countries. This ambitious roadmap seeks to achieve a 50% improvement in recycling rates compared to 2024, targeting the 80% of laboratory equipment currently in need of responsible disposal.

ADMIRE's multifaceted strategy includes developing certified decontamination and recycling processes to ensure the safe and effective handling of medical and diagnostic equipment. It focuses on building regional capacity and infrastructure to support the safe transport and disposal of these instruments across borders.

The coalition is also committed to creating skilled green jobs and driving economic opportunities through workforce development. In partnership

with regulators, ADMIRE works to establish robust policy frameworks that support responsible recycling practices. Additionally, the coalition promotes innovation in product lifecycle and sustainable design, encouraging manufacturers to adopt circular practices from the outset.

ADMIRE invites governments, manufacturers, healthcare providers, and civil society to join its mission of transforming Africa's approach to diagnostic and medical equipment waste.

"This is about creating long-term change," says Airaga. "Africa deserves resilient healthcare systems that don't just treat patients but also protect people and the planet. Together, we can build a cleaner, safer, and more circular future for Africa."

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The hidden cost of always-on: tech burnout in the age of instant response

By Justin Render

We live in a culture where availability is mistaken for productivity. Slack, Teams, WhatsApp, SMS — today's tech professionals are expected to stay constantly connected across multiple platforms, across time zones, and across roles. But this "always-on" environment is as dangerous as it is exhausting.

Burnout in the IT sector isn't always loud or dramatic. It often manifests subtly — in slowed response times, lower problem-solving capacity, reduced creativity, and disengagement. For developers, system architects,

engineers, and IT managers, the inability to enter periods of deep focus can undermine well-being and critical project outcomes.

The industry loves the language of optimisation — but we rarely apply it to human energy. When engineers are stretched across chat windows and under pressure to respond within minutes, they're not innovating. They're surviving.

We're also seeing an exodus of talent that's harder to quantify. High-performing professionals aren't leaving tech — they're leaving unsustainable environments. And with AI accelerating timelines and expectations, the pressure to deliver has only increased.

What can teams do to minimise always-on fatigue?

Start with design. Build schedules that protect deep work. Introduce real asynchronous processes. Create buffer zones around deadlines. Use tools that reduce, not multiply, notifications. Most of all, model this from the top — if managers are visibly online at 10pm, the message is clear: boundaries aren't respected.

Sustainable engineering isn't just about systems. It's about the people behind them. And if we want them thinking clearly, solving creatively, and staying in the field — we need to start building healthier ecosystems, not just faster ones.

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- Process connection via 4-20mA/HART
- No recalibration required
- Impressively simple



Seven decades of technological evolution: a new generational framework (1960–2030)



By **Dr Chris Blair**, GROUP DIRECTOR of 21st Century, cblair@21century.co.za
B.Sc. Chem. Eng., MBA – Leadership & Sustainability, PhD – Leadership & Management

Generational theory offers a practical framework for understanding how collective experiences shape human behaviour across time. Scholars have traditionally delineated Baby Boomers, Generation X, and Millennials based on birth year. Yet, as technology accelerates, these broad categories are perhaps oversimplified, much like a one-size-fits-all suit that fits no one perfectly.

In this article, I am indulging the idea of a model that is based on seven generations, each linked to a decade from 1960 to 2030, and defined by the technological and digital transformations that marked their formative or professional years. This exploration blends academic research with personal reflection (my own multi-email enthusiasm at the age of 62, versus a colleague's single-inbox caution at the age of 72), offering a fresh perspective on how tech can rewire us.

I have used as a framework the major works in generational theory and digital transformation. Mannheim's (1952) concept of generational identity, forged by shared historical contexts, provides a theoretical backbone. Tapscott's (1998) analysis of the Net Generation and Autry & Berge's

(2011) digital native-immigrant dichotomy give us a view through a technological lens. Selwyn's (2012) work on education's digital shift and Vial's work (2021) on organisational transformation both add richness to the framework.

Each decade from 1960 to 2030 anchors a generation, inferring its identity from the dominant tech of the period and the impact it has on society. My personal example – my decentralised email strategy in the 1990s, versus my colleague's centralised mistrust - illustrates how these shifts manifest across people of different ages.

