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April 2016

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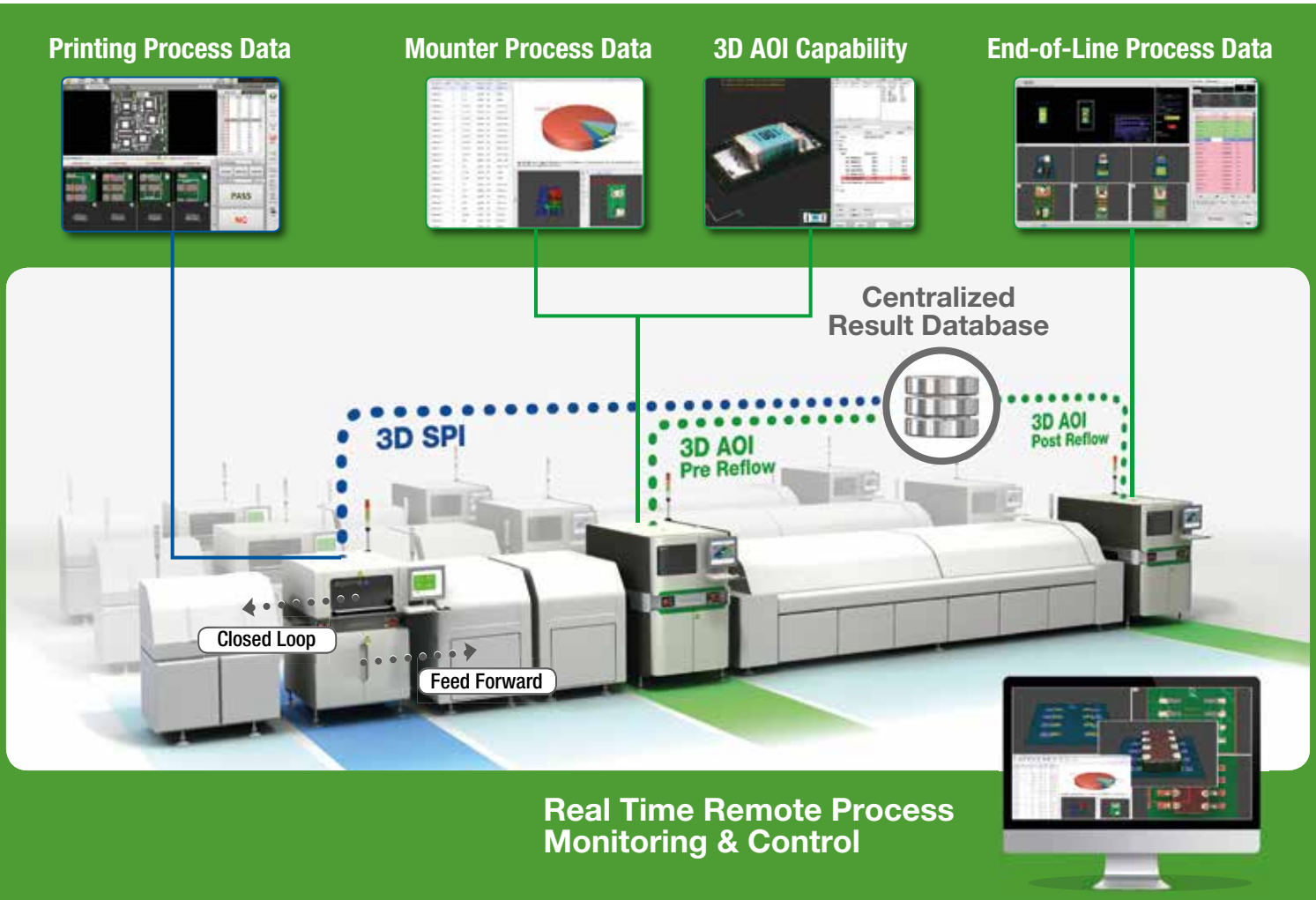

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EU adoption of harmonized rules combined with developments in electronic tagging has made it easier for citizens and their pets to enjoy freedom of movement within the Union.

Similarly the identification and tracking of livestock are governed by a system of permanent identification of individual animals enabling reliable traceability from birth to death. While current rules maintain checks on management, supervision and traceability for animal and public health reasons, legislation continues to evolve alongside technology. In fact, to enhance food safety and better safeguard animal health in the EU, as from 2019 the bovine animals will need to be identified using two means of the identifications: conventional ear tag and an electronic identifier.

