

SUSTAINABLE DEVELOPMENT

December 2024

DIGITAL IDENTITIES

New frontiers in secure ID production and verification

Top
Suppliers
50

ePassport technology

SMART CITIES

A regional prespective on e-government and AI

CLIMATE CHANGE

COP 29: what stays and what goes in government agendas worldwide

ONBOARD
TECHNOLOGY

FUTURE MANUFACTURING

Electronica 2024: digital technologies are the key to achieving a carbon-neutral future

ID WORLD
THE PLAYERS OF THE AUTO ID INDUSTRY

DIGITAL ID PROOFING

Do consumers want frictionless onboarding experiences or strong security for personal data?

iD People
Movers & Shakers of the Auto ID Business

EXCLUSIVE INTERVIEW

Nuecir Exchange Program
Meet Franco Caraffi,
Marine Systems Director
Carnival Cruises

As secure identities now form the backbone of most individuals' trust frameworks as citizens and at work – across nearly every industry sector – the need for certainty that authentication and verification processes of their private identities are safe, has never been greater.

While the production of physical documents remains at the core of the ID industry, there is a rising tide of digitisation of all credentials – whether e-passports, IDs or those for logical and physical access. This has been exacerbated by the need for tougher border controls, in the light of migration and refugee crises, as well as moves to online and remote working which requires secure access and identification.



Recently, in a move to speed up border controls and ensure smoother and more secure travel, the European Commission has proposed to digitalise passports and identity cards for anyone entering or leaving the Schengen area. While this does not detract from the need for physical documents, there is a call for more efficient processes, as

technology and innovative systems advance.

Currently, both EU citizens and non-EU citizens are subject to systematic checks in person when crossing the EU's external borders. The EC says digital passports are a major step forward in strengthening security in the Schengen area and making travel easier. They will allow border guards to quickly approve genuine travellers and focus better on stopping suspects of crime and terrorism. The proposals include a common framework for the use of digital travel credentials and a new 'EU Digital Travel' app.

In a wider context, governments are enabling the use of trusted digital identity services giving people another way to securely prove things about themselves, without having to present physical documents. However, measures are required to establish a statutory footing for digital verification services without creating a mandatory

digital ID system or introducing ID cards. A scan is not good enough. We still need to use our passport at an automated border gate, but enabling citizens to prove who they are without presenting physical documents is becoming more and more commonplace. When using a digital identity, the amount of information shared can be limited to only what is necessary for the transaction. This is preferable perhaps to private citizens, but it is nevertheless, important that digital identities can be trusted to be reliable and accurate, like physical documents.

Trust frameworks come into play here as a set of government-backed rules, which draws on existing guidance, standards and best practice for trustworthy and secure digital identity services. Organisations that offer digital identity services can choose to be independently certified against the trust framework's requirements. Where a service is certified, users and businesses alike can trust it to be private, secure and reliable. They can be confident that it meets high standards in areas including privacy, data protection, fraud management, cyber security and inclusivity.

When researching what some industry pundits are saying about digital replacing physical ID, it seems the clock is very much ticking. But for others in UN focus groups who ask if the private sector thinks UN member states will still be issuing plastic and paper credentials in ten years' time, the consensus was still a unanimous 'yes.' However, they urge going for far more cost-effective physical documents than what is required because ultimately they will become a backup certificate to the digital certificates as well as the central record.

Either way, the ID industry can look forward to a solid road ahead with both digital and physical side by side for the foreseeable future.

Tim Cockerell

Inline Window Application

IPS

Inline Production System for ID Cards ·
Data Pages · Driving Licenses ·
Resident Permit Cards

- ▶ Fully automatic punching and inserting
- ▶ For cards and data pages
- ▶ Zero gap technology
- ▶ Full lamination for utmost durability



INNOVATIVE MACHINERY SOLUTIONS SINCE 1956

We would be pleased to welcome you at:

- **ICAO Trip Symposium** - Montreal/Canada, November 13-15, 2024, Booth 50
- **Trustech** - Paris/France, December 03-05, 2024, Booth D055
- **APSCA** - Bangkok/Thailand, December 11-13, 2024, Booth B9

MELZER®

www.melzergmbh.com

A report on the G20 in Rio de Janeiro, Brazil, where the world's twenty largest economies discussed the world's most pressing challenges and how many of these relate to the autoID and sustainable development communities, as the world comes to grips



climate change as well as social and political upheavals. Meanwhile we also looked at COP 29, which saw concerned nations meet in Azerbaijan to forward climate commitments.

An analysis of the International Energy Agency (IEA) declaration stating a new global energy economy is emerging – based on clean and modern technologies. We explore how this has developed internationally in both developed and emerging economies, looking at three strategic areas of public policy – energy, industry and trade – as they become increasingly interwoven for cost-effective clean energy transitions.



A look at the significance of digital government services when addressing citizens' needs globally. Discussion surrounds how these services are vital to support individuals through key life events, from registering a birth to healthcare and education to public safety and job support, social



assistance and pensions, and more. This report showcases citizens' experiences with digital government services within the GCC region, based on data (surveys and the use of artificial intelligence (AI), and especially generative AI (GenAI).

8 Viewpoint

- > **The digital face of the 21st Century: technology, identity and energy**
By Victor March

10 Events

- > **Eco-Smart Cities 2024: promoting circularity 'on land and sea' against all odds**
By Victor March
- > **Electronica 2024: demonstrating the electronics manufacturing industry's innovative strength**

14 Energy

- > **Charting the rise of the new global energy economy**
By the International Energy Agency (IEA)

16 Smart Cities

- > **Launching smart cities at sea with IoT and AI**
By Victor March
- > **Identifying robust AI practices and systems for cities**
By Global Cities Hub
- > **Harnessing the evolving nature of smart cities**
By Verizon

24 eGovernment

- > **Championing next-generation citizen services in the Gulf States**
By R. Mourtada et al, Boston Consulting
- > **Accelerating digital transformation for sustainable development**
By the Department of Economic and Social Affairs - United Nations
- > **Spotlighting digital identity proofing**
By Entrust

ID WORLD

THE PLAYERS OF THE AUTO ID INDUSTRY

For the 20th year, our "Top 50 Suppliers of ePassport Technology" features the most active players in the ePassport and eID evolution, who are driving advancements in biometrically enabled, machine-readable identity and travel documents.

Page 31



HID acquires IXLA to expand secure credential issuance

Leader in trusted identity solutions, HID, has announced it has acquired IXLA, an Italian manufacturer of advanced laser and color personalization systems for cards and passports. According to the company, the addition of IXLA will expand HID's card and passport personalization portfolio, particularly in European markets and emerging economies. IXLA specializes in the design, development, and implementation of advanced laser and color personalization systems in three core categories: card printers for laser desktop and mid-range solutions for the secure personalization of security documents such as identification cards, driver's licenses, health

cards, and other government-issued credentials; passport printers for low-mid-volume printers with laser and inkjet-based color personalization that offer precise printing solutions for personalizing passports; and application software for machine management software so all personalization processes meet stringent security requirements to safeguard sensitive data. The IXLA portfolio offers laser and inkjet personalization systems for government and payments. The offering specializes in card printing and flexible issuance for driver's licenses, ID cards, police and military IDs, high security government cards and passports, and more.

Mastercard payments to commit to 'password-less' payments

Payments are set to remove manual processes at checkout by 2030, phasing out passwords and number entry from Mastercard. The issuer has committed to combining biometrics and tokenization, introduced 10 years ago, to secure the future of password-less payments and reduce abandoned carts and fraud, stating fraud rates are seven times higher online than in store. Mastercard says partnership is crucial to bringing these technologies together by 2030 and helped achieve tokenization across 30% of Mastercard transactions worldwide through

Mastercard's Digital Enablement Service. The Mastercard Payment Passkey Service was first rolled out to millions of consumers in India, Singapore and the United Arab Emirates.



Sita and Idemia collaborate to redefine travel

Leader in air transport technology, Sita, and Idemia Public Security, a leader in digital technologies, biometrics, and security have announced a joint operation to advance interoperability, trust, and data security through a globally recognised Digital Travel Ecosystem. This initiative aims to develop an open-to-all trust network that brings together key players in the industry to advance the way passengers travel around the world. This collaboration is focused on driving interoperability across the travel sector, ensuring that travellers' digital identities are seamlessly recognized and trusted worldwide. As the travel industry evolves, stakeholders across various sectors – in-

cluding governments, airports, and airlines – are rapidly adopting digital identities and biometric solutions, creating challenges in maintaining consistency, trust, and security across the travel journey. Sita's Digital Travel Ecosystem is intended to bring together key players in identity management to provide a solution to these challenges by creating an open, secure, and interoperable framework that ensures a travellers' digital identity is trusted globally, without the need for direct integrations between issuers and verifiers. The decentralised nature of the Digital Travel Ecosystem ensures that travellers' digital identities and personal information remain fully under their control.

Austrian State Printing wins Suriname's ICAO standard ePassport

A contract for the production of the new biometric security passport for the Republic of Suriname has been awarded to the Austrian State Printing House (OSD). The new electronic passport contract between the Government of Suriname and the Austrian high security printer OSD, in partnership with Vlatacom Research and Development Institute, was signed in Paramaribo. As selected provider, OSD offers its internationally recognized experience with modern biometric ePassports for its customer. Suriname's new ePassport meets the latest ICAO requirements and, in addition to biometric security features, also includes a state-of-the-art polycarbonate data page and additional innovative security features. With this new generation of Surinamese ePassports, the country not only joins the club of 140 states and non-state entities that already issue ePassports, but also moves into the circle of states that provide the most modern ID documents worldwide.

Bank Rakyat Indonesia partners with Nium for cross-border payments

Up to 150 million customers of Bank Rakyat in Indonesia will be empowered to make real-time cross-border payments in built-up cities or remote locations, in a partnership struck up with leading payments infrastructure company, Nium. The partnership offers a variety of real-time payment mechanisms, supporting cross-border bank account destinations and the global use of electronic cards and digital wallets. The financial products are aligned with a customer focus on where all banked customers are making payments. BRI stated their motivation is to deliver customer convenience for cross-border payments and expand digital payment assets like digital wallets and electronic cards. With an extensive presence across Indonesia's 17,000 islands, BRI is creating one of the most highly-banked countries in Southeast Asia. Cross-border payments are projected to grow significantly in Indonesia, with a forecasted year-on-year increase of 15% through 2025.

Enisa call for EU digital identity wallets cybersecurity certification

Wallet experts are being rallied to join a Working Group launched by ENISA (the European Union Agency for Cybersecurity) with enough support to develop the EU Digital Identity Wallets Cybersecurity Certification. The call gauges interest in establishing the working group to support the development of a cybersecurity certification scheme for EUDI Wallets. With a 2026 deadline for cooperation, the EUDI Wallet is stated to be Europe's answer to standardising digital wallets and identification, whilst converging with the availability of other digital credentials and

services as part of the wallet design. The wallet enables convenient online identification to access public and private services where person ID documents and data is stored, presented and exchanged in the wallet. Personal data used in the wallets is secure for transactions for both users and merchants. The future cybersecurity certification scheme will standardise highly secure functioning of the wallets and be adopted by the EU Commission based on the ENISA scheme. All EUDI Wallets issued to citizens will be interoperable and secure across the EU.

SA adopts biometrics for social protection

The South African Social Security Agency (SASSA) has introduced biometric verification for Social Relief of Distress (SRD) grant applications, in a bid to enhance security and curb fraud. The system, which employs fingerprint and facial recognition technology, will be implemented during both the application and payment processes, ensuring that grants are accessed only by legitimate beneficiaries. Beneficiaries have been urged to ensure their personal information

is updated in agency records and to cooperate with the new protocols. SASSA assured that guidance and support for the transition would be available through local offices and official communication channels. According to the World Economic Forum, have embraced digital public infrastructure and technology to streamline welfare programs, employing management information systems (MIS), social registries and biometric authentication.

European Commission to digitalise passports and ID cards for travel

In a move to speed up border controls and ensure smoother and more secure travel, the Commission has proposed to digitalise passports and identity cards for anyone entering or leaving the Schengen area. Both EU citizens and non-EU citizens are subject to systematic checks in person when crossing the EU's external borders. In 2023 alone, there were almost 600 million crossings recorded. The EC says digital passports are a major step forward in strengthening security in the Schengen area and making travel easier. They will allow border guards to quickly approve genuine travellers and focus better on stopping suspects of crime and terrorism. The proposals include a common framework for the use of digital travel credentials and a new 'EU Digital Travel' app for travellers to create and store their digital travel credentials. Digital travel credentials

are a digital version of the data stored on passports and identity cards. They include the information contained in the chip of the passport or ID card, including a facial image of the holder but not their fingerprints. A digital travel document can be stored on a mobile phone and, once available, in the EU Digital Travel application. It will be completely voluntary for travellers to ask for or use this digital version of their documents, free of charge.



Alaska chooses Thales for driver licenses and ID cards



A second consecutive contract in the state of Alaska to issue driver licenses and ID cards with laser-engraved, polycarbonate card technology has been secured by Thales. Via the Alaska Division of Motor Vehicles (DMV), citizens will be issued with new translucent polycarbonate IDs to prove their identity. The partnership will validate 225,000 more drivers and citizens' identities annually. Thales was appointed the chosen provider to use a leading-edge card format in the new IDs. This integrates a higher level of data security visibly distinguished with translucent windows and secure elements including the Thales Window Lock technology. Protecting against counterfeiting, the technology imprints a 'negative' secondary portrait within the card.

Singapore Cruise Center revolutionises with digital travel solutions

By enlisting digital travel technology, Singapore Cruise Center has embarked on revolutionising the passenger experience at Tanah Merah Ferry Terminal and HarbourFront Ferry Terminal in Singapore's maritime hub. Sita is supplying its biometric-ready smart path and flex as-a-service solutions as part of the agreed deal to fortify digital terminal and passenger processing infrastructure. The global player in travel and transport technology, will expand in Singapore's premier maritime centre, supplying biometric-ready kiosks, self-bag drop, and gates to modernise the passenger experience and processing touchpoints at TMFT and HFFT. The service enables agile and responsive passenger processing, and creates a platform for SCC to build custom passenger-facing applications. The upgraded ferry terminals, serving as Singapore's gateway to the Riau Islands and south-eastern coast of Peninsular Malaysia, are expected to manage approximately over 7 million passengers annually.

The digital face of the 21st Century: technology, identity and energy

Leaders from the world's twenty largest economies (G20) gathered in Rio de Janeiro, Brazil to discuss the world's most pressing challenges. Meanwhile COP 29 saw concerned nations meet in Azerbaijan to forward Paris Accord climate commitments. How many of these challenges and commitments have been met and which relate to the autID and sustainable development communities?

As the world comes to grips with the impacts of wars, climate change and socio-political upheavals, the G20 came together in Rio de Janeiro at a global summit to focus on social inclusion, global governance reform, and energy transitions. Also high on the list of agenda items in 2024 were ongoing geopolitical and trade tensions, including the ongoing war in Ukraine and US-China trade relations.

This year's Group of 20 (G20) summit was chaired by Luiz Inácio Lula da Silva, the President of Brazil, who has pledged to use his country's presidency to give the global south a stronger voice in world decision-making.

Reportedly, the meeting was overshadowed by events that are further increasing divisions among the world's leading and emerging economies: Russia's war of aggression against Ukraine, which entered its 1 000th day, the escalating conflict in the Middle East, and the election to a second term of President Donald Trump, whose 'America First' approach to foreign policy includes threats to impose tariffs on imports. The G20

The G20 Summit in Rio de Janeiro saw a focus on social inclusion and new energy



leaders adopted a declaration addressing pressing global issues, including combating hunger, reforming international institutions, and climate change.

Universal connectivity

Prior to this the G20 Ministers responsible for the Digital Economy, had convened in Macaíó, Brazil. Building upon the achievements and commitments of previous presidencies, they reported they conducted discussions on digital inclusion, universal and meaningful connectivity; on digital government and

inclusive digital public infrastructure; on integrity of information online and trust in the digital economy; and on artificial intelligence for inclusive sustainable development and inequalities reduction.

They reaffirmed the importance of building safety, resilience, security and trust and creating an enabling, inclusive, open, fair, non-discriminatory, safe, secure and sustainable digital economy that puts humans and their development at the center and enables the protection, promotion and full enjoyment of human rights. We acknowledge the role of international cooperation, partnerships,

innovation, competition and entrepreneurship in the digital sphere, and recognize the transformative power of digital technologies to bridge existing divides and empower societies and individuals including all women and girls and people in vulnerable situations. We thus commit to addressing the challenges and harnessing the potential of the digital transformation, bearing in mind the needs, circumstances and capacities of all countries, and of developing countries in particular, while aiming at the achievement of the Sustainable Development Goals, in order to see its benefits reach all corners of the globe.