1960s: the mainframe cohort (born 1945–1960)

The 1960s was an era of bold innovation, from moon landings to mainframe computers like the IBM 360. The Mainframe Cohort, born between 1945 and 1960, encountered technology as a monolithic, centralised force. These machines, operated via punch cards and esoteric commands, were the preserve of specialists only. Mannheim (1952) argues that early experiences imprint lasting traits, and for this group, tech was a distant authority to be managed, rather than embraced. My 72-year-old colleague, who in the 1990s insisted on a single email address for his staff, epitomises this mindset. Control was paramount, and trust in tech was tenuous. Their digital transformation was minimal, reflecting a world where computing remained an organisational endeavour, rather than a personal one.

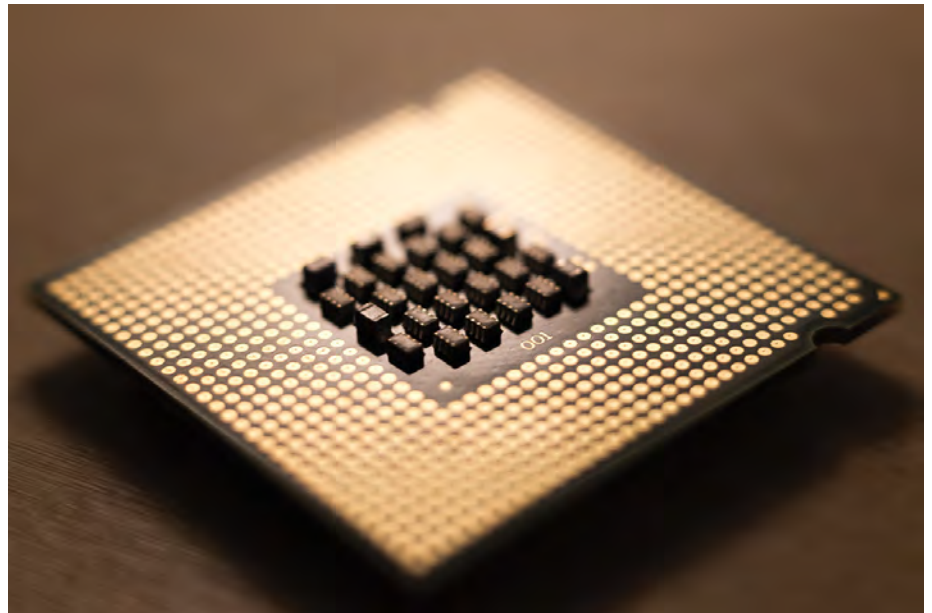


1970s: the microchip pioneers (born 1955–1970)

The 1970s introduced the microchip, shrinking tech from room-sized monsters to desk-friendly devices like the Apple II. The Microchip Pioneers, born between 1955 and 1970, were the first to tinker with personal computing, a shift Tapscott (1998) links to an emergent DIY culture. This cohort adapts and innovates - comfortable with tech as a tool rather than as a tyrant. At 62, I find myself in this cohort, my 1990s adoption of multiple email addresses reflecting a willingness to decentralise – a stark contrast to my colleague’s Mainframe-era caution. Research by Bennett et al. (2008) cautions against over-generalising the adoption of tech, yet the Pioneers’ hands-on ethos marks a pivotal transition in digital engagement.

1980s: the floppy disk practitioners (born 1965–1980)

By the 1980s, technology became more accessible, with the floppy disk and the IBM PC. The Floppy Disk Practitioners, born between 1965 and 1980, navigated a world where tech moved from labs to living rooms. Autry & Berge (2011) call this cohort the Digital Immigrants, adept at adopting - rather than inheriting - tech fluency. Their era saw the rise of practical computing - word processors,



spreadsheets, and the dot-matrix hum - tools that bridged analogue and digital realms. My email proliferation in the 1990s gives a nod to their pragmatism, though with a slightly forward tilt! Selwyn (2012) underscores how this decade democratised tech, yet for Practitioners, it remained a means to an end, not a lifestyle.

1990s: the dial-up innovators (born 1975–1990)

The 1990s unleashed the internet, epitomised by the modem’s dial-up tune, which is permanently engraved in the memories of all who were there at the time. The Dial-Up Innovators, born 1975 to 1990, surfed the Web’s early waves via Netscape and AOL, earning Tapscott’s (1998) title of the Net Generation. This cohort blended their analogue upbringing with digital exploration, mastering email, chatrooms, and rudimentary sites. My multi-email approach aligns with this collaborative spirit, while my colleague’s resistance highlights a generational fault line. Vial (2021) notes how connectivity redefined work and play, and the Innovators thrived in this space – they were essentially digital pioneers who were tethered to a pre-digital past.