This said, when it comes to animals, whatever it is we think is right cannot as of yet be translated in a holistic framework of directives working in the interest of both nature and our dominant species alike. Even in today's economy, animals remain what they represented to us historically: a prime resource that sustains and uplifts humanity to superior levels of wellbeing and wealth. We still feed on them and they can represent a financially important asset according to their pedigree and physical shape. Animals contribute to our GDP, no matter how much we like them or how we treat them. Paradoxically, they can be a threat to our life or a vector of illness while still representing a valuable element in the ecosystem. We recognize that some of them can be our best companions, entitled to live together with us in our houses and sporadically even to inherit them. But in other cases, even though belonging to the same species of some of our pets, they are just a forgotten number in a countless herd of irrelevant individuals destined to be raised for the sole purpose of being transformed. With estimated standing populations of 1.42 cattle, 1.85 billion sheep and goats, 1 billion pigs and 19.5 billion chickens, the global livestock population counts for about as many individuals as today's population of homo sapiens sapiens, with a 24% increase reported over the last 30 years.

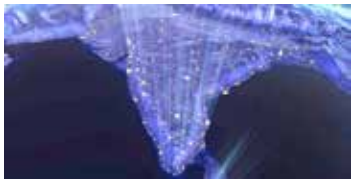
From a technology standpoint, over the last decades animal identification progressively went digital, at the speed of many other processes leveraging speed and automation offered by auto ID systems. This implies the use of various technologies spanning across almost the entire auto ID spectrum, with the exception perhaps of cards (unless we decide to accept eartags as the ergonomic replacement of this preferred form factor for those having no opposable thumb). Animal ID systems perform similar track and trace functions, whatever biometrics, contactless or barcode-based technology is used, and whatever animal is observed. Standards have been developed and legislation has been issued to mandate their implementation systematically across entire segments of the animal population in many countries.

As far as companion animals are concerned, pets are progressively recognized as members of society and identified to monitor issuance of the appropriate healthcare services and secure reconnection to owners considered in charge of their wellbeing as family members. All this happens while huge segments of the world's human population still expect to be uplifted from being totally underprivileged and unknown to their governments. Hundreds of millions of people still live and die without leaving a trace and without having any means to assert their rights. This is being addressed and great strides are being made as we speak in changing society for the better. Universal societal inclusion was seen as utopic not long ago. In today's digital society it is a vision. Tomorrow it well may be our reality.

Sophie Boyer de la Giroday

Sophie B. de la Giroday

Government urges Microsoft on digital connectivity in India



In order to provide digital connectivity across the country, including in inaccessible areas like North-East and Himalayan region, the Indian Government has asked Microsoft to provide technology that can be used to connect such areas where fibre or cable could not reach, according to news reports. Microsoft is running a pilot project in Andhra Pradesh using the white space technology to deliver broadband. The company stated they have installed cloud computing facilities in India, including data centers at three places and have requested that the government should also be open to use their cloud platform. In other reports the Government said that India is under stress of terrorism and extremism and therefore cyber security remains highly important and Microsoft must ensure that data stored in their centers is completely safe and secure.

Digital services to combat tax evasion in Greek region

According to the Global Government Forum, the Greek region of Attica-Athens is introducing new digital services to tackle tax evasion and corruption, with the aim of comparing data on citizens' assets and purchases to their declared income. As of this year, the region's taxpayers will be required to submit tax returns using a 56-page electronic form requesting data on movable and immovable assets as well as income. A prelude to the forthcoming Digital Assets Registry, the new database will gather financial information on taxpayers, enabling the administration to check whether – for example – an expensive car has been bought using banking services or via other methods. The aim is to help officials to better target tax evasion investigations.

Gemalto and Worldline join for speedy mobile payment deployment

European payment and transactional services provider, Worldline and digital security company, Gemalto, are working together to enable seamless onboarding of banks and card issuers to mobile payment wallets provided by device manufacturers. With this agreement, the two companies will be able to offer banks an end-to-end ready-to-use and customizable service for quick time-to-market, flexibility and control of their customers' data. Worldline will provide tokenization, a key element of mobile payments which transforms a physical card into a digital token, while Gemalto will ensure the highly secured credential delivery services to embed these tokens into smartphone mobile wallets Worldline will also provide additional identity verification and other issuing-related services.

Changi airport chooses Morpho for facial recognition

Morpho (Safran) has signed a contract with Changi Airport in Singapore to supply a solution to facilitate the passenger journey using facial recognition. This biometric control system involving self-bag drop, integrated border clearance and self-boarding gates will increase the airport's operating efficiency and improve passenger travel experience. The solution is based on automated gates to support the airport's Fast and Seamless Travel (FAST) concept for Terminal 4 which will open in 2017. MorphoPass manages the different stages in a passenger's