Digital Inclusion

A commitment to achieving universal and meaningful connectivity for all, considering that, despite growing digital connectivity, one third of the world's population — the majority of which in developing countries, particularly in least developed countries —, remains unconnected to the Internet, due to the lack of accessibility, affordability, digital literacy and skills. We reaffirm the G20 leaders commitment in 2023 to cut the gender digital divide in half by 2030. We recognize that closing this connectivity gap requires coordinated and targeted efforts to address the specific needs of the underserved and unconnected, providing not only universal access through reliable, resilient and high-performance infrastructure but also a level of secure, sustainable and high-quality connectivity that enables users, including those in vulnerable situations, to have a safe, satisfying, enriching and productive online experience at an affordable cost.

Iva Johansson announced the EC's move to digitalise e-passports and IDs for travel



Azerbaijan President, Ilham Aliyev opened COP 29's UN climate talks in Baku

Digital government

The importance of promoting an inclusive, open, accessible, equitable, human-centric, safe, secure, trusted, sustainable, development-oriented digital transformation, in which digital government services, including those based on digital public infrastructure (DPI), can play a key role in improving the responsiveness, effectiveness, transparency and reliability of the public sector in the digital era, while protecting privacy, personal data, human rights and fundamental freedoms.

The group said that digital identification, a basic DPI, can often be an entry point to digital inclusion and a mechanism to reach target 16.9 of the Sustainable Development Goals, namely to 'provide legal identity for all' by 2030.

Integrity of information

Digital platforms have reshaped the digital ecosystem and online interactions by amplifying information dissemination and facilitating communication within and across geographical boundaries. However, the digitization of the information realm and the accelerated evolution of new technologies, such as artificial intelligence, has dramatically impacted the speed, scale, and reach of misinformation and disinformation. The group emphasized the need for digital platforms' transparency and responsibility in line with relevant policies and applicable legal frameworks and seek to work with platforms and relevant stakeholders in this regard.

Artificial intelligence

In order to protect and promote information integrity, the development and deployment of artificial intelligence (AI) solutions in information ecosystems, especially when aimed at personalizing, moderating and generating content, should be ethical, transparent, auditable and accountable, with human oversight and in compliance with applicable legal frameworks to ensure privacy, personal data protection and the respect of human rights, fundamental freedoms and intellectual property.

The G20 side event "Harnessing Artificial Intelligence for Social Equity and Sustainable Development" was a chance for G20 members and invited countries to discuss challenges arising from the prevailing disparities in terms of conditions, possibilities and capacities and explore potential solutions to equip governments and relevant stakeholders, including the private sector, academia and civil society, with the capabilities and tools necessary to respond to such challenges.

COP 29

In Baku, the UN climate talks at COP 29 resulted in developed nations agreeing to help channel 'at least' \$300bn a year into developing countries by 2035 to support their efforts to deal with climate change. However, the new climate-finance goal — agreed along with a range of other issues — has left developing countries disappointed. They were united in calling for developed countries to raise \$1.3tn a year in climate finance. But some countries that rely on oil and gas exports reportedly put up a strong fight in negotiations to stop further progress.

In the end, negotiators agreed on a looser call to raise \$1.3tn each year from a wide range of sources, including private investment, by 2035. According to some climate watchers, reaching this deal is a sign that countries are still committed to working together on climate, but with the US potentially now unlikely to play a part, it will become harder to meet the multi-billion dollar goal, they say.

by Victor March

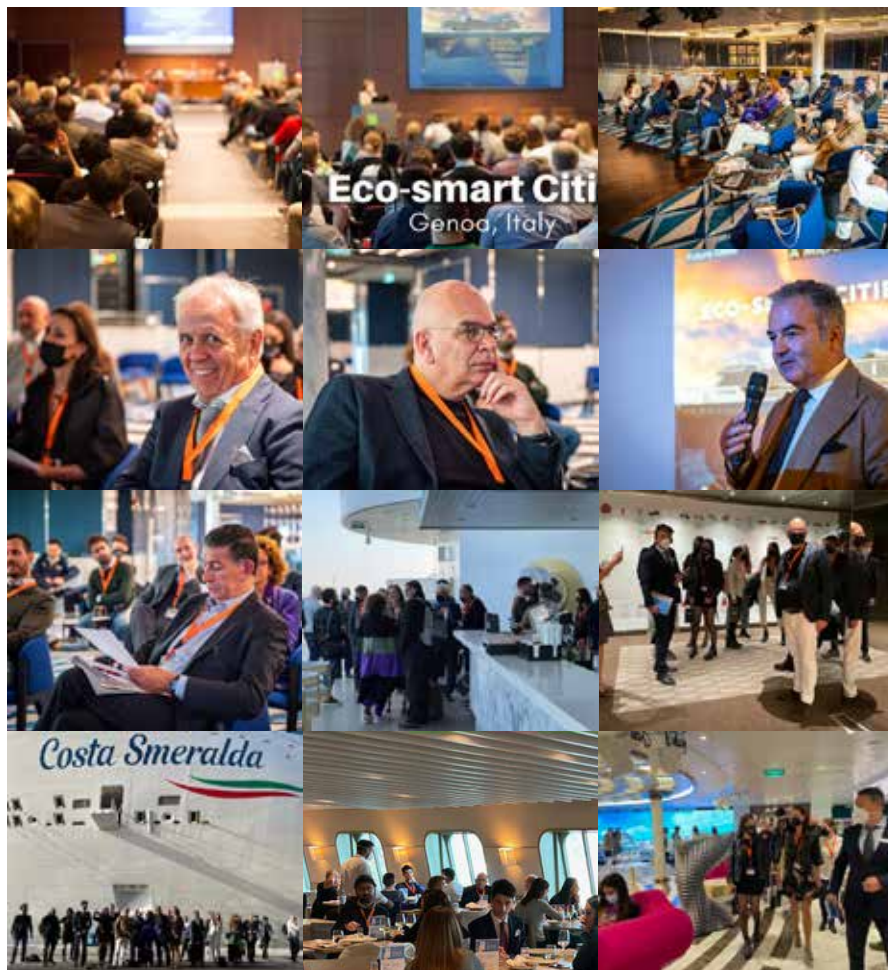
Eco-Smart Cities 2024: promoting innovation for circularity ‘on land and sea’ against all odds

Weathering a perfect logistic storm, Eco-Smart Cities 2024 took place on October 18 and 19, once again welcoming international delegations on board the flagship of Carnival Cruise’s Costa fleet

Four years have passed since the first Eco-Smart Cities congress was launched aboard the flagship of Carnival Cruises’ Costa fleet in October 2021. That unforgettable event boldly took place despite unprecedented travel restrictions and social distancing imposed during the Coronavirus pandemic. All congress attendees were tested twice and arrived masked, their body temperature being measured prior to boarding the ship. And yet, the inaugural conference program, entitled ‘From smart buildings to intelligent cities on land and sea’, presented new urban development principles, with experts from around the world speaking on how to address an even greater global emergency: climate change.

This year, it is climate change that spoke loud and clear at Eco-Smart Cities, surprising attendees as they were meeting up in Genoa from different continents. As per the program, the same ship, Costa Smeralda, scheduled to dock for the very first time at the Port of Genoa, Italy, in fall 2024, prepared to welcome members of a vibrant international community. Their mission is to shed light on the latest best practices in environmentally and socially responsible urban development.

Having enriched the format of the two-day event with an all new ‘Exchange Program’, the organizers furthermore promised to offer a fast track of high-profile one-to-one networking opportunities, meticulously pre-arranged with exclusive personalized agendas. Little did anyone know, until the



Sustainable development advocates from around the world met again onboard Costa Smeralda, after the inaugural two-day event in 2021, organized during Covid times. The Eco-Smart Cities community grows and the vibrant debate among innovators, technology pioneers, policy makers and investors bares new fruit

final hours leading up to the event, that getting aboard Costa Smeralda or simply to Genoa would become something short

of a mission impossible. As widely reported in the media, sudden and dramatic rain-falls swept across Northern Italy, causing



Eco-Smart Cities 2024: rethinking urban development in light of climate change

landslides, shutdown of public services and even casualties in the city hosting the event. Nonetheless, while unforeseeable meteorological conditions led to major disruption to land and air transportation, with national security alerts upheld for days, almost all stalwart supporters of the Future Cities Working Group scheduled to arrive in Genoa, arrived just in time to meet up with the influential community members, prestigious guests and long standing representatives of the Sustainability Summit engaged in turning radical innovation into reality.

The full initiative landed successfully, and just as October 18 surprised everyone with a perfect day of blue skies and sunshine, it seemed born to defy all odds.

Nuecir Exchange Program

By opening its doors and hatches once more as official venue of the highly anticipated cardinal appointment in the agenda of Eco-Smart Cities events, Costa Smeralda becomes synonym of fostering multi-disciplinary knowledge sharing, public-private

The Nuecir exchange program: striking success at its first edition



Nuecir Exchange Program: see you at NCC Zenith in 2025!



Exclusive agendas of one-to-one meetings at Eco-Smart Cities 2024: a success to be repeated in 2025 at the Nuecir Competence Center (NCC)

collaboration and inter-industry cross fertilization. This year it furthermore offered a breathtaking backdrop to the launch of a new initiative promoting radical innovation

for an efficient circular economy. By going live at the October event in Genoa, under the new umbrella brand Nuecir, it repositioned the community's mission. The Nuecir Exchange Program involved advocates of circularity, R&D experts, industry leaders, policy makers and solution providers, as an exclusive feature in this year's event format, offering personalized agendas for high-profile in person networking, bringing together trail blazers and decision makers committed to advancing the frontiers of sustainable development.

In future, the Exchange Program will be directly managed by the Nuecir Competence Center (NCC). Visit Nuecir.com and stay tuned to ensure that your name is on the next passenger list!

by Victor March

Fast-track networking at Eco-Smart Cities 2024

Can we transition from a linear to a circular economy, to share and preserve our society's resources? This year's edition of Wise Media's event on land and sea featured a particularly fascinating experience designed for select attendees participating in the all-new Nuecir Exchange Program. Organized for policy makers, investors, pioneering innovators, system integrators, as well as members of academia and heads of laboratories, the initiative fosters collaboration within ambitious international programs and offered each participant a tailor-made agenda of exclusive, one-to-one meetings.

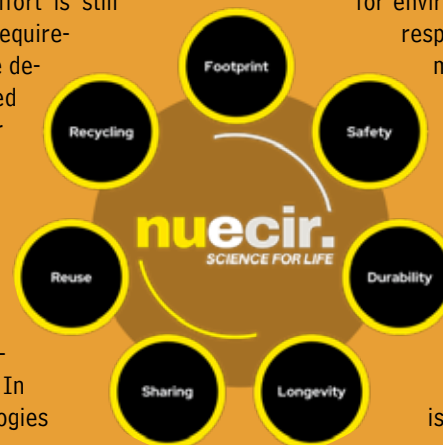
Urgently needed radical innovation

A relentless R&D effort is still needed to meet the requirements of sustainable development. Launched in 2024, the Nuecir Exchange Program catalyzes multi-disciplinary debate, international collaboration, as well as public and private sector investments in this field. In fact, new technologies

can definitely help accelerate progress towards, if not bridge the gap to a circular economy. With this in mind, a new initiative has been created and calls to action scientists and researchers from around the world to drive change by providing scientific answers and technological solutions to surmount the many obstacles still in the way of our collective transition from a linear to a circular economy.

Nuecir Exchange Program

Nuecir encourages to undertake the complete journey to develop new ideas 'from concept to market-ready'. Its supporters are happy to concentrate fully on with what they consider a winning technology for environmentally and socially responsible urban development. They are committed to helping the best solutions go through the stages of research, development, prototyping, testing and scale-up until certifications and operating manuals declare that the needed innovation is ready to hit the arena.



Demonstrating the electronics manufacturing industry's innovative strength

At electronica 2024 in Munich, the international electronics industry demonstrated in 18 exhibition halls that digital technologies are the key to achieving a carbon-neutral future. In November, 3,480 exhibitors presented their innovations across the entire spectrum of electronics to about 80,000 visitors at the world's leading trade fair.

In addition to sustainability, key topics such as artificial intelligence, the future of mobility, and the development of young talent sparked lively discussions at the exhibition stands and throughout the extensive supporting program. In addition, Semicon Europa took place concurrently in two halls.

Automotive start

Two program highlights on the day before the trade fair set the stage for a strong start to electronica. The electronica Automotive Conference brought together international specialists and leaders from across the supply chain to discuss the current challenges facing the industry.

This was followed in the evening by the CEO Roundtable with CEOs Jean-Marc Chery (STMicroelectronics), Jochen Hanebeck (Infineon Technologies) and Kurt Sievers (NXP Semiconductors) along with special guest Barbara Bergmeier (Executive Director of Industrial Operations at Jaguar Land Rover).

Among other things, they highlighted the crucial role of international cooperation in the semiconductor industry and discussed how artificial intelligence can help ensure stable supply chains.

Knowledge transfer and AI

The extensive supporting program at electronica offered a wealth of special-



ist insights and new impulses. Across six stages, experts shared their knowledge through application-oriented presentations on nearly every area of electronics.

New focal points in the forum program included AI machine learning, industrial control, and women in tech. Sustainability and the circular economy were also prominent topics, featured in presentations, discussion rounds, and special tours. Another key focus was on the talents of tomorrow: The Fast Forward platform gave selected start-ups a stage to present their innovations, .

Semicon Europa

As an addition to electronica, exhibitors at Semicon Europa presented products and solutions for semiconductor manufacturing across two parallel halls. Strategically co-located with electronica, it brought together industry leaders from across the supply chain to share insights on the advancements driving sustainable growth in the semiconductor sector, according to SEMI Europe.

Farewell to SMTconnect

Held for the last time, in addition to products and solutions from 165 exhibitors, the focus at the SMTconnect 2024 in Nuremberg, Germany in June 2024, was primarily on personal exchange on current trends and developments in electronics manufacturing.

Now, the organizer Mesago Messe Frankfurt has decided to discontinue the event, which will no longer take place as from 2025. The German trade fair for all areas of electronics manufacturing opened its doors for the first time in 1987. Over the decades, it created a platform for bringing together relevant decision-makers and industry experts from the sector.

Wise Media exhibited for 25 consecutive years in Mesago Messe Frankfurt's event on Surface Mount Technology and Hybrids in electronics manufacturing. Its publication OnBoard Technology was launched at the Nuremberg show in year 2000 and several conferences were hosted by Wise Media on the occasion of the Nuremberg show, since over a decade.

Supporting Bulgaria's renewable energy transition

ERBD, the European Bank for Reconstruction and Development is lending up to €50 million to Tenevo Solar Technologies EAD to build and operate a fully merchant solar photo-voltaic plant in southeastern Bulgaria. The Tenevo plant is expected to generate more than 300 GWh of electricity a year and save 250,000 tonnes of carbon emissions annually. A parallel financing facility of €53 million will be provided by



Raiffeisen Bank International, making the total finance package €103 million. The project will be supported by first loss risk cover deployed under the EBRD's InvestEU Framework for Sustainable Transition, which aims to foster sustainable investment and convergence to EU norms, and will contribute to the Bulgarian green energy transition. This is the first use of the InvestEU guarantee by the EBRD in Bulgaria. The Tenevo plant will add 238 MW of solar generation capacity to the Bulgarian national energy system, with a long-term plan to add on a 250MW capacity of behind-the-meter energy storage. This project is set to advance towards Bulgaria's ambitious net-zero greenhouse gas emissions target by 2050 and reduce reliance on coal generation, which still dominates in the power system.

Azerbaijan completes first renewable energy auction for 100MW solar plant

China's Universal International has emerged as the winner with a bid of \$0.0354 per kWh for the solar plant. Azerbaijan has concluded its first renewable energy auction, awarding the contract for a 100MW solar power project to Chinese company Universal International. The announcement was made during the COP29 United Nations climate summit in the country's capital, Baku. Universal

International Holdings emerged as the winner with a bid of \$0.0354 per kilowatt hour (kWh) for the 100MW solar plant. The company now plans to commence development in the Garadagh region. The Ministry of Energy of Azerbaijan states the selection of Universal International underscores the increasing interest and confidence of international investors in Azerbaijan's green energy initiatives.