2000s: the smartphone forerunners (born 1985–2000)

The 2000s thrust technology into people’s pockets with the advent of the smartphone. Apple’s iPhone (2007) was a defining artefact. The Smartphone Forerunners, born between 1985 and 2000, embody Autry & Berge’s (2011) Digital Natives, intuitively navigating a world of apps, social media, and instant messaging. My 1990s email habits predate this multi-platform fluency. This cohort integrated tech into identity itself. Facebook and Twitter shifted digital transformation from utility to intimacy. For the forerunners, connectivity was not a choice, but rather a constant – a generational hallmark that my colleague would find bewildering.

2010s: the cloud integrators (born 1995–2010)

The 2010s elevated tech to the ethereal with cloud computing, epitomised by Google Drive and streaming giants. The Cloud Integrators, born between 1995 and 2010, grew up in a seamless digital ecosystem - smartphones, wearables, and AI assistants were standard. Vial’s (2021) analysis of digital transformation as boundary-blurring resonates

here; physical constraints dissolved as data floated freely. My email juggling seems archaic beside their cloud-synced lives, where multi-tasking spans devices and platforms. Selwyn (2012) highlights education's parallel shift, yet for Integrators, tech is less learned than lived - a fluid, ever-present reality.

2020s: the AI navigators (born 2005–2020, maturing 2020–2030)

The 2020s, our current frontier, is defined by artificial intelligence and interconnected systems - think Chatgpt and the metaverse. The AI Navigators, born between 2005 and 2020, are emerging into a world where tech anticipates our needs, from autonomous vehicles to virtual realms. Vial (2021) describes this decade's transformation

as ecosystem-driven, a notion that these Navigators embody as they partner with AI. My email habits and my colleague's reticence are quaint relics to them; their digital landscape is adaptive, predictive, and immersive. Mannheim's (1952) lens suggests their identity will fuse with this tech, crafting a generation that is uniquely attuned to artificial agency.

Conclusion: a reflective synthesis

This seven-decade model is a way of looking at generational theory through the lens of technological evolution, from mainframes to AI. Each cohort - from the Mainframe Cohort to the AI Navigators - reflects a distinct dance with digital transformation, shaped by the tools and contexts of its time. My own journey at 62, embracing email multiplicity, and my colleague's at 72, clinging to singularity, is a good example of how age can define the way we embrace technology. As Mannheim (1952) posits, shared epochs forge us, yet within each, individual rhythms vary. Using this framework invites the question – how will the Navigators continue to redefine work, learning, and connection? For now, this framework offers us a brief hint at how this may unfold: academic yet alive, reflective yet forward-looking.

This article is based on research conducted by Dr Chris Blair of 21st Century, one of the largest remuneration and HR consultancies in Africa. Contact info@21century.co.za for any further information.



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The impact of radio frequency noise on communication is like climate change on weather

By **Hans van de Groenendaal***, Science writer

Climate change has hit the world hard, South Africa included. We must not let this happen to communication by understanding the looming problem now and by taking early preventive measures while we can.

Picture this: It's 1925 when John Streeter, a Cape Town radio amateur, makes South Africa's first intercontinental radio contact with Brazil. Later that year, he contacts the first American on the 36-metre band.

By the end of 1925, John had made contact with every continent. His transmitter of choice was a low-power triode valve transmitter, the receiver a regenerative radio and the antenna a simple dipole of sorts.

One could argue that there were good propagation conditions, but looking at the sunspots count, the world had just come out of a sunspot minimum in 1923, and according to many reports, the sunspot count was erratic, frequently with no sunspots observed.

Would we be able to repeat this with the same equipment today? It's unlikely. Although John's station was in the middle of suburban Cape Town, he did not suffer from a high radio frequency (RF) noise level, which is today becoming a major concern and would ultimately kill communication, first on HF and later on VHF and higher frequencies.

In many ways, we are all responsible for this, because we allow it to happen, although we may be unknowingly! It is no different from climate change. While it may sound overly dramatic, it is real.

Just like climate change, which so many of us wrote off as hype

just a few years ago, we are now experiencing it in real time with excessive rain, high temperatures and high winds. In radio terms, the RF noise level makes HF communication more difficult, and the signs are already there that it is moving up the spectrum.

There are many culprits in the scenario. We keep developing and manufacturing devices which unintentionally generate radio frequencies as by-products, often over a wide frequency spectrum.

Amongst these devices are LED lights from the ones we have at home to street lights, traffic lights, solar installations and electric car chargers to name a few. The list is endless and increasing at an exponential rate.