Nuclear key for end-user decarbonisation

Microsoft sees nuclear in the same vein as renewables for helping it to meet its clean energy goals - but currently has no intention of directly investing in its own nuclear power plants, the company's Nuclear and Energy Innovation director said the company has developed a strategic roadmap for utilising new nuclear energy that complements Microsoft's clean energy goals and decarbonisation commitments and its policy considers nuclear in same vein as renewables. Microsoft said was already active in collaborating with industry players to develop and leverage AI for licensing and other facets to help accelerate development. The market will also support

the deployment of new nuclear, particularly small modular reactors (SMRs) - and the financial models to support such projects are already being developed, according to the company.



Hydrogen storage said to cut UK energy costs by £1bn annually

According to a new report, large scale hydrogen storage - particularly through the redevelopment of facilities could save UK consumers up to £1 billion per year by 2050. Centrica and FTI Consulting suggests that hydrogen storage could save the UK up to £1 billion annually by 2050. This approach would help manage the intermittency of renewable energy and provide a cost-effective way to stabilise the energy grid. The report emphasises the importance of repurposing facilities like the Rough gas storage site to store hydrogen, acting as a large scale energy reserve. Centrica says they now have a blueprint for the role that hydrogen could play as a large battery in a net zero energy system, providing electricity when 'the wind doesn't blow, and the sun doesn't shine'. Further government investment is needed.

Engineered additive makes low-cost energy storage a possibility

Solar and wind are quickly transforming the energy landscape—but if the full potential of these intermittent, renewable energy sources, is to be realised, safe, affordable batteries capable of storing it are necessary, according to a recent study. As part of an effort to overcome the long-term energy-storage challenge, University of Wisconsin—Madison engineers have invented a water-soluble chemical additive that improves the performance of a type of electrochemical storage called a bromide aqueous flow battery. Currently, giant tractor-trailer-sized lithium-ion battery packs store energy for the grid—but with technical limitations. Lithium batteries have safety concerns due to the potential for fires and explosions and a complicated international supply chain. Aqueous flow batteries, however, could make grid-scale storage safer and cheaper. In these batteries, positive and negative liquid electrolytes circulate over electrodes that are separated by a membrane. Since the batteries use ions dissolved in a liquid—water—they can be scalable, sustainable and safe.

Charting the rise of the new global energy economy

A declaration by the International Energy Agency (IEA) states a new global energy economy is emerging – based on clean and modern technologies. How is this developing internationally in both developed and emerging economies?

Three strategic areas of public policy – energy, industry and trade – are increasingly interwoven. Tensions and trade-offs arise in each of these areas as governments seek to reconcile their commitment to well-functioning markets and cost-effective clean energy transitions, on the one hand, with the need to establish secure, resilient clean technology supply chains, on the other.

This involves tough decisions around choosing which industries to support, collaboration with trading partners, and how to prioritise innovation efforts. The 2024 edition of Energy Technology Perspectives (ETP) is designed to support decision-making in these areas. ETP-2024 analysis explores the future of manufacturing and trade of clean energy technologies, with granular sectoral detail across supply chains, built on a unique bottom-up dataset and a quantitative assessment of countries' industrial strategies.

Manufacturing and trade are foundational for the new clean energy economy. The sizeable economic opportunities associated with manufacturing clean energy technologies are a top priority for government and industry. The global market size for six of the main clean energy technologies – solar PV, wind, electric vehicles (EVs), batteries, electrolyzers and heat pumps – has grown nearly fourfold since 2015 to exceed USD 700 billion in 2023, which is around half the value of all the natural gas produced globally that year. Growth has been driven by surging clean technology deployment, particularly for EVs, solar PV and wind. Under today's policy settings, the market for key clean technologies is set to nearly triple by 2035, to more than USD 2 trillion. This is close to the average value of the global crude oil



market in recent years. International trade is essential to the proper functioning of the global economy – including the energy system. Global goods trade – comprising vital supplies of everything from food and clothing to smart phones and semiconductors – amounted to around USD 24 trillion in 2023 in value terms.

Fossil fuels accounted for around 10% of this, while bulk materials and chemicals – including steel, aluminium and ammonia – accounted for around 20%. Clean energy technology trade today accounts for a comparatively small share relative to these established industries, at around 1%, but it is growing fast.

At around USD 200 billion, the value of trade in clean technologies is nearly 30% of their global market value. The biggest element is trade in electric cars, which has doubled since 2020, reaching around one-fifth of trade in all cars in 2023 in value terms.

Solar PV is the second-most traded technology in value terms. Under today's policy settings, overall clean technology trade is on track to reach USD 575 billion by 2035, or around 50% more than the value of global trade in natural gas today.

Technology surge

Investments in manufacturing are surging in response to rapidly growing demand for clean technologies. A major wave of manufacturing investment in clean technologies is underway, with many new factories being built across the world. Global investment in clean technology manufacturing rose by 50% in 2023, reaching USD 235 billion. This is equal to nearly 10% of the growth in investment across the entire world economy, and around 3% of global GDP growth. Four-fifths of the clean technology manufacturing investment in 2023 went to solar PV and battery manufacturing, with EV plants account-



Growth is driven by surging clean technology deployment, particularly for electric vehicles

ing for a further 15%. The amount of manufacturing capacity being added has been comfortably outpacing current deployment levels. Despite some recent cancellations and postponements of solar PV and battery manufacturing projects, investment in clean technology manufacturing facilities is set to remain close to its recent record levels, at around USD 200 billion in 2024.

Industrial outlook

Strategies in Europe and the United States are set to alter the outlook for manufacturing and trade. In the European Union, the future of clean technology manufacturing will be shaped by how successfully the targets of the Net Zero Industry Act (NZIA) can be achieved. While the NZIA targets are readily achievable for some technologies like the final steps of wind component and heat pump manufacturing, the task facing the automo-

tive industry is much larger. More than 40% of the internal combustion engine (ICE) vehicles produced in the European Union today are destined for export and facing competition from EV manufacturers in China, as are domestically produced EVs for the EU market. For the EU car industry to compete in the growing EV market, manufacturing cost reductions for electric cars and full integration of supply chains, including batteries, will be essential.

In the United States, the Inflation Reduction Act and Bipartisan Infrastructure Law are bearing fruit. They have already mobilised USD 230 billion of investment in clean technology manufacturing through to 2030. Based on current policy settings – and driven by the incentives provided under these pieces of legislation – US demand for solar PV modules and polysilicon could be met almost entirely by domestic production by 2035.

Solar PV is the second-most traded technology in value terms



Emerging and developing economies in Latin America, Africa and Southeast Asia account for less than 5% of the value generated from producing clean technologies today. A fair and just transition requires enabling more regions to reap the economic benefits from growing supply chains for clean and modern energy technologies. A faster clean energy transition and larger overall market for clean energy technologies will be foundational for this. Other factors that presently deter investment in emerging markets also need to be overcome, including political and currency risks, a lack of skilled workers and poor infrastructure

Beyond the mining and processing of critical minerals, countries in Africa, Latin America and Southeast Asia all have prospects to boost their competitive advantages and move up the value chain. We collected country-by-country data across over 60 indicators, assessing the business environment, infrastructure for energy and transport (such as electricity grids, gas pipelines and ports), resource availability and domestic market size, to identify opportunities for each country.

Well-designed industrial strategies can help companies address competitiveness gaps or reach the innovation frontier sooner, but their interplay with trade policy measures needs careful consideration. Industrial policy deployed with a specific, measurable and time-bound goal can support the achievement of energy policy and climate goals. For example, battery production in the European Union is around 50% more expensive than in China today. Innovative battery technologies currently under development could help reduce the cost gap by up to 40% – at which point, the advantages of manufacturing being located in the European Union may outweigh the remaining cost difference. To cultivate and maintain competitiveness and innovation, industrial and trade policies must be closely monitored and amenable to course correction, taking into account the new parameters and objectives of international trade in clean technology supply chains. There is no single recipe to follow for these policies, but the analysis presented in ETP-2024 is designed to help move the debate in this area forward.

by the International Energy Agency (IEA)

Launching smart cities at sea with IoT and AI

How one of the world's major cruises liners are striving to ensure their massive 'floating closed conurbations' are becoming smarter and more sustainable as they move around vulnerable oceans or dock in environmentally-conscious ports

Carnival Cruises operates more than 100 ships that travel to 740 destinations in the United States, Canada, Mexico, Europe, Asia, and Australia; you get to experience breakthrough technology from the cruise company's interactive customer experience initiatives. Using Internet of Things (IoT) technology, connected devices and artificial intelligence (AI), the company is on a quest to turn cruise ships into 'smart cities at sea'.

Sustainable Development met with Franco Caraffi, Marine Systems Director of Carnival Cruises, onboard the Costa Smeralda. We asked about the company's smart city vision, and its goals for a sustainable future through reducing its carbon footprint – both offshore and on.

What are Carnival Cruises' achievable sustainability goals for 2030 – and beyond?

"Overall, the company plans to achieve 20% carbon intensity reduction relative to our 2019 baseline measured in both grams of CO₂e per ALB-km and kilograms of CO₂e per ALBD, which means when we are at berth – and a 50% reduction in absolute particulate matter air emissions relative to our 2015 baseline.

We have also expanded our liquefied natural gas (LNG) program. Another goal is to reduce indirect emissions associated with food procurement and waste management. We identify carbon offset options only when energy efficiency options have been exhausted. And for the future."

"Our 2050 aspirations are to achieve net



zero emissions from ship operations and achieve 100% fleet shore power."

What progress has the company made in achieving these goals?

"Goal one is to increase fleet shore power connection capability to 60% of the fleet. Progress shows 64% of the fleet has shore power connection capability, up from 57% in 2022 and 46% in 2021. Secondly, expansion of battery, fuel cell and biofuel capabilities, has been successfully piloted through the use of biofuels as a replacement for fossil fuel on one ship in 2023 and two ships in 2022.

Thirdly we achieved 50% single-use plastic item reduction in 2021 and in the process of removing hundreds of millions of single-use plastic items from the fleet. Finally, regarding our goal to increase advanced waste water treatment systems coverage to more

than 75% of our fleet capacity, the company has already achieved 70% coverage of fleet capacity and 70% of ships."

What about decarbonization strategies?

"Our decarbonization strategy has four components: fleet optimization for delivering larger, more efficient ships as part of our ongoing newbuild program, some of which may replace existing ships in our fleet. Energy efficiency – by continuing to improve our existing fleet's energy efficiency through investment in projects such as service power packages, air lubrication systems, and expanding shore power capabilities to leverage renewable energy sources while in port. Itinerary efficiency – by designing more energy-efficient itineraries, focusing on operational execution and investing in port and destination projects in strategy locations. New technologies and alternative fuels cover the fourth strategy. Here we are



Carnival Cruises has been pursuing sustainability goals for a number of years

investing in a first-of-its-kind lithium-ion battery storage system and assessing carbon capture and storage. We also support the adaptation of alternative fuels.”

What other technologies have been embraced – such as wearables?

“Carnival’s customer experience division introduced the Ocean Medallion, a quarter-size 1.8-ounce waterproof wearable device powered by a battery that will last at least a month. The Ocean Medallion, that you can carry in a pocket or in a bag or wear it around your wrist, neck or on your belt, is the central element that allows for personalization and the use of technology to elevate the cruising experience on and off the ship.”

When was it introduced?

“It was first deployed on the company’s Regal Princess ship—a 1,100-foot behemoth with 19 decks that can carry 3,500 passengers and 1,300 crew. The modern-day cruise ship has multiple restaurants, attractions, shows, and activities. With so many choices and no way you could experience everything on one cruise, personalization enabled by technology can help passengers get exactly what they want when they want it without spending much energy figuring it out themselves.”

How does the internet of things feature here?

“The Ocean Medallion relies on 7,000 sensors placed throughout the multiple-decked ship. There are hundreds of miles of cables on the ship that support the technology. Every stateroom door and staff mobile device is also a sensor to enable the Internet of

Things experience. Each passenger’s name is carved into a Medallion that’s connected to them, tracks their movements throughout the ship and works in conjunction with Ocean Compass, the app and service that displays personalized recommendations for every passenger on 4,000 digital interaction points from 55-inch high-res screens distributed throughout every area of the ship.”

What does the Ocean Medallion do?

“The promise of the Ocean Medallion is to provide everything our customers want, whenever they need it. In general, the medallion aims to be in tune with what passengers are doing in real-time even if that’s different than what they had planned to do. It will adjust its support based on what they need at the exact moment. Some of the things the medallion enables passengers to do include:

- set up their cruise itinerary before they leave home.
- check-in remotely and connect to Ocean Ready, another Carnival technology that allows cruisers to answer health questions and go paper-free, select food preferences and excursions before boarding.
- Access their stateroom without a key. In fact, thanks to geolocation technology, as passengers approach their room lights will turn on, and the A/C will adjust to their preferred temperature, and their room’s door will unlock when they arrive.
- Restaurant and activity reservations can be made, and passenger allergies and food and wine preferences will be remembered.
- Receive invitations to special events and personalized recommendations for what to do.
- The medallion offers intelligent navigation throughout the ship—important when you are navigating 19 floors.
- Cruisers can order anything on demand no matter where they are located and charge purchases to their account without needing to credit cards or money.”

Can passengers opt-out?

“Yes, passengers can always choose not to wear the medallion. They can opt out of certain tracking programs and determine how much personalization and service enabled by the Ocean Medallion they wish to use. Hav-



Meet Franco Caraffi

Franco Caraffi is the Marine Systems Director of Carnival Corporation’s Costa Group. He joined the company in 1998. After covering several positions inside the IT organization in various areas, he was appointed to the new role in the Marine sector in 2012. Here Caraffi was responsible for the creation of the Neptune platform for nautical data, eMustering and on board access controls, fuel procurement and crisis management tools. After having implemented the platform for the Costa Group, he is also leading the roll-out of the Neptune solution across the entire Carnival Corporation.

Franco Caraffi is also a member of the Technical Committee of Eco-Smart Cities. He welcomed delegations at the Genoa event hosted on Costa Smeralda on October 18, as Nuecir’s Advocate for ‘Footprint’:
www.nuecir.com

ing said that, Internet of Things technology, artificial intelligence, and connected devices and the way they are deployed to provide personalized service to Carnival cruisers is the way the company hopes to achieve a competitive edge from other cruise lines such as MSC Cruises and Royal Caribbean who are also unveiling their own personalized tech experience.”

What about the future and AI?

“AI technology is very important for our footprint. We need to do everything possible to reduce consumption and to make less use of materials because it is important for both our business and our guests on board. Artificial intelligence can really help with this and we need to make the best possible choice for the future regarding its adoption.”

by Victor March

Identifying robust AI practices and systems for cities

What opportunities and challenges does AI pose in cities and how can international organisations support its ethical use?

Predictions that artificial intelligence (AI) will generate great technological changes in our lives are dominating many areas of local and central government debate. Alongside the Internet of Things (IoT), blockchain, image processing and digital apps, AI is considered to be one of the most disruptive technologies.

It is already impacting numerous areas, including education, healthcare, business, agriculture, and urban development. Each year, generative AI acquires new capabilities, becomes more accessible, and scales up, creating massive opportunities and risks. It is widely assumed that AI and AI-associated technologies will enhance economic growth and public well-being in 'smart cities'. While local and regional governments (LRGs) should deploy these technologies, they should do this only when they contribute to LRGs' public mission and enhance the quality of life and meet the needs of their citizens. They should also be able to feed their needs and expectations into global processes for AI regulation.

The last few years in AI have seen a shift away from using multiple small models, each trained to do different tasks—identifying images, drawing them, captioning them—toward single, monolithic models trained to do all these things and more. The business sector has already taken important steps towards adaptation. Public institutions are not the quickest to adapt, but local authorities are usually praised for being more reactive to meet the needs of their populations.

Complex socio-economics

By 2050, about 70% of the world's population will live in cities. Cities attract people



because they offer a broad array of services and opportunities – in education, health, employment, housing, water and sanitation, transportation, as well as cultural activities. If cities can learn to use AI properly, they will manage their increasingly complex socio-economic systems more efficiently.

The 'smart city' is an urban development concept. Smart cities aim to improve their residents' quality of life by applying new technologies (AI, IoT, ICT, digitalisation, etc.) to make life more sustainable, resilient, adaptive, and efficient. A smart city relies on an ecosystem of objects and services that interact with each other and with their users. That said, smartness is a tool (use of technology), not an aim in itself; the aim is a city that is more sustainable, resilient, adaptive and efficient. Using AI technology, cities can improve various critical citizen services

including traffic management, public transport, waste management, infrastructure maintenance and more. In other areas, the use of AI is hotly debated due to the challenges it presents for security and surveillance, energy consumption and distribution and measuring the environmental effects.

Cities have also started to rely on 'digital twins'. This concept goes one step further, offering a holistic model of sustainable urban planning. By combining digital technology, including AI-enabled algorithms, with urban operational mechanisms, it offers an opportunity to leap straight towards a future-proof urban upgrade. Smart cities are highly exposed to the disruptive nature of AI; indeed, they are the outcome of disruptive innovations. However, cities need to ensure that technological changes benefit all their citizens. Cities that are smart and sustain-



Locally-generated data used for ID cards are the responsibility of local governments

nable, from online services to developing ‘citiverses’, must have solid foundations; they must be able to apply AI applications across urban management, land use, data analytics, business development and environmental sustainability, while using data ethically and meeting the need for local public services.

To balance technological opportunities and socio-economic needs appropriately, and ensure they are fully equipped to govern, to collect and analyse data, and to regulate, adopt and deploy AI-led solutions, local governments must invest in both building their capacity and meeting international stan-

AI has seen a shift away from using multiple small models, trained to do different tasks – identifying images, drawing them, captioning them – toward single, monolithic models



dards. International organisations can help them in this complex endeavor.

Robust frameworks

Data and data management are particularly important issues. The adoption of AI implies the adoption of data-driven decision-making, in various fields and at different levels of government. This change impacts job markets, healthcare, local businesses, and education. LRGs have a primary responsibility to understand the value of locally-generated data and how data should be used for the common good. They need to establish a robust framework to regulate national or local data, protect data privacy, and address data concerns associated with AI.

Cities generate hundreds of petabytes of data from which advanced machine-learning solutions can be derived. Data is sourced from public service providers as well as private businesses. Local governments are in a position – but sometimes lack the capacity – to regulate the ownership and use of data that they harvest from their own activities and by arrangement with private service providers.

Regulations and strategies

Smart cities that want to deliver better public services and increase the well-being of their residents need to deploy AI and genAI in ways that meet needs and advance their mission. AI initiatives should align with

LRGs’ overall strategic priorities. LRGs that set clear goals and objectives can communicate their vision effectively and are in a position to make sound policy and technological choices.

The various guidelines and guiding principles developed or under development by relevant international organisations serve as frameworks for creating national and local smart city regulations, plans and strategies to ensure that digital urban infrastructures and data make cities and human settlements more sustainable, inclusive, prosperous and respectful of human rights.

Cities are especially active in innovation using AI. Smart cities are able to control and predict the consequences of planned services and infrastructures. To profit from the use of technology, LRGs need to set clear standards for the ethical use of AI. They also play a key role in developing local AI ecosystems for businesses, and ensuring that new local technologies are used efficiently and ethically. International organisations should involve LRGs in their efforts to promote viable, human-centred smart cities.

Private sector and NGOs

Local governments are in a position to regulate data ownership and use in their own activities and by arrangement with private service providers. LRGs should ensure that all data is collected, processed and exploited ethically, to advance their mission and the common good.

Various multilateral initiatives also seek to regulate AI and genAI. Relevant international organisations should formally and actively involve LRGs in an institutionalized manner in AI-related global decision-making processes, because cities are able to significantly enhance the implementation of international instruments; In addition, they should take their fair share in identifying and promoting local best practices when creating international regulations, taking into account the expertise of those in local public service delivery.

by Global Cities Hub

Harnessing the evolving nature of smart cities

Smart cities can be seen as the embodiment of the massive opportunities and challenges presented for urban transformation via what the World Economic Forum has called the Fourth Industrial Revolution. How are these being deployed and the challenges met?

The importance of cities to the development of a sustainable, global economy that can increase prosperity, address climate change, and ensure the well-being of all communities is widely recognized. Local leaders around the world are committing to digital and low carbon strategies as they prepare their communities to meet economic, environmental, and social challenges. Cities are also recognizing the need to ensure social and digital equity when deploying new technologies.

Ideas and principles behind the smart city movement continue to evolve as cities and their partners better understand the requirements, the opportunities presented by new technologies, and how to address the challenges. The task now is to show how citywide deployments of smart city solutions can deliver real improvements to services and to people's lives. There are many signs that this shift is happening:

Internet of Things (IoT) deployments in cities are ramping up: Connected street lights are creating new urban network platforms; smart meters and smart grids are enabling new urban energy systems; transportation and mobility are being transformed through digitization, electrification, and automation; and citywide networks are supporting urban innovation on a massive scale.

Cities are developing new ecosystems that integrate the public and private sector, universities and research bodies, and voluntary and community organizations: This development has many facets including the creation of new business models, the establishment of research and innovation plat-



forms, and support for new forms of citizen and community engagement.

Smart, sustainable, and digital approaches are becoming embodied in city planning, infrastructure projects, building developments, and service design: The spread of smart, connected devices and the growth of urban data analytics is transforming many operational areas and opening the door to a vast array of yet-to-be-defined new services.

Cities need to demonstrate that innovative technologies and new approaches to service delivery can have a positive and measurable impact on key city challenges in areas such as transportation, public safety, health, and social equity; benefit all

communities, create more equitable cities, and reduce the digital divide; be based on stable, proven, and replicable business models; and enable cross-sector innovation and collaboration without producing a new generation of siloed solutions and stranded assets.

Fourth industrial revolution

Cities also need to be prepared for the next wave of technological disruption and the implications of the Fourth Industrial Revolution, which are likely to have an even greater impact on how cities work. Cities, service providers, and technology companies all have a role to play in this shift, as do state and national governments. The



Urban transformation is being hailed as the 4th Industrial Revolution according to the World Economic Forum at its 2024 annual meeting

ability of the whole smart city value chain to cooperate to address barriers and to maintain momentum will be crucial. There is no single model for the smart city, nor is there a final endpoint. Cities committed to making the best use of technology to serve their citizens are embarking on a journey shaped by local priorities and conditions. There are, however, lessons to be learned from more than a decade of smart city activity across the world.

Local momentum

Navigant Research is tracking smart city projects in around 300 cities across the world. Many other cities are developing their strategies and deploying new technologies to improve urban services. This momentum behind smart cities is reflected in the expanding market for smart city solutions. Navigant Research estimates annual investment in the global smart city technology market will reach \$265 billion by 2028. The US market alone is expected to be worth \$30 billion in 2020, and more than \$65 billion annually by 2028.

The smart city technology landscape is broad. Almost any digital or infrastructure innovation has potential applicability to the urban environment. The efficiency and responsiveness of emergency services, for example, are being enhanced by better public safety monitoring, data analytics, and interagency communications. Sectors such as transport and urban energy are being transformed by a combination of policy ini-

tiatives and new technologies, while new solutions are emerging in previously undervalued operational areas such as street lighting, parking, and waste management. The growing use of artificial intelligence (AI), the deployment of 5G networks, and the development of autonomous vehicles will further accelerate the transformation of city services.

The evolution of smart cities is entering a critical new phase. Where the first phase focused on creating a smart city vision and the second on innovation, the third phase is focused on delivering outcomes that make a significant impact on major city challenges. Achieving that impact requires proven

Cities deploying connectivity solutions at scale continue to evolve their vision of the future city and support new waves of innovation



solutions to be deployed at scale across cities and communities in an effective and efficient manner.

Interconnectivity

Thinking about smart cities in this way is not to prescribe some simple pathway that all cities will follow in linear fashion, nor is each phase ever completed. But the relationship between the three elements is implicit in any overall smart city approach—how to balance vision, innovation, and outcomes in a way that maintains progress and can demonstrate real and growing value to cities and communities. Cities deploying solutions at scale will continue to evolve their vision of the future city and support new waves of innovation and experimentation. What is important is to understand the distinct characteristics, requirements, and objectives of each phase and how they are interconnected.

Initial smart city programs spring from diverse starting points, including mayoral leadership, city consultations, government mandates, public-private sector collaborations, R&D projects, and challenge competitions. Whatever the initial impetus, the focus should be on establishing a common vision based on an understanding of city priorities and key assets, founding collaborations and partnerships, and conducting early pilot projects. Key features



Transformation in distinct operational areas such as public safety, transportation or street lighting is multi-faceted

of any shared vision for smart cities call for a holistic perspective that understands the interconnectedness of many city challenges and their solutions; a framework for collaboration across city agencies and an initial partner ecosystem; and a set of shared principles around city goals (e.g., for digital inclusion or sustainability) and technical platforms (e.g., adherence to open standards).

Social change

The evolution of smart cities is not happening in isolation from broader technologi-

cal and social changes. Smart cities can be seen as the embodiment of the massive opportunities and challenges presented by what the World Economic Forum has called the Fourth Industrial Revolution. The combination of ubiquitous communication, new energy solutions, innovations in transportation, and the digitization of almost all aspects of society mark a major change in economies and societies. To this can be added the challenges of mitigating and adapting to climate change.

New technologies and their impacts are developing at an exponential rather than linear rate; moreover, they are deeply in-

The combination of ubiquitous communication, new energy solutions and the digitization of many aspects of society mark a major change in economies and societies



terconnected, meaning that they are producing combinatorial advances that are often hard to envision in advance. The combination of digital technologies and new technical innovations in almost all fields is driving a paradigm shift in economy, business, society, and personal life. Furthermore, the transformation encompasses entire systems across cities, countries, companies, industries, and society. All these characteristics are relevant to the further development of smart cities, which are becoming living laboratories for the Fourth Industrial Revolution.

City diversity

The success of the smart city concept reflects its ability to encapsulate the many elements involved in the evolution of urban infrastructure, operations, and services under the pressure of new technology. The challenge is to show how citywide deployments of new solutions can have a real impact on urban challenges and improve outcomes in critical areas. Despite the immense diversity of cities, there are important lessons to be learned from early leaders and how they are evolving their smart city programs to the next phase. Key recommendations for cities looking to accelerate their smart city journey include ensuring smart city pilots and demonstrations are aligned to local priorities in all aspects of citizen services.

The opportunity presented by smart cities is multi-faceted, combining transformation in distinct operational areas (such as public safety, transportation or street lighting) but also pointing to the potential for new systemic approaches to many previously intractable urban issues.

Developing the vision, skills, and funding models to make these links is critical to delivering on the smart city vision. Only by doing so will it be possible for smart city solutions to play a part in an urban transformation that can make significant improvements to the health, safety, sustainability, and prosperity of all cities and their residents.

by Verizon

Quantum computing pitched to transform smart cities

Deep-tech systems, such as quantum computing, are playing a game-changing role in redefining smart city operations. With the potential to address urban challenges, quantum computing startups are working on solutions for everything from optimizing traffic flow to improving energy efficiency, demonstrating the growing momentum in quantum computing. Central to smart city operations is the optimization of complex systems. Modern cities generate an immense amount of data from traffic cameras, energy grids, water systems and environmental sensors. Despite their current processing power, binary computers face

significant limitations in processing and deriving actionable insights from these datasets. Quantum computers could potentially excel in such environments, leveraging their ability to simultaneously analyze vast, multi-variable datasets. One area where quantum computing can make a significant impact is transportation, according to pundits of the technology. Urban centers plagued by gridlock could benefit from quantum-driven traffic management systems. Quantum algorithms can dynamically analyze real-time traffic data to optimize traffic signal timings, streamline vehicle routes and enhance public transit schedules.

Uber, Lyft plan robotaxi fleet expansions

With Tesla planning to produce robotaxis and compete with existing ride-hail companies as soon as 2025, Uber and Lyft say they are adding partnerships to enter new cities with driverless vehicles. Ride-hail providers Uber and Lyft are driving deeper into the realm of autonomous vehicles. The companies' leaders described new partnerships with technology and robotaxi companies during recent investor events. Lyft will add AVs to its platform in some cities through a collaboration with

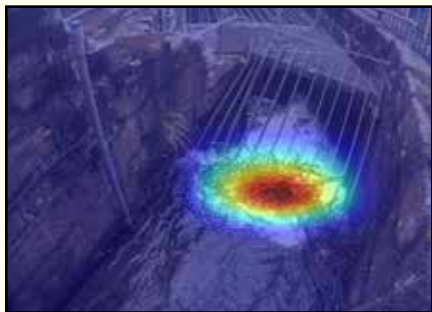
May Mobility. The company also announced partnerships with autonomous and advanced driver assistance company Mobileye, along with Nexar for better data for AV research.



University of Bath harnesses IoT and AI to combat urban flooding

An IoT solution aimed at tackling urban flooding by combining smart cameras with AI has been unveiled by the UK's University of Bath. The software, called 'AI on The River,' identifies blockages in culverts by detecting debris and waste. Culverts, critical for enabling waterways to flow under urban infrastructure, are fitted with trash screens to avert debris penetration. However, blockages at these screens can swiftly lead to flooding. By leveraging IoT capabilities,

this system offers proactive monitoring and alerts. The system is attracting global interest, particularly from nations like South Africa where data scarcity hampers similar technological developments. The system underwent trials at a site in Cardiff, achieving nearly 90% accuracy in spotting potential obstructions. Traditionally, culverts have been manually monitored via CCTV, necessitating continuous human intervention. Incorporating IoT with AI ensures local authorities can optimise resource allocation, focusing on genuine issues and enhancing immediate response capabilities. With climate change increasing flood risks globally, this IoT-focused research marks a significant advancement in managing urban water challenges. The system's flexibility paves the way for a sustainable, intelligent approach to flood forecasting, setting a new benchmark for IoT applications in infrastructure.



Samsung Knox expands to bolster IoT security

In efforts to bolster IoT security, Samsung has announced the extension of its Knox platform to AI-powered home appliances. Knox Matrix, previously limited to mobile devices and TVs, will now encompass home appliances. This integrated protection system allows connected devices to monitor each other for security threats and alert users of any protective measures taken. As the connected ecosystem of AI home appliances expands, the importance of security is growing exponentially, according to at Samsung. The South Korean tech giant is set to introduce mobile biometric authentication to its home appliances next year, eliminating the need for traditional login credentials and reducing the risk of password exposure. At the heart of Samsung's enhanced security strategy is Knox Matrix, a solution that leverages private blockchain technology to protect connected devices and networks.

Google weaves Thread into smart homes

Aiming to make the smart home more cohesive, Google continues to weave Thread technology into the fabric of its ecosystem. Recent releases and discoveries suggest the tech giant is betting big on Thread and Matter as cornerstones of tomorrow's connected homes. The latest Pixel 9 series and Google TV Streamer now boast built-in Thread radios, potentially serving as central hubs for smart device control. But Google's ambitions don't stop there. Android Authority uncovered telling clues in a recent Google Play Services beta (v24.38) that hints at deeper Thread integration on the horizon. Strings mentioning 'Thread Networks' in the beta code, pointing towards Google's intention to transform Play Services into a Thread network management powerhouse. This latest development would align with the company's ongoing efforts to streamline Thread network setup, including a cloud backup feature for Thread credentials and support for the Thread Group's credential sharing initiative. Industry watchers predict a gradual shift, with Thread radios becoming commonplace in smart home gadgets and mobile devices over the coming years. Thread is a protocol that uses IEEE 802.15.4 radio technology on the 2.4 GHz spectrum.

Championing next-generation citizen services in the Gulf States

How are citizens' attitudes towards government use of artificial intelligence (AI) in the GCC, and especially generative AI (GenAI), being addressed as they become increasingly familiar with the tools deployed?

The significance of digital government services in addressing citizens' needs globally cannot be overstated. These services are vital to support individuals through key life events, from registering a birth to healthcare and education to public safety and job support, social assistance and pensions, and more. Digital government services also streamline critical business processes like registering a company, filing taxes, and ensuring regulatory compliance. They are integral to the broader functioning of a nation and its economy, acting as the backbone that ensures societal and economic systems operate smoothly, quickly, and efficiently.

Citizens' satisfaction with their government services and their experiences accessing them translate quickly into positive overall perceptions of government effectiveness and support. As such, building and operating seamless digital offerings to better serve citizens' evolving needs should be a key priority for governments and recognized as a core driver of socioeconomic development. Innovation and technological advancements, in this regard, provide governments with vital opportunities to do even better. This report showcases citizens' experiences with digital government services within the Gulf Cooperation Council (GCC) region, based on data from BCG's flagship 2024 Global Digital Government Citizen Survey (DGCS). A particular focus in this edition was on citizens' attitudes towards government use of artificial intelligence (AI), and especially generative AI (GenAI).

Previous surveys have shown that GCC governments receive strong citizen approval for their digital services. This positive trend



continued in 2024, as GCC countries maintained their global lead in satisfaction with a net approval score of 81%, significantly higher than the global net average of 65%.