Not all these devices will indeed cause interference, as their design and manufacturing include filters and screening to mitigate interference. Currently, international bodies such as CISPR are working on setting limits that these devices and equipment must meet. However, agreeing on limits is a long-drawn-out process as organisations like the International Amateur Radio Union and other Radio organisations, such as the Society of Broadcasters, call for stricter limits, the industry, on the other hand, calls for the widest possible limits. Another issue which is not currently seriously considered is the cumulative effect of noise-generating devices. While some discussions have started about this subject, they are only at the stage of "Is it a problem and should it be investigated?"

We cannot sit back, because even if the desired noise limits are agreed, there are many rogue manufacturers and dealers which happily sell the "noise generating" devices leaving out filter circuits to cut costs and maximise profits.

On 15 June 2016, the Federal Communications Commission (FCC) Office of Engineering and Technology's Technical Advisory Council opened a noise floor technical inquiry to seek answers to the following basic questions:

- Is there a noise problem?
- Where does the problem exist? Spectrally? Spatially? Temporally?
- Is there quantitative evidence of the overall increase in the total integrated noise floor across various segments of the radio frequency spectrum?
- How should a noise study be performed?

While all respondents agreed that it was becoming a problem, most feedback was anecdotal and did not include measured quantitative data. This is largely because the responders did not have the instrumentation resources or the budget to provide

the quantitative evidence being sought. Despite the scarcity of quantitative data submissions, one clear outcome of this TAC technical inquiry was an unmistakable consensus among the responders: A noise floor study is not only needed but overdue.

An IEEE EMC paper (2018) authored by Koos Fockens, Peter Zwamborn and Frank Leferink showed that tests carried out at 54 different locations in the Netherlands over a decade showed a statistically significant increase in the man-made radio noise (MMN floor) in comparison with ITU-R reference levels. The paper, entitled “Measurement Methodology and Results of Measurements of the Man-made noise Floor on HF in the Netherlands”, refers to measurements made in various locations, from lakes and woods at far distances from built-up areas to residential areas of various densities of habitation and in city centres. As expected, the increase of the Man-Made Noise (MMN) floor was the highest in built-up regions.

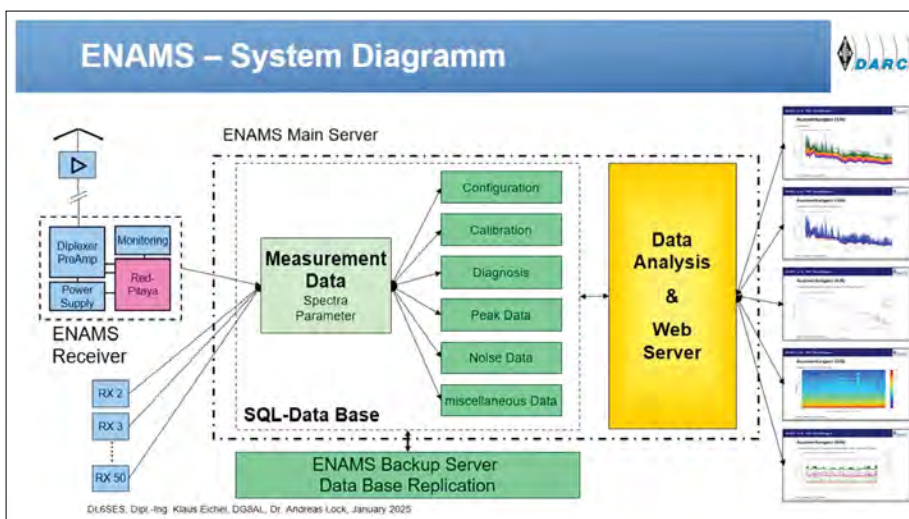
The authors concluded that the data about man-made noise in ITU-R P.372 – 13 needs updating and suggested new values for the relevant parameters. Their measurement and analysis have confirmed the accumulation effect caused by the increasing density of interfering sources in proximity. From their observation, it can be concluded that the paradigm of MAN-MADE Noise has shifted over time. In conventional EMC standard, it is assumed that only one single sub-system is present in the proximity of the receiver, but that is not the case anymore!

Radio amateurs raised the red flag

Perhaps it is not unexpected that it was the amateur radio fraternity in Europe that raised the red flag as they started experiencing interference from cheap energy-saving lights that were flooding the market. At the 2017 International Amateur Radio Union Region 1 conference in Germany, considerable time was spent discussing EMC issues and the need for the monitoring of the RF noise floor to collect data to convince government regulatory agencies to take early action. Two proposals emerged. The German Amateur Radio Society (DARC) has developed a system that is close to the ITU-R measurement methods, if not more advanced. It is called the Electrical Noise Area Measurement System (ENAMS).