Accelerated digitalization

While this year's survey has reconfirmed cumulative trends from past editions, it has also signified an evolution in citizen expectations. Accelerated digitalization and newer technologies like AI and GenAI are increasing citizens' expectations in terms of personalization and improved user experience. This year's data also highlights a strong link between satisfaction levels and the perception that government digital services are on par with those of the private sector, which are typically best-in-class.

This underscores the need for government services to match the efficiency and effectiveness of the private sector while fostering continued innovation in the future.

However, this year's survey shows citizens' increased interest and comparison to leading players in both private and public sectors. For instance, while 42% of GCC respondents (steady proportion since 2022) expect quality standards similar to those of global digital leaders, including top high-tech private-sector companies, citizen expectations benchmarked to regional private sector companies have seen a 5 ppt decline since 2022 to entail 33% of respondents in 2024. And 23% of GCC respondents (4 ppt higher than 2022) expect quality standards to match those of the best online government services globally, indicating citizens



Citizen trust is imperative for governments to successfully leverage AI and GenAI in digital services, given GCC citizens' heightened familiarity with GenAI tools.

are more aware of global best practices across both private and public sectors.

Satisfaction levels

It is important to note that while citizens expect increasingly higher standards for digital government services, the consistent growth in satisfaction levels in the GCC is reflected in continued widespread usage. Observing an upward trend since 2022, the GCC records the highest usage rates of digital government services globally in 2024. This overall usage level is a remarkably positive indicator for governments in the GCC. However, it is equally important to understand how both the frequently, and less frequently used, services perform to understand what is going well and what still needs improvement.

The next generation of digital services for governments will be driven by the newest emerging technologies, including AI and GenAI. These technologies will enable a whole new range of delivery methods and a variety of high-value service use cases, from personalized recommendations and proactive nudges to more advanced chatbots that will reduce burden on citizens.

AI has rapidly become a global game changer, showing rapid expansion in scale and scope of relevant use cases, as well as gaining accelerated adoption across organizations. Most interestingly, generative AI (GenAI) has emerged as an important transformational AI technology for direct

citizen services. Intuitive tools like ChatGPT by OpenAI and Gemini by Google have seen rapid and widespread GenAI adoption around the globe and across industries and users. And just as GenAI is driving productivity and competitive advantage in private-sector customer service, it is also starting to transform digital government service quality and citizens' experiences.

Widespread citizen adoption

GCC citizens are significantly more familiar with GenAI than other regions, as reflected in their higher general usage of GenAI tools. This creates a strong opportunity for GCC governments to accelerate the integration of AI and GenAI into their digital services.

Citizen trust is imperative for governments to successfully leverage AI and GenAI in digital services, especially given GCC citizens' heightened familiarity with GenAI tools. Without trust, people are less likely to engage with AI-driven solutions or features, squandering many related service improvement opportunities. Interestingly, the data shows a positive link between the quality of digital government services, overall citizen satisfaction, and citizens' trust in their government to use AI responsibly.

In GCC countries, which have high citizen satisfaction scores for digital government services, citizens trust their governments even more than private sector entities to

use AI responsibly. The net average trust in governments' responsible use of AI is 71% across GCC countries – 49% higher than the global average – and compared to 52% for the private sector. This trust gives GCC governments the opportunity to rapidly yet safely deploy GenAI to further enhance service efficiency, accessibility, and personalization, thereby fostering even greater trust and satisfaction.

Both the lightning speed of GenAI's technological advancement, and the widespread global adoption, come with several challenges. First, governments need to move fast enough to keep up in an effective and responsible way, however they rarely innovated this quickly.

Path forward

It is necessary to innovate continuously to keep pace with heightened citizen expectations and a rapidly advancing global technology landscape— and to prioritize addressing lingering service usability and user experience issues to maintain high levels of satisfaction. This includes diversifying investment and improvement efforts across their entire portfolio of digital services. It is also key to accelerate the identification and adoption of winning AI and GenAI use cases where citizens are most comfortable and where adoption can generate the highest impact on citizen experience and satisfaction.

Focus on trust-building actions favored by citizens is needed by setting a balanced strategic course, collaborating with all relevant stakeholders to implement responsible AI frameworks, and quickly introducing comprehensive guardrails to advance AI adoption.

It is time to take action, as opportunities await the GCC governments that can capitalize on their current digital service momentum, keep pace with AI and other fast-moving technology, thereby exceeding citizen expectations and maintaining their trust overall.

by R. Mourtada et al
Boston Consulting

Accelerating digital transformation for sustainable development

Enhanced digital government services are seeing a significant upward trend worldwide. What major trends are emerging from the UN's e-Government Development Index (EGDI)?

Developments in digital government have seen major growth across the globe, with all regions leveraging technology to enhance government services and improve people's engagement. This shift has accelerated during the post-pandemic recovery period, with increased investment in resilient infrastructure and cutting-edge solutions such as cloud computing and broadband.

The rapid digitalization of services, the shift towards remote work, the integration of artificial intelligence (AI), the emphasis on digital identity and data management, and the increased use of data and emerging technologies for policymaking are key global megatrends.

These transformations have catalysed innovation in the private sector, particularly for micro-, small, and medium-sized enterprises, which are increasingly integrating digital technologies and standards that align with those applied in government platforms. Venture capital investment has significantly expanded, with increased funding directed towards AI startups. Concurrently, public sector digitalization has driven crucial improvements in infrastructure, including the expansion of affordable broadband access and the enhancement of cybersecurity, contributing to the evolution of a thriving digital economy.

Model frameworks

The Digital Government Model Framework from the UN provides countries with a comprehensive methodological road map for the effective planning, implementation and assessment of digital government initiatives. Embodying the ecosystem approach and



focusing on principles of good governance, inclusivity, and security, the framework emphasizes the importance of leveraging digital technologies to enhance public services delivery, promote inclusivity, and achieve the Sustainable Development Goals (SDGs).

The global average value of EGDI, as a proxy for measuring the digital divide, reflects substantial improvement over the past two years, with the proportion of the world population lagging in digital government development decreasing from 45.0 per cent in 2022 to 22.4 per cent in 2024. This improved ratio primarily derives from the positive performance of Asia, in particular the positioning of India and Bangladesh above the global average EGDI value. The Americas have also shown steady improvement, with an increased proportion of countries in the very high EGDI group. Africa and Oceania have made some progress

but remain below the global average.

Despite the advances made, 1.73 billion people remain on the wrong side of the digital divide. The gaps in digital development are particularly wide in Africa and Oceania. Significant challenges remain in bridging the digital divide, securing adequate financing, bolstering cybersecurity, and aligning digital strategies with effective implementation. Uneven access to technology and information creates disparities among countries and communities in the same region, leading to migration and brain drain in digitally underserved areas.

Continental shifts

Europe leads in e-government development, followed by Asia, the Americas, Oceania and

Africa. While all regions have achieved progress in various areas, the pace of development has been uneven, and regional disparities in digital development persist.

Europe continues to be the top performer in e-government, with most of the region's countries falling into the very high EGDI group.

Asia has made impressive strides since 2022, with Singapore, the Republic of Korea, Saudi Arabia, the United Arab Emirates, Japan and Bahrain leading in digital government development. Strong upward trends have also been driven by significant advancements in digital transformation in China and Western and central Asia, with strategic government initiatives focusing on the integration of cutting-edge technologies in public services.

In the Americas, digital leaders such as the United States of America, Uruguay, Chile, Argentina, Canada, and Brazil drive progress, supported by regional collaboration and international partnerships. All of the Caribbean small island developing States (SIDS) except Cuba and Haiti have shown commendable progress in digital development and are in the high EGDI group.

Infrastructure disparities

In Africa, Mauritius and South Africa have moved up to the very high EGDI group, marking the first time countries from this region have reached the highest level. However, most African countries have EGDI levels below the global average. Significant disparities in digital infrastructure, connectivity, digital skills, and e-government readiness persist within the region. An analysis of past and present EGDI indicators confirms that even with the most optimistic projections, Africa will not bridge the digital gap with other regions by 2030. This underscores the urgent

Vincenzo Aquaro, Chief of UN DESA, which sees AI use as crucial in achieving SDGs



need for accelerated efforts and innovative solutions to address the digital divide.

Oceania is characterized by significant variability in digital development. Australia and New Zealand remain regional and global leaders, while SIDS face substantial challenges in digital advancement.

Driving sustainable growth

These overall positive trends in digital government development highlight the potential for technology to drive sustainable and inclusive growth. Ongoing national and regional efforts, along with international support, are essential to address the challenges and achieve comprehensive digital transformation worldwide.

At the local level, digital government can significantly impact people's daily lives through the provision of accessible, efficient and transparent services. Local government is often the first point of contact between citizens and public services. By leveraging digital tools, local authorities can improve services delivery, enhance citizen engagement, and promote inclusive development, directly contributing to the realization of the SDGs.

The local Online Services Index (IOSI) was introduced by the United Nations Department of Economic and Social Affairs (UN DESA) in 2018 to assess the digital government capabilities of cities worldwide. For this edition, the most populous city in each of the 193 United Nations Member States has been assessed. A comparative analysis of EGDI and IOSI results indicates that national portals continue to outperform city portals. There are significant disparities between the two in terms of development and performance, indicating the need for focused efforts to improve local e-government and support digital transformation at the municipal level.

The more populous cities tend to have relatively high IOSI values, as they are able to benefit from superior resources and a higher demand for online services. However, around 22 percent of the cities assessed do not offer evidence of an operational official website. This finding suggests that there are a substantial number of cities lacking an online presence, which can hinder access to essential digital services. Barriers to creating and

maintaining municipal websites include budget constraints, a lack of technical expertise, and infrastructure limitations.

These findings underscore the importance of implementing targeted initiatives to bridge the gap between national and local e-government, enhance the digital presence of all cities, and ensure that smaller municipalities are not left behind in a world that is rapidly becoming digitalized.

AI in digital government

The integration of AI in the public sector has garnered considerable global attention. As AI can be used to automate processes, enhance efficiency, and reduce redundancies, it has the potential to revolutionize public administration. However, the rapid advancement of AI technology, particularly the development of large language models (LLMs), has outpaced the adoption of relevant regulatory frameworks, and there is an urgent need for effective governance to mitigate associated risks, such as data bias. The United Nations has emphasized that AI has the potential to support or hinder the achievement of the SDGs and that international cooperation and robust regulatory measures are needed to ensure that AI and other emerging technologies are utilized responsibly and productively.

The addendum to the present Survey explores the opportunities and challenges associated with AI integration in the public sector, offering insights into current trends and the regulatory landscape. It emphasizes the need for a balanced approach that maximizes the benefits of AI while minimizing its risks. It also calls for integrated AI governance frameworks, substantial investment in AI capacity-building, and collective international action to ensure that AI technologies contribute positively to sustainable development.

Understanding the evolution of digital government is crucial for contextualizing the Digital Government Model Framework, ensuring that it addresses real-world needs, leverages lessons learned, and drives better outcomes in achieving the 2030 Agenda for Sustainable Development.

by the Department of Economic and Social Affairs - United Nations

Spotlighting digital identity proofing as online verification volumes surge

How to verify identities remotely and securely as customer experience meets high-assurance security through modern identity and authentication: biometrics, encryption, device reputation, AI and machine learning

Since the coronavirus global pandemic expanded an already burgeoning population of remote workers and consumers, almost every enterprise is facing a surge in the volume of identities they need to verify online, as millions more people work, shop, and conduct transactions from home.

An effective identity proofing solution brings a combination of strong security and engaging user experiences to almost every remote use case. This new landscape means enterprises, consumer marketers, financial institutions, and government agencies need to explore modern identity proofing. The volume of identities needed to manage and verify will increase – and the population of remote users will continue to expand as people become more comfortable with ubiquitous connectivity.

Balancing security and experience

In broad terms, the methodology of identity proofing has existed in some basic form for decades to 'prove' identities. This practice is often referred to as static PII (personally identifiable information), and it is far from secure, given the proliferation of hacking, malware, and social engineering. The problem with these approaches is that they present a poor combination of poor user experience (aka friction) and flimsy security.

Consumers often get frustrated during onboarding and abandon important processes like opening new accounts or signing up for new products and services. When tech-



nology providers offer solutions to remove some of that friction, they sometimes inadvertently provide enticing new opportunities for hackers. These early methodologies have evolved somewhat, but many of the ID proofing solutions on the market today are only slightly refined versions of those high-friction/low-security methodologies.

How does identity proofing with low friction and strong security work? Banks, government agencies, corporations, and other organizations that need to onboard a large number of users quickly and securely require a modern identity proofing solution. And these organizations should ensure that the ID proofing solution they select can be easily integrated with their own apps, websites, or other digital properties for a seamless user experience. Users expect employers or service providers to protect

their identity, and they are holding them responsible. Whether users are accessing banking services, government programs, company VPNs, or e-commerce sites, they increasingly believe the providers are responsible for protecting their identity and liable for any implications of a breach. From that perspective, creating layers of the highest assurance security measures would make sense.

Onerous processes

Unfortunately, consumers will abandon account opening processes and employees will work around security measures if the identity proofing process is too onerous. The key is finding a modern solution that provides both high-assurance security and low friction for users. Do consumers

want frictionless onboarding experiences or strong security for personal data and transactions? There may have been a time when they had to choose. But now they want it all. There is ample evidence to support that theory, as multiple studies show that up to 70% of consumers will abandon a mobile or online registration process if it presents too much friction. If they do not like the experience, they will move on to another brand, but they are more and more likely to be savvy about a provider's security posture.



Elements of modern identity and authentication, such as biometrics, are continuing the convergence with AI-powered solutions

Automating compliance

The regulation landscape for any organization that uses identity proofing is constantly changing. As hackers evolve, so must the regulators who are intent on protecting consumers, as well as the interests of financial institutions, corporations, health-care providers, government agencies, and other organizations. When it comes to protecting consumers and their privacy, the European Union's General Data Protection Regulation (GDPR) set a benchmark in many respects.

One of the most identity-specific parts of the regulation reads: 'Personal data shall be processed in a manner that ensures appropriate security of the personal data, including protection against unauthorized or unlawful processing and against accidental loss, destruction, or damage, using appropriate technical or organizational measures.'

While the regulation pertains to European consumers, other regulatory agencies are using it as a benchmark. As most security executives know, the financial penalties of violating GDPR are potentially massive. So, when considering identity proofing technology, it is important to choose a solution that simplifies compliance with GDPR specifically — and is likely to accommodate new regulations that emulate the EU statute.

In data retention practices, GDPR clearly states personal data can only be collected for a specific business purpose; then only store a bare minimum of that data for the long term. In this case providers need to look for a solution that does not retain selfie images, PII, or other identity data. As far as compliant algorithms are concerned, the chosen platform cannot be built to aggregate data from multiple customers and prospects to create machine learning algorithms used for decisioning. In the case of financial service applications, machine learning tools must focus only on

All forms of verification – biometrics, encryption, device reputation, AI and machine learning – are the new components of trusted identity



Consumer expectations

Mobility and connectivity have changed both the definition and value of identity. Without trusted identity, nothing in the modern context works. Customers accessing offerings on smartphones, employees working anywhere, and other critical ecosystems rely on trusted identities to function. A key challenge in these ecosystems is that consumer expectations for convenience and the sophistication of cyberattacks are both racing ahead at the same incredible pace.

Previous definitions of identity and the methodologies used to authenticate identities no longer work because of all this change. So, as an enterprise sets out to evaluate and select an identity proofing solution, it will be important to keep some of these best practices in mind.

Building a truly cross-functional search team, is equally influenced by the need for exceptional customer engagement and strong enterprise security. Enterprises must include members that represent both interests, starting by recalibrating their definition of identity. The old definition and old methodologies no longer apply. Concepts like decentralized and distributed are reshaping identity. Grassroots research into customer preferences — employees, citizens, or other users — can be conducted as they have preferences being shaped by their experiences with other brands. It is also crucial to identify the most pressing cybersecurity threats. Just like consumer preferences, hacker methodologies evolve and become more sophisticated every day.

Elements of modern identity and authentication such as biometrics, encryption, device reputation, AI and machine learning are the new components of trusted identity. Reach out to trusted partners to develop a deeper understanding of these technologies. Determine the impact of key regulatory requirements. Regulatory bodies are trying to keep up with privacy issues, cyber threats, and other key issues, but regulations change fast and present entirely new challenges.

by Entrust

ISO standardises GLEIF's digital organisational identity

The International Organisation for Standardisation has expanded the Legal Entity Identifier technical standard, ISO 17442, to standardise verifiable LEIs, a new form of digitised organisational identity developed by the Global Legal Entity Identifier Foundation (GLEIF). The new ISO standard describes how the LEI can be embedded in digitally signed, tamper-resistant credentials, addressing the

global demand for decentralised, automated authentication. This standard introduces the vLEI, which utilises Authentic Chained Data Container (ACDC) credentials and Key Event Receipt Infrastructure (KERI) protocol for secure issuance and revocation. This ensures the vLEI's provenance can be traced back to GLEIF, solidifying its position as the 'root of trust' for the vLEI system.

EU-LAC Digital Alliance promote digital ID in Central America

The Spanish Cooperation Training Center (CFCE) is embarking on digital citizen engagement in Central America in the framework of the Digital Alliance between the European Union (EU) and Latin America and the Caribbean (LAC) and the Global Gateway Strategy. Organized by the European Commission and the Presidential Commission for Open and Electronic Government (GAE) of Guatemala and facilitated by the e-Governance Academy (eGA), the project aims to establish a local network of trainers and stakeholders who will be equipped to support vulnerable communities in devel-

oping digital awareness and enhancing their digital skills and capacities. In doing so, the activity aims to address the digital divide, which in many communities is characterized by limited access to technology, resulting in significant exclusion from digital services, as well as from political decision-making processes and social life. Also, crucial aspects such as digital awareness, skills, and competencies are often overlooked. As a result, the activity focuses on the most vulnerable communities, where the lack of digital skills and knowledge presents a major barrier to economic, social and political inclusion.

Kuwait's Vision 2035 advances digital identity

In order to diversify the economy and strengthen its position as a regional financial hub, Kuwait has embarked on a major digital transition. A key component of this change is the emphasis on digital identity and biometric technology, which are critical for updating government services and

enhancing national security. Recently, the Ministry of Interior's biometric fingerprinting project reached a significant milestone, with slightly over 3 million citizens and foreigners registered as part of the nationwide effort. The companies like STC Kuwait play an important part in the country's digital progress. As a prominent telecommunications operator, STC has expanded its services beyond traditional services to play a significant role in Kuwait's digital transformation. These contracts improve the country's connectivity and assist the government in achieving its broader digital goals, such as enabling the use of biometrics and AI technology across industries. As STC advances with digital vision, it contributes to the accomplishment of Vision 2035, reshaping Kuwait's future as a technologically sophisticated and secure nation.



New Zealand rules for trusted digital identity services

The New Zealand government has finalised its Digital Identity Services Trust Framework, kickstarting the country's push to roll out a suite of digital identity services. The framework establishes the rules and regulations that accredited digital identity services must follow, including ensuring privacy and security. It aims to give people control over their information. Specific services expected to emerge include a digital driving licence, bank ID and trade certification. Services will be accessed using "accredited digital identity wallets and apps", with the information they contain protected through encryption technology. Consent is a key aspect of the framework and service providers must obtain the user's permission before sharing personal information.

e-Government in the Balkans is a work in progress

A new BIRN report says a lack of funds and political will means that e-government services and open data provision in the Balkans remain limited. e-Government is becoming the norm around the world, but people in the Balkans are not benefitting in full because of a lack of political will in some cases and a shortfall in institutional capacity in general, a new report on open data and digitalisation published by the Balkan Investigative Reporting Network (BIRN) shows. In the Balkans, however, the roll-out has only been partial and faces a range of challenges, according to BIRN's report, BIRN's report highlights how Balkan countries are performing badly in e-government development; the online offering of public services remains limited. In 2022, Serbia ranked 40th on the UN's E-Government Development Index, ahead of Albania, Montenegro and North Macedonia in 63rd, 71st and 80th place respectively. Bosnia and Herzegovina came in at 96. Kosovo was not listed. The governments of all six Western Balkan countries covered by the BIRN report have specialised e-government websites and all e-government portals analysed by BIRN are active and up to date; new services are created on a regular basis.



20th edition!
The most authoritative
directory in the industry

Presented by

**SUSTAINABLE
DEVELOPMENT**

2024 **Top** **50** Suppliers



ePassport technology

Digital identity technologies such as smart cards and biometrics are prevalent everywhere. National ID cards have undergone a huge transformation and it is forecast that the number of electronic National ID cards in circulation will top 4 billion citizens by 2024. More than 132 countries are now issuing electronic passports with 1 billion ePassports currently in circulation. Unlike conventional passports, the electronic passport has a

microprocessor which stores a digital version of the ID photo as well as all of the ID data found on the first page of the paper passport. For 20 years, our "Top 50 Suppliers of ePassport Technology" features the most active players in the ePassport and eID evolution, who are driving advancements in biometrically enabled, MRTDs and digital forms of identity and international travel.

- » **Manufacturing digital eIDs**
- » **Ensuring digital security**

Top 50 Suppliers

ePassport technology

Components						Equipment	IT Systems		Services		
Security Paper	IC Chips	Operating Systems	Inlays / Antennas	Cards / Passports	Prelaminates	Card Manufacturing	Data Capture and/or Personalization	Software / Applications	Readers/ Hardware	System Integrator	Value Added Reseller

3M	www.3m.com/security				✓		✓		✓	✓	
Access IS	www.access-is.com				✓	✓			✓		
ASK	www.ask-rfid.com			✓	✓				✓		
Atlantic Zeiser	www.atlanticzeiser.com				✓	✓	✓	✓		✓	
Austria Card	www.austriacard.at		✓		✓		✓	✓			
Bundesdruckerei/Veridos	www.veridos.com				✓	✓	✓	✓	✓	✓	
Cetis	www.cetis.si				✓			✓		✓	
Cognitec Systems	www.cognitec.com							✓			
Crossmatch	www.crossmatch.com							✓	✓	✓	
Cryptovision	www.cryptovision.com		✓		✓			✓		✓	
De La Rue	www.delarue.com	✓	✓	✓	✓	✓	✓			✓	✓
Dermalog	www.dermalog.de						✓	✓	✓		
Diletta	www.diletta.com				✓	✓	✓	✓	✓		
Entrust Datacard	www.entrustdatacard.com		✓				✓	✓			
Gemalto	www.gemalto.com		✓	✓	✓	✓	✓	✓	✓	✓	
GET Group	www.getgroup.com				✓		✓	✓	✓	✓	✓
HID Global	www.hidglobal.com				✓	✓	✓	✓	✓	✓	
IAI	www.iai.nl				✓		✓				
Idemia	www.idemia.com			✓	✓	✓	✓	✓		✓	
Industrial Innovation Group	www.industrialinnovationgroup.com	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Infineon Technologies	www.infineon.com		✓								
Integrale Solutions	www.integrale-solutions.com	✓		✓	✓		✓	✓	✓	✓	
Iris	www.iris.com.my		✓	✓	✓		✓	✓	✓	✓	✓
Ixla	www.ixla.it						✓	✓			
JDSU	www.jdsu.com	✓									
Kugler-Womako	www.kugler-womako.com								✓	✓	
Landqart	www.landqart.com				✓	✓					
Linxens	www.linxens.com		✓		✓	✓		✓	✓		
Lumidigm	www.lumidigm.com							✓	✓		
MaskTech	www.masktech.de			✓				✓	✓		
Melzer	www.melzergmbh.com				✓	✓	✓				
Monet+	www.monetplus.cz							✓	✓	✓	✓

Components						Equipment	IT Systems	Services			
Security Paper	IC Chips	Operating Systems	Inlays / Antennas	Cards / Passports	Prelaminates	Card Manufacturing	Data Capture and/or Personalization	Software / Applications	Readers/ Hardware	System Integrator	Value Added Reseller

Mühlbauer	www.muehlbauer.de						✓	✓	✓	✓	✓	
Multipolaris	www.multipolaris.hu	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓
Nadra	www.nadra.gov.pk				✓		✓	✓	✓		✓	✓
Nagra ID	www.nagraid.com		✓	✓	✓							
NBS Technologies	www.nbstech.com				✓		✓		✓			
NetSeT Global Solutions	www.netsetglobal.rs				✓			✓	✓	✓	✓	✓
NXP	www.nxp.com		✓	✓	✓							
Oasys	www.oasys.uk.com				✓		✓	✓				
On Track Innovations	www.otiglobal.com		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Optaglio	www.optaglio.cz	✓				✓						
Orell Füssli	www ofs.ch	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
Otto Künnecke	www.kuennecke.com							✓	✓	✓		
PAV Card	www.pav.de	✓			✓	✓	✓	✓				
ruhlamat	www.ruhlamat.com		✓		✓	✓	✓		✓			
Secunet	www.secunet.com				✓			✓	✓		✓	
Secure Tech Consultancy	www.securetech-consultancy.com			✓		✓		✓	✓	✓	✓	✓
Sicpa	www.sicpa.com	✓						✓	✓		✓	
Smart Packaging Solutions	www.s-p-s.com				✓		✓					
Speed Identity	www.speed-identity.com					✓		✓		✓		
Supercom	www.supercom.com		✓			✓		✓				
Suprema	www.supremainc.com					✓		✓		✓	✓	
Thales	www.thalesgroup.com					✓			✓		✓	
UL Transaction Security	www.ul-ts.com					✓		✓	✓	✓	✓	✓
Unisys	www.unisys.com			✓				✓	✓		✓	
Veridos	www.veridos.com	✓		✓	✓	✓	✓	✓	✓	✓	✓	
Vision-Box	www.vision-box.com		✓	✓		✓	✓		✓	✓	✓	
Vlatacom	www.vlatacom.com			✓		✓		✓	✓	✓	✓	

LEGEND

COMPONENTS

SP = Security Paper
 IC = IC Chips
 OS = Operating Systems
 INL = Inlays / Antennas
 CARDS = Cards / Passports
 PL = Prelaminates

EQUIPMENT

MF = Card Manufacturing
 PERS = Data Capture and/or Personalization

IT SYSTEMS

APP = Software / Applications
 HW = Readers / Hardware

SERVICES

SI = System Integrator
 VAR = Value Added Reseller

3M Security Systems Division

www.3M.com/security

CARDS, PERS, HW, SI

1545 Carling Ave., Suite 700, Ottawa, Ontario – Canada

Tel. +1 613 720 2070

Fax +1 613 720 2063

3M Security Systems, Identification & Authentication security solutions from one of the world's most trusted and innovative companies. Industry experience. Global reach. Ingenious technologies. Integrity. Credentials that have made 3M a leading provider of security solutions. Serving customers in over 200 nations, you not only get the personal attention of a local company, but also benefit from the strength of an experienced, reliable, global organization. 3M™ ePassport Readers, 3M™ Identity Document Issuance Systems, 3M™ Border Management Systems and 3M™ Confirm™ Laminates offer proven security.

Access IS

www.access-is.com

CARDS, MF, HW

18 Suttons Business Park, Reading, Berkshire, RG6 1AZ – UK

Tel. +44 7748 770 632

Fax +44 118 926 7281

Access IS designs and manufactures innovative e-Passports, e-IDs, and e-DLs readers for Governmental and Commercial applications. From the world's smallest OEM OCR reader to our compact desktop Full-Page passport reader, we have a broad range of scanners to answer all your needs (i.e.: Border control & Immigration, ID Document Issuance, Law Enforcement, Hotel Check-in, Banking and Retail, Gaming, KYC, etc.). All our products are designed to be fast, accurate and highly reliable to endure years of heavy duty frontline use.

ASK

www.ask-rfid.com

info@ask.fr

INL, CARDS, HW

2260 route des Crêtes, BP337, 06906 Sophia-Antipolis – France

Tel. +33 4 97 21 40 00

Fax +33 4 92 38 93 21

ASK, with over 200 million contactless products in circulation in 50 countries, including more than 15 million ePassport inlays, is a worldwide provider of a full range of contactless devices including smart cards, smart tickets, smart adhesive labels, readers and inlays for electronic passports, eID documents and contactless smart cards. The ASK e-Identity range includes SPiD eCovers for ePassports, and CoreLam, for eID inlays. ASK has been selected by major clients worldwide to provide e-identity inlays to several governmental bodies.

Atlantic Zeiser

www.atlanticzeiser.com

thorsten.tritschler@atlanticzeiser.com

CARDS, MF, PERS, APP, SI

Bogenstraße 6-8, 78576 Emmingen – Germany

Tel. +49 7465 291-0

Fax +49 7465 291 166

Atlantic Zeiser is a world-leader in industrial high-security identification, coding and personalization solutions, offering total system solutions to governments and industries such as security printing (passport and banknote production), commercial printing, plastic card, telecom, pharmaceutical, banking, packaging, labels and cosmetics. The company specializes in card personalization systems and digital & security printing solutions by printing sensible variable data onto various products to create product identity – whilst ensuring full data and process integrity. AZ supports its customers through 11 subsidiaries as well as distribution and support offices in some 50 countries.

Austria Card

www.austriacard.at

isales@austriacard.at

CARDS, OS, PERS, APP

Lamezanstrasse 4-8, 1230 Vienna – Austria

Tel. +43 1 610 65-0

Austria Card is a market leading and internationally operating company in the field of secure communications for payment, government and industrial applications. High standards, quality of life, innovation, and personal attention are the driving values of the company. Austria Card provides government authorities with national identity cards, driving licenses, digital tachograph cards, police identification, and passport data pages. The compliance with international standards shows that Austria Card meets the customers' demand for high levels of security: periodical audits of production processes and product quality as well as a continuous innovation process ensure that latest standards are met.

Bundesdruckerei/Veridos

www.bundesdruckerei.de
 info@bundesdruckerei.de
 info@veridos.com

CARDS, MF, PERS, APP, HW, SI

Oranienstraße 91, 10969 – Berlin

Tel. +49 30 2589984-0

Fax +49 30 2589984 39

A company formed between Bundesdruckerei and G&D, Veridos is the world's leading provider of integrated identity solutions. Governments, organizations, businesses, and regional authorities worldwide trust Veridos' uniquely comprehensive product portfolio. We support our customers with secure and reliable end-to-end identity solutions, expert guidance and future-proof technology.

Cetis

www.cetis.si
 info@cetis.si

CARDS, APP, SI

Copova 24, 3000 Celje – Slovenia

Tel. +386 3 4278 500

Fax +386 3 4278 817

With its smart ID management solutions Cetis offers competent partnership to governments and companies. Cetis answers the questions of HOW TO provide cutting edge identification documents and identity management solutions taking into account demands of customers. System integration accompanied by security printed matter is Cetis's turnkey service. We have patented solution for e-passport with polycarbonate data page and have a nationally awarded innovation – Nanotech intaglio lamination plates. Highest security standards are self-evident: ICAO/ISO, CWA 14641, FSCC (Facility Security Clearance Certificate), EMV & CQM.

Cognitec Systems

www.cognitec.com
 info@cognitec.com

APP

Grossenhainer Str. 101, D-01127 Dresden – Germany

Tel. +49 351 862 920

Fax +49 351 862 9210

Cognitec develops market-leading face recognition technology and applications for enterprise and government customers around the world. Various independent evaluation tests have proven the premier performance of the FaceVACS® software. Cognitec's portfolio includes products for facial database search, video screening and analytics, border control, ICAO compliant photo capturing and facial image quality assessment. Corporate headquarters are located in Dresden, Germany; other offices in Miami, FL; Rockland, MA; and Sydney, Australia.

Crossmatch

www.crossmatch.com
 sales@crossmatch.com

APP, HW, SI

3950 RCA Boulevard, Suite 5001, Palm Beach Gardens FL 33410 – USA

Tel. +1 561 622 1650

Fax +1 561 622 9938

Crossmatch, an HID company, helps organizations solve their identity management challenges with market-specific biometrics technologies. We empower governments, law enforcement agencies, banks, retailers and other enterprises to mitigate risk, drive productivity and improve service levels. Our solutions are built on consultative expertise, refined best practices and the application of advanced biometrics technologies. Crossmatch understands the forces of change in the markets we serve and we develop solutions that anticipate customer requirements. Our network of consultative and technical service experts collaborate with customers in more than 80 countries worldwide.

LEGEND**COMPONENTS**

SP = Security Paper
 IC = IC Chips
 OS = Operating Systems
 INL = Inlays/Antennas
 CARDS = Cards/Passports
 PL = Prelaminates

EQUIPMENT

MF = Card Manufacturing
 PERS = Data Capture and/or Personalization

IT SYSTEMS

APP = Software/Applications
 HW = Readers/Hardware

SERVICES

SI = System Integrator
 VAR = Value Added Reseller

Cryptovision

www.cryptovision.com
info@cryptovision.com

CARDS, OS, APP, SI

Munscheidstr. 14, 45886 Gelsenkirchen - Germany

Tel. +49 2 09 1 67 24 50

Fax +49 2 09 1 67 24 61

Cryptovision is a world-leading specialist for cryptography and electronic identity solutions. The Germany based company has been specializing in this field for 15 years, with hundreds of successful projects delivered. More than 100 million people worldwide make use of cryptovision products every day in such diverse sectors as defense, automotive, financial, government, retail and industry.