The South African Radio League (SARL) has been working on a different approach. It is encouraging radio amateurs to set up their own RF noise monitoring systems using a dongle and a Raspberry Pi. The system is in a development phase.

ENAMS is an interference field strength measurement system for recording the level of interference in the frequency range 66 kHz– 31 MHz. The DARC has employed over 50 systems in diverse locations across Germany. There are a few ENAMS systems set up in other European countries, the USA and New Zealand.



The ENAMS project was initiated because in 2011, the German Federal Network Agency (Bundesnetzagentur) stopped publishing general interference measurements, and therefore, the increase in the general interference level due to the proliferation of interfering electronic devices in residential and commercial areas was no longer documented. With ENAMS, the DARC is now positioned to measure the relevant interference levels itself and contribute meaningfully to the discussion on limits and standards. The ENAMS group has developed a newer version, including lessons learned from experience gained over the past five years and will start making it commercially available later this year.

What have we learned from climate change?

Scientists have warned the world about the impact of CO₂ on the climate and how weather patterns will change. Governments have been reticent to react and today we all suffer the consequences. We seem to have woken up, but are we doing too little too late to improve on the situation?

We should not let this happen to the radio frequency spectrum. We need to put programmes in place to collect and document evidence to convince spectrum regulators and industry bodies that unless action is taken to regulate against unwanted and unintentional RF transmissions, which are just noise, radio communication is going the same way as climate change.

We must protect the Radio Frequency spectrum; it is the only one we have. We need ENAMS installed around South Africa to monitor and measure the RF noise levels in South Africa so that we can take proactive action and empower agencies like ICASA to enforce EMC standards and deal with offenders.

ENAMS video presentation:

<https://youtu.be/agyZenR9eNk>

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Kal's Cortex: The power of the prompt

If your AI results feel off, the problem may not be the technology – it might be how you're asking. Kal explores the craft of prompt writing and shows how the right language can unlock entirely different outputs. As AI becomes more embedded in daily tasks, understanding how to guide it clearly is essential. This column unpacks the fine art of asking better questions. [Read more](#)

Compliance or catastrophe? Inside chemical logistics

In the chemical logistics sector, true compliance isn't about paperwork – it's about culture. This piece examines the real-world impact of poor regulation, from environmental fallout to human safety, and explores how industry leaders are embedding accountability into operations. [Read more](#)

Make it here: manufacturing as a national asset

Manufacturing should be treated as a strategic priority, not just a line item. This piece reframes the sector as key to economic growth, resilience, and sovereignty. Featuring examples of local innovation, it offers policy ideas to help rebuild domestic industry. [Read more](#)

Mobile money, mega risk: Africa's £660 billion cybercrime target

With mobile money use exploding across Africa, cybercriminals have found fertile ground. Over £660 billion moved through mobile platforms in 2023 alone. This article outlines the security gaps, the regulatory struggle to keep pace, and the broader economic implications if safeguards aren't prioritised. [Read more](#)

From rural roots to the tech industry route

A digital coding foundation is training young people in rural South Africa and connecting them directly with jobs in tech. The programme's hands-on curriculum and job-placement guarantees are already changing lives. This piece spotlights the model and its potential for expansion. [Read more](#)

Synthetic intuition – Can AI have a gut feeling?

Kal returns to the cognitive edge to ask whether machines could one day make instinctive decisions. Looking at how human intuition works, and whether anything similar is possible in synthetic systems, the article offers a thoughtful exploration of AI, autonomy, and what it means to 'know' without logic. [Read more](#)

Plant-based pathways: A new era in antigen production

PlantForm and Smart Biotech are evaluating how plants can be used to produce antigens for avian flu – marking a shift in vaccine science. Plant-based manufacturing could speed up development, lower costs, and expand global access. This article explores how the approach works and what it might mean for future pandemics. [Read more](#)

ECSA seeks assessors to help shape the profession

The Engineering Council of South Africa (ECSA) is calling on experienced professionals to join its team of assessors. The goal is to strengthen professional standards by involving qualified engineers and technologists in the evaluation process. If you're registered with ECSA and keen to contribute, applications are open now. [Read more](#)

Formula 1 gains ground in South Africa

New Nielsen data shows a marked increase in Formula 1 viewership across South Africa. Improved access to broadcasts and strong youth engagement are driving the shift. The data points to motorsport's growing appeal across new segments of the local market. [Read more](#)



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