De La Rue

www.delarue.com
identity.systems@uk.delarue.com

SP, IC, OS, INL, CARDS, MF, PERS, SI, VAR

De La Rue House, Jays Close Viables, Basingstoke, Hants RG22 4BS – UK

Tel. +44 1256 605000

Fax +44 1256 605299

De La Rue's intelligent Government solutions, now part of HID, ensure the integrity of every individual's identity, today and tomorrow. A reliable and trusted partner of governments worldwide, De La Rue has implemented over 100 projects in 65 countries in the last 6 years alone, focusing on the provision of passport, ePassport, national ID, eID, driving license and voter registration schemes. A specialist identity systems integrator, we pride ourselves on the ability to deliver complete identity solutions with the highest possible levels of end-to-end security.

Dermalog

www.dermalog.de
info@dermolog.de

PERS, APP, HW

Mittelweg 120, 20148 Hamburg – Germany

Tel. +49 40 4132270

Fax +49 40 41322741



As the name - derived from the Greek terms "derma" (skin) and "logos" (mathematical logic) - suggests, Dermalog is active in the fields of biometric identification technologies. Dermalog's technology, based on more than 20 years of experience, is employed in border control, access control, civil and criminal AFIS (automatic fingerprint identification system), smart card and biometric logon applications. The company has its head office in Hamburg and a branch office in Kuala Lumpur, Malaysia, with further branches planned in the most important markets and continents.

Diletta

www.diletta.com
contact@diletta.com

CARDS, MF, PERS, APP, HW

Industriestrasse 25-27, D-64569 Nauheim – Germany

Tel. +49 6152 18040

Fax +49 6152 180422

For more than five decades DILETTA has been engaged in the development and production of identity products and security systems for governments and other national institutions. DILETTA offers complete systems for centralized and decentralized personalization of high security travel documents which support all safety criteria, contactless chip technology and machine readable features. With over 30,000 installations in more than 100 countries we have gathered an amazing expertise and ample experience.

Gemalto

www.gemalto.com
info@gemalto.com

IC, OS, INL, CARDS, MF, PERS, APP, HW, SI

6, rue de la Verrerie 92190 Meudon – France

Tel. +33 1 55 01 50 00

Gemalto, part of Thales, is a leader in digital security solutions and dedicated to making personal digital interactions more convenient, secure and enjoyable. The company provides end-to-end digital security solutions, from the development of software applications through design and production of secure personal devices such as smart cards, SIMs, ePassports, and tokens, to the management of deployment services for its customers. Gemalto has operations in about 100 countries and over 10,000 employees including 1,300 R&D engineers.

Entrust Datacard

www.entrustdatacard.com

MF, PERS, APP

1187 Park Pl, Shakopee, MN 55379 – USA

Tel. +1 952 933 1223

Entrust Datacard offers technologies that empower governments to enhance service levels while strengthening security, mitigating risk and controlling costs. Solutions range from citizen enrolment and document issuance to physical and digital credentials. The company provides identity-based solutions that streamline and safeguard access — to facilities, networks and the cloud — for employees and other authorized users. The scalability of our identity-based solutions allows enterprises to respond quickly to changing security needs.

HID Global

www.hidglobal.com

INL, CARDS, MF, PERS, APP, HW, SI

15370 Barranca Pkwy, Irvine, CA 92618 – USA

Tel. +1 949 732 2000

Fax +1 949 732 2120

HID Global is the trusted leader in products, services and solutions related to the creation, management, and use of secure identities for millions of customers worldwide. Recognized for robust quality and innovation, HID Global is the supplier of choice for OEMs, integrators, and developers serving a variety of markets that include physical access control; IT security, including strong authentication/credential management; card personalization; visitor management; government ID; and identification technologies for technologies for a range of applications.

IAI industrial systems

www.iai.nl

info@iai.nl

PERS

De Run 5406, 5504 DE Veldhoven – The Netherlands

Tel. +31 40 254 24 45

Fax +31 40 254 56 35

IAI designs, builds and supplies passport personalization equipment. Functionalities include chip encoding, laser engraving, inkjet printing and lamination, perforation of the passport number through the visa pages, perforation of the holder's photograph (ImagePerf) and the application of a label on the back cover. IAI offers high volume passport systems for centralised personalization (BookMaster One) and low volume systems for decentralised personalization (BookMaster Desk). The BookMaster One has recently been redesigned to offer a more flexible choice in configuration and speed.

Idemia

www.idemia.com

info@idemia.com

OS, INL, CARDS, PERS, APP, SI

Boulevard Lénine, BP 428 76805 Saint-Etienne-du-Rouvray – France

Tel. + 33 2 35 64 53 46

Idemia is a leader in trusted identities for an increasingly digital world placing the client, consumer or citizen at the heart of everything it does, combining security, convenience, the human factor and continuity within a single proposition. The company places augmented identity at the center of its actions and conceives security in a global way, upstream of technological developments, by factoring in the customer's environment and how they specially use technology.

LEGEND**COMPONENTS**

SP = Security Paper
 IC = IC Chips
 OS = Operating Systems
 INL = Inlays/Antennas
 CARDS = Cards/Passports
 PL = Prelaminates

EQUIPMENT

MF = Card Manufacturing
 PERS = Data Capture and/or Personalization

IT SYSTEMS

APP = Software/Applications
 HW = Readers/Hardware

SERVICES

SI = System Integrator
 VAR = Value Added Reseller

Infineon Technologies

www.infineon.com/chip-card-and-security
SiliconIdentity@infineon.com

IC

Am Campeon 1-12, 85579 Neubiberg – Germany

Tel. +49 800 951 951951

Infineon Technologies AG offers the industry's most comprehensive product portfolio of semiconductor-based security products for a wide range of chip card and security applications including electronic ID documents, mobile payment and system security. With more than 25 years experience in security ICs and core competences in the fields of security, contactless communication as well as integrated microcontroller solutions (embedded control), Infineon is helping to augment data security in an increasingly connected world.

Industrial Innovation Group

www.industrialinnovationgroup.com

IC, OS, INL, CARDS, PL, MF, PERS, APP, HW, SI, VAR

Taryam bld., Industrial Area 18, Maleha Street, Sharjah PO Box 123428 – UAE Tel. +971 65 57 07 2



IIG offers advanced authentication and security technology platform offerings including IDs, cards and secure documents. Other solutions range from on-package authentication measures to a new generation system to help governments to track supply chains. Products and technologies include RFID, holograms, biometrics, security printing, software, taggants and track & trace solutions for the government and public sector, as well as manufacturing and retail.

Iris

www.iris.com.my

IC, OS, INL, CARDS, MF, PERS, APP, HW, SI, VAR

Smart Tech. Complex, Tech. Park, Bukit Jalil, 57000 Kuala Lumpur – Malaysia Tel. +603 89960788

Fax +603 89960441

Founded in 1994, IRIS the inventor of the world's first ePassport and multi-application smart card, has more than 20 years of experience as a technology innovator and leading provider of secure electronic identification documents for all trusted identity solutions. Recognized for excellence in ID technology, IRIS understands the importance of secure authentication, authorization concerns and standardization to the nation.

Ixla

www.ixla.it
renzo.eterno@ixla.it

PERS, APP

Via Ponte Chiusella 28, 10090 Romano C.se (Torino) – Italy

Tel. +39 0125 719286

Fax +39 0125 718455



IXLA has been the first vendor to release a real desktop laser system for e-Passports, compact and effective. The product range has grown, adding the new XJ laser and inkjet to the laser-only field proven XP's, all with automatic feeder. Thanks to the uncompromised dedication to product quality, constant innovation and competence, IXLA is still the leading brand in desktop solutions for laser personalization of passports and cards, reaching soon the mark of 3,000 delivered units.

Jdsu

www.jdsu.com

SP

2 Applegate Drive, Robbinsville, NJ 08691 – USA

Tel. +1 609 632 0800

Fax +1 609 632 0850

Jdsu's Authentication Solutions group, now including ABNH, offers a market-leading set of overt and covert security solutions for authentication and brand protection, including counterfeiting protection of identity documents. The company's unique color-shifting technologies, such as OVP, SecureShift, MetaSwitch and Phantom, along with its Charms microstructured taggants, can be provided as integrated solutions, including printing on a variety of substrates for labels and packaging. And with the addition of ABNH, options now include holographic hot stamp foil, HoloMag, demetalized holographic laminates, and tamper-apparent holographic labels. Jdsu provides custom solutions for customer-specific authentication needs.

Linxens

www.linxens.com

MF, IC, INL, PERS, APP

6 Rue Marius AUFAN, 92300 Levallois Perret – France

Tel. +33 1 41343450

Fax +331 47576492

Linxens is a world-class provider of component-based solutions for the security & identity market. We design and manufacture Microconnectors and RFID Antennas and Inlays. With 8 production facilities in Asia, Europe and North America, 4 R&D Centers, and over 3000 employees, Linxens makes its large-scale production capacity available to its customers, and delivers guaranteed product and technical reliability. Linxens technology gives users the best connection possible. Linxens crafting the future of connections.

MaskTech

www.masktech.de

OS, PERS, APP

Masktech GmbH, Nordostpark 16, 90411 Nuernberg – Germany

Tel. +49 9119 551490

Fax +49 9119 551497



MaskTech is the leading independent provider of high security multi-application operating systems and customized Flash/ROM masked products for electronic identification applications. Our core product - MaskTech Chip Operating System (MTCOS) - is a high performance OS, especially designed for secure semiconductors with powerful crypto co-processor and RFID, dual interface or contact interface. MTCOS is available and certified Common Criteria EAL4+ on a unique variety of microcontrollers of different silicon vendors. MTCOS is a fully open standard compliant (ISO/IEC) multi-application system, used in over 60 countries' travel, ID documents and authentication solutions.

Melzer Maschinenbau

www.melzergmbh.com

sales@melzergmbh.com

MF, INL, CARDS

Ruhrstr. 51-55, Schwelm, 58332 – Germany

Tel. +49 2336 929280

Fax +49 2336 929285



Melzer is internationally well-known as the leading production equipment supplier for trendsetting ID documents, Smart Cards, DIF Cards, RFID Inlays and e-Covers for Passports. Customized solutions in combination with the unique modular inline production processes ensure highest productivity, flexibility and security at a maximum yield and lowest per unit costs. Numerous governmental institutions rely on reliable solutions created by Melzer. The Melzer product portfolio also includes advanced RFID converting equipment for the production of smart labels/tickets and luggage tags.

Mühlbauer

www.muehlbauer.de

info@muehlbauer.de

MF, PERS, APP, HW, SI

Josef-Mühlbauer-Platz 1, 93426 Roding – Germany

Tel. +49 9461 952 0

Fax +49 9461 952 1101

For over 30 years the Mühlbauer Group has been a reliable turnkey solution partner for private companies and the public sector in the areas of plastic- and chip cards, passports and various RFID applications around the world. The primary reason: our thinking and execution of a solution goes far beyond the ability of other suppliers. Especially for Government projects with applications such as ID cards, passports or driver's licenses we provide our clients an enormous array of options which save valuable time and resources.

LEGEND**COMPONENTS**

SP = Security Paper
 IC = IC Chips
 OS = Operating Systems
 INL = Inlays/Antennas
 CARDS = Cards/Passports
 PL = Prelaminates

EQUIPMENT

MF = Card Manufacturing
 PERS = Data Capture and/or Personalization

IT SYSTEMS

APP = Software/Applications
 HW = Readers/Hardware

SERVICES

SI = System Integrator
 VAR = Value Added Reseller

Nadra

www.nadra.gov.pk
abdul.baqi@nadra.gov.pk

CARDS, MF, PERS, APP, SI, VAR

Shahrah-i-Jamhuriat, G-5/2, Islamabad 4400 – Pakistan

Tel. +92 90392597

Fax +92 9108143

NADRA is one of the leading organizations in providing cutting edge technology in system integration and ID solutions in Pakistan. NADRA has one of the largest centralized databases of the world and offers ID solutions and services which keep secure national, social and cultural factors in mind to provide customized solutions for any country. The multiple product & service based applications include issuance of Citizen Registration Cards, Chip based Smart ID Cards, Travel Documents, Biometric based Border Control System, Motor Vehicle Registration System, e-Toll Collection System, Online Verification System, Biometric Verification System, Personnel & Access Control System and e-Commerce platform.

Nagra ID

www.nagraid.com

IC, OS, INL, CARDS

Crêt-du-Loche 10, 2301 La Chaux-de-Fonds – Switzerland

Tel. +41 32 924 04 04

NagraID (Switzerland), expert advisor and technology provider for the digital & ID security industry, offers tailor made products like secure smartcards, Display Cards, inlays, prelamines, e-Covers with gold printing and security features, etc with value-added services and transfer technologies for citizens ID's, corporate ID's, financial and e-Consumers ID's markets. NagraID's advanced technologies and product families are the results of 35 years of experience in micro-electronic product development, crowned by Swiss high precision, quality methodologies and heritage. NagraID's products are Certified ISO 9001:2008 & Security environment according to EMV and CCEAL5+. Established in 1976, NagraID joined the Kudelski Group in 2001.

NBS Technologies

www.nbstech.com
info@nbstech.com

CARDS, MF, PERS, HW

703 Evans Avenue, Suite 402, Toronto M9C 5E9 – Canada

Tel. +1 416 621 1911

Fax +1 416 621 8875

NBS Technologies has remained a leading developer and provider of equipment for card personalization, EMV compliance/migration, smart card manufacturing and semiconductor handling equipment. Governments are clearly the most sensitive and aware of security and access control issues – National Security has never been more important. At NBS, we can deliver card personalization and card printing systems to governments that meet the needs of virtually any specific application. In either an instant, on-the-spot issuance scenario, remote/distributed/branch issuance or via a centralized card production facility, NBS has the solution that fits.

NetSeT Global Solutions

www.netsetglobal.rs
office@netsetglobal.rs

CARDS, PERS, APP, HW, SI, VAR

Osogovska 10, 11030 Belgrade – Serbia

Tel. +381 11 3058612

Fax +381 11 2547492

NetSeT Global Solutions is a trusted solution provider and system integrator for complex, national level projects - eID, eHealth, eDL/VL and ICAO ePassport. With more than 15 years of experience and 12 national projects worldwide, NetSeT is the leading eID/ePass company in SEE region. Flagship products and services: Central Identity Management System, CAMS, Enrolment, Perso Data Management, Smart Logistics, Secure National Registers, eGovernment PKI, EAC PKI, eID and PKI Applets, Secure Middleware, Strong Authentication and Encryption, Border Control, Entry/Exit Management System.

NXP

www.nxp.com

IC, OS, INL

Mikron-Weg 1, A-8101 Gratkorn – Austria

Tel. +43 3124 2990

Fax +43 3124 299330

With 2 billion chips sold to date, NXP Semiconductors is the world's leader in the design and manufacturing of contactless chips used in smart cards, smart labels and tags as well as in automotive systems and the corresponding reader components. NXP has been awarded over 80% of all ePassport projects globally, including the US, France, Germany and Singapore. Furthermore NXP is supplying its technology for major national ID, health card and driving license projects.

Oasys Technologies

www.oasys.uk.com
sales@oasys.uk.com

CARDS, MF, PERS

3 Stratton Bus. Park, Montgomery Way, Biggleswade, UK, SG18 8UB

Tel. +44 (0)1767 600232

Passports and ID Card production lines now form the basis of the latest range of high quality production equipment from Oasys Technologies. On passports and ID Cards, Oasys now has an established track record on machinery to produce the full E-Data Page product covering the key steps of collation, lamination and guillotining/punching operations.

On Track Innovations

www.otiglobal.com

IC, OS, INL, CARDS, MF, PERS, APP, HW, SI, VAR

ZHR Industrial Zone, P.O. Box 32, 12000 Rosh Pina – Israel

Tel. +972 4 686 8000

Fax +972 4 693 8887

Since 1990, OTI provides secure contactless smartcard technology for a wide variety of markets. OTI's offerings include products/solutions for ePassports, national IDs, electronic payments, petroleum payments, medical, and automatic parking and ticketing systems. OTI provides an end-to-end turnkey, interoperable, ICAO/ISO compliant solution for national ID/ePassports, driving/vehicle licenses, voter registration programs, ranging widely from data enrollment through population registry, biometric screening, and documents production, to eVisa and border control applications, including security printing, raw materials, smart inlays/covers/stickers, chips, operating system, readers and personalization systems.

Optaglio

www.optaglio.cz
jan.bitman@optaglio.cz

SP, CARDS

Rež 199, 250 68 Husinec-Rež – Czech Republic

Tel. +420 220 941 075

Fax +420 220 941 077

Optaglio helps governments tackle identity theft and illegal migration by delivering authentication solutions of the highest standards. We develop and innovate our protective solutions for both national and international ID documents in order to keep ahead of counterfeiters. Optaglio delivers advanced security for multilayer polycarbonate documents. The top solution for ID protection - OVMesh™ presents a superior alternative to hot stamping foils with high refractive index in terms of tamper resistance and design versatility and the ease of application.

Orell Füssli Security Printing

www ofs.ch
info@ofs.ch

SP, IC, OS, INL, CARDS, PL, PERS, APP, HW, SI, VAR

Dietzingerstrasse 3, CH-8036 Zürich – Switzerland

Tel. +41 44 466 77 11

Fax +41 44 466 79 01

Founded in 1519, Orell Füssli Security Printing is a leading provider of security technology, products and solutions for identification documents and systems, banknotes, and secure documents. Nowadays, travel documents must meet toughest security standards, and the development, production and issuing of passports, visa and other identification documents has become a complex and demanding task. Since we know how to meet these standards in a customized way, we are the ideal partner for such projects.

LEGEND**COMPONENTS**

SP = Security Paper
IC = IC Chips
OS = Operating Systems
INL = Inlays/Antennas
CARDS = Cards/Passports
PL = Prelaminates

EQUIPMENT

MF = Card Manufacturing
PERS = Data Capture and/or Personalization

IT SYSTEMS

APP = Software/Applications
HW = Readers/Hardware

SERVICES

SI = System Integrator
VAR = Value Added Reseller

Otto Künnecke

www.kuennecke.com
contact@kuennecke.com

PERS, APP, HW

Bülte 1, 37603 Holzminden – Germany

Tel. +49 5531 9300 0

Fax +49 5531 9300 903

Otto Kuennecke has set a mark with handling of ID projects. In 2014, Otto Kuennecke received the ICMA "Elan Award" for the most innovative machine in the business – the DCS, a high-end storage and commissioning system for ID documents for just in time mailing management. With machine solutions by Otto Kuennecke, ID documents can be verified, sorted and packed in different kinds of packages – banderoles, post boxes, secure envelopes etc. Otto Kuennecke creates the right solution for your special requirements.

PAV Card

www.pav.de
timm@pav.de

INL, CARDS, MF, PERS, SP

Hamburger Strasse 6, 22952 Luetjensee – Germany

Tel. +49 41 54 7 99 0

Fax +49 41 54 7 99 151



PAV is a well-established company with a rich tradition and employs about 250 staff members. Our epassport inlays made from polycarbonate or synthetic paper are suited for further processing in every standard passport production. The inlay from PAV can be integrated smoothly into the cover or the data page of the passport. The RFID technology makes it possible to read-out the data wireless. Today we serve several countries with their ePassport inlays and eID cards.

ruhlamat GmbH

www.ruhlamat.com

IC, INL, CARDS, MF, PERS, HW

Sonnenacker 2, 99834 Gerstungen – Germany

Tel. +49 36925 9290

Fax +49 36925 929111



ruhlamat is an innovative engineering and machine building company with its headquarters located in Germany. Activities are focused on smart card and passport personalization, module preparation as well as RFID Inlay production and special machinery. ruhlamat branches and representations throughout the world create an ideal basis for a professional and area-spanning service network.

Secunet

www.secunet.com

CARDS, PERS, APP, SI

Kronprinzenstrasse 30, 45128 Essen – Germany

Tel. +49 201 54 54-1234

Fax +49 201 54 54-1321

Secunet Security Networks offers solutions and know-how for the complete life cycle of electronic passports, identity documents, residence permits, and visas. secunet experts support public authorities, organisations in the industrial sector and system integrators in their projects concerning biometrics and eIDs. The Federal Government of Germany as well as many other European countries trust in our expertise as a pioneer and reliable partner.

Secure Tech Consultancy

www.securetech-consultancy.com
info@securetech-consultancy.com

CARDS, PERS, APP, SI, VAR, HW, OS

Software Technology Park, Sector I-9/3, Industrial Area, Islamabad – Pakistan

Tel. +92 51 111 111 782

Fax +92 51 443 6480

Secure Tech Consultancy is the perfect partner for both public & private sector organizations seeking success in planning and implementing IT Solutions. Our expertise covers implementing ID cards, e-Passports, border control, data integration, biometric technologies, RFID systems, access Control, Office Automation and e-Governance projects. We are experienced in enrolment & integration of iris, facial and fingerprint identification. Our success stems from many successful on ground implementations.

Providing secure and high added value components for card and travel document manufacturers



IN Groupe with its secure components brands SPS and SURYS provide secure and high added value components for card and travel document manufacturers.

SPS brand is specialized in the design, manufacturing and sale of contactless solutions dedicated to ID cards, e-passport and dual interface banking cards. Developed and manufactured in Rousset, France, with a subsidiary in Singapore, SPS solutions are specialized in contactless and dual-interface products, with a recognized micro packaging expertise. SPS has delivered several million epassport inlays and ecovers to every continent based on its unique ebooster technology. The Teslin based inlay uses an inductive coupling technology, where there is no physical connection between the antenna and the chip, and a copper wire antenna, offering a highly reliable and cost effective solution to passport manufacturers. SPS completes its offer with Polycarbonate data pages, from finished data page to hinge inlay and electronic components. SPS' technology is designed to accept all chip

and OS suppliers on the market. Global leader in optical security solutions, French leader on the document security and traceability market and pioneer in optical-digital authentication, SURYS brand offers an innovative range of optical and digital authentication and traceability solutions on the Identity, Vehicles, Fiduciary and secure traceability markets. With multiple references in these fields, SURYS is an internationally recognized brand for its leadership in a highly innovative technological sector in over 130 countries.



SPS

85 avenue de la Plaine
ZI de Rousset-Peynier
13790 Rousset – France
Tel. +33 442538830
Fax +33 442538448
www.s-p-s.com
contact@s-p-s.com

SICPA

www.sicpa.com

SP, PERS, APP, SI

Av de Florissant 41, 1008 Prilly – Switzerland

Tel +41 21 627 55 55

Fax +41 21 627 57 27

Sicpa is a provider of security inks and integrated security solutions that protect most of the world's banknotes, as well as the security documents of over 100 countries, including passports, visas, ID documents and access cards. We are the trusted partner of governments, central banks and security printers, providing cutting-edge technologies to address specific needs in the domain of document security.

LEGEND

COMPONENTS

SP = Security Paper
IC = IC Chips
OS = Operating Systems
INL = Inlays/Antennas
CARDS = Cards/Passports
PL = Prelaminates

EQUIPMENT

MF = Card Manufacturing
PERS = Data Capture and/or Personalization

IT SYSTEMS

APP = Software/Applications
HW = Readers/Hardware

SERVICES

SI = System Integrator
VAR = Value Added Reseller

Speed Identity

www.speed-identity.com
info@speed-identity.com

CARDS, PERS, APP, HW, SI

Slakthusgatan 9, SE-121 62 Johanneshov – Sweden

Tel. +46 8 702 33 50

Speed Identity is a leading global provider of high performance biometric enrollment and data capture solutions. The company pioneered live biometric enrollment in the early 2000. To date we have successfully delivered thousands of systems to more than 120 countries worldwide. Our customers include government departments and agencies such as ministries of foreign affairs, ministries of interior, law enforcement agencies, tax agencies, road authorities and immigration agencies. a leading global provider of high performance biometric enrollment and data capture solutions.

Supercom

www.supercom.com

IC, CARDS, PERS, HW, SI

1 Arie Shenkar Street, Herzliya 4672501 – Israel

Tel. +972 9 889 0880

Fax +972 9 889 08143

SuperCom is a global leading provider of traditional and digital identity solutions, providing advanced safety, identification, and security products and solutions to governments as well as private and public organizations around the world. SuperCom has been inspiring governments and national agencies, to design and issue secured multi-ID documents and robust digital identity solutions to its citizen and visitors, using SuperCom e-government platforms and innovative solutions.

Suprema

www.supremainc.com

CARDS, PERS, HW, SI

16F Parkview Office Tower, Jeongja-dong, Gyeonggi, 463-863 – Korea

Tel. +82-31-783-4502

Fax +82-31-783-4503

Suprema is a leading global provider of biometrics technology and identity management solutions. The company's range of products includes fingerprint modules, biometric access control systems, e-passport readers and live-scanners. Suprema's solutions are featured by integration of the excellent embedded system design capability and the strong backgrounds in theories and algorithms backed by a number of experts having the rich experience and extensive knowledge in the field of biometric solutions, embedded system design and signal processing.

Thales

www.thalesgroup.com/security

CARDS, APP, SI

45 rue de Villiers, 92526 Neuilly-sur-Seine Cedex – France

Tel. +33 1 57 77 80 00

Fax +33 1 73 32 20 22

Thales is one of Europe's leading players in the security market. Identity management systems play a major role in a country's economic and social development. They help simplify relationships between administrations and the citizens they serve, providing easier access to elections, job vacancies and social services. Thales produces identity documents and operational control systems in over 25 countries. More than 250 million secure identity documents have been generated by Thales - a long-standing supplier of identity systems, biometric systems and secure documents both in France and around the world.

UL Transaction Security

www.ul-ts.com

CARDS, PERS, APP, HW, SI, VAR

Delta 1A, Building L'Aimant, IJsseloord 2, 6825 ML Arnhem - The Netherlands

Tel. +31.26.376.4800

Fax +31 26 376 4840

UL Transaction Security is the world's number one knowledge center in secure transaction technology. UL's Transaction Security service line is a result of the consolidation of Collis, RFI Smart and Witham Laboratories. Our international team of expert consultants and product developers work with you to ensure compliance, interoperability and security for your chip-based products and systems.

Unisys

www.unisys.com

OS, PERS, APP, SI

801 Lakeview Drive, Ste 100, Blue Bell, Pennsylvania 19422 – USA

Tel. +1 215-986-4011

Unisys is global biometrics, identity management and smartcard solution integrator. The company provides a holistic approach to people identity that combines technology, management, business process and operational expertise to deliver higher levels of identity assurance. It helps improve border security by establishing systems for positive identification with biometrics for visa/passport issuance, and entry/exit management in a country.

Veridos

www.veridos.com

SP, OS, INL, CARDS, MF, PERS, APP, HW, SI

Truderinger Str. 15, Munich 81677 – Germany

Tel. + 49 3020095 5480

Veridos creates secure and pioneering identification solutions for the international market. As a joint venture of Giesecke & Devrient and Bundesdruckerei, Veridos pools the specialist expertise, the many years of experience and the innovative power of the 4 largest German providers for high security technologies.

Vision-Box

www.vision-box.com

IC, OS, CARDS, PL, PERS, APP, HW, SI

R. Casal do Canas n.2, Zona Ind. de Alfragide, 2790-204 Carnaxide – Portugal Tel. +351 21 154 9000 Fax +351 21 154 3901

Vision-Box develops, manufactures and deploys mission critical security systems which integrate biometric technologies. The new VBePASS is the latest achievement in Vision-Box's product portfolio, an ICAO compliant live biometric enrolment kiosk which automatically adjusts height and light intensity for ideal capture conditions of face, fingerprints and signature. VBePass systems have been deployed and installed worldwide as a front end for ePassports, national identity cards and visa programs.

Vlatacom Institute

www.vlatacom.com

info@vlatacom.com

CARDS, PERS, APP, SI

5 Milutina Milankovica, 11070 Belgrade – Serbia

Tel. +381 11 377-11-00

Fax +381 11 377-11-99



Vlatacom Institute provides end-to-end solutions for issuing of highly secure biometrics: e-ID cards, e-Passports, e-Driving Licenses, Officer-ID cards, etc. With more than 20 years of experience in encryption, software engineering, electronics, telecommunications, system design, system integration and maintenance, Vlatacom delivers its solutions for e-Governance and border management to Governments worldwide. High-end security, improved performance and rapid facilitation of citizens/passengers are achieved using encryption and multimodal biometrics that enable the strong authentication of officers, citizens and documents in the system.

LEGEND**COMPONENTS**

SP = Security Paper
 IC = IC Chips
 OS = Operating Systems
 INL = Inlays/Antennas
 CARDS = Cards/Passports
 PL = Prelaminates

EQUIPMENT

MF = Card Manufacturing
 PERS = Data Capture and/or Personalization

IT SYSTEMS

APP = Software/Applications
 HW = Readers/Hardware

SERVICES

SI = System Integrator
 VAR = Value Added Reseller

Publisher
Roberto Dell'Acqua

Chief Editor
Tim Cockerell

Editorial Staff
Victor March, Gaia Steden
idpublications@onpublishing.com

John Matthews, Andrew Fielding

Advertising
Karina May
sd@onpublishing.com

© 2024 Wise Media AG
Issue: December 2024

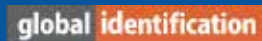
Wise Media AG
Bahnhofstrasse 104
8001 Zurich,
Switzerland, CHE – 159-363.931



www.sustainabledevelopmentmagazine.com



www.id-world-magazine.com



www.global-identification.com



www.onboard-technology.com

All rights reserved. This publication or any part of it may not be reproduced or transmitted in any form or by any means, electronic or mechanical including by photocopy, recording or information storage and retrieval systems without the written consent of the publisher. No material sent to the editorial office, whether published or not, will be returned. © 2024 Wise Media AG

People and organizations featured in this issue

Page Name	Page Name	Page Name
2 SMT	8 G20 Summit	4 Melzer
30 BIRN	18 GCH	13 Microsoft
24 Boston Consulting	4 Gemina	10, 48 Neucir
16 Carnival Cruises	23 Google	6 Nium
8 Cop29	6 HID	23 Samsung
12 Electronica	6 Idemia	6 Sita
29 Entrust	14 IEA	12 SMTconnect
13 ERBD	7 Inisa	7 Thales
30 EU-Lac	30 ISO	23 Uber
7 European Commission	2, 6 Ixla	26 UN
13 FTI Consulting	6 Mastercard	20 Verizon



ID WORLD BUYER'S GUIDE – a well of information from 25 years of IDW Directories
Book your space today in the celebratory 25th Anniversary edition:
idpublications@onpublishing.com

Sustainable Development is proud to present the world's leading reference on auto ID technology solutions and component suppliers, bringing together a comprehensive review of players in the fields of Cards, Biometrics, RFID and Big Data. Drill deeper into essential information about who supplies which products in relation to the key auto ID technologies, which role each company plays in the value chain, as well as product specifications and categories. ID WORLD connects our industry. Key players provide us with their direct input for distribution to the community.

Vertical directories published throughout the year



Top Suppliers - Access Control Technologies

Systems, components and total solution providers in the production and deployment of projects in physical and logical access control. Reach key decision makers at end-user level as well as system integrators in safety and the wider security systems industry.



Top Suppliers - ePassport Technologies

Players involved in the production and deployment of ePassport and eID projects. Reach key decision makers at government level and potential industry partners interested in the digital wave of personal ID.



Top Suppliers - Anti-counterfeiting and Product Security Technologies

Component and solution providers in the field of anti-counterfeiting and product security technologies active in the fields of advanced solutions for instantly validating product authenticity.



Top Suppliers - Mobile Authentication Technologies

Key players involved in the deployment of mobile authentication projects focusing on vertical market segments of advanced biometrics authentication, innovative applications for mobile transactions, NFC and credentialing via mobile.



Top Suppliers - Animal Identification Technologies

Component and solution providers in the field of animal identification active in the fields of advanced technologies for livestock tracking, pet identification and the monitoring of marine and endangered species.

Request your copy or update your profile at idpublications@onpublishing.com

GEMINA INTERNATIONAL

ECO-SMART LIVING

Sustainability in the digital era



FROM SMARTER BUILDINGS TO INTELLIGENT CITIES

www.gemina.com

Gemina stands for innovative development and modernization aimed at empowering urban lifestyles, with data and intelligence utilized to reduce the environmental impact. The relentless rise in population and urbanization levels urge communities worldwide to embrace the smart city vision and adopt environment-friendly construction concepts. Today, citizens, businesses and communities can embrace digitization and contain dangerous man-made climate change. Gemina designs and builds to address the main requirements of sustainable urban development, with a focus on all the beneficiaries of future urban living: city dwellers, property owners and the environment.

Gemina: sustainable urban development meets intelligent construction



World-class expertise joins courage and creativity: let us make the circular economy viable, starting with our willingness to share. We believe in sustainable growth and in living well on this planet.

Nuecir. Innovating from growth to greenfield.



nuecir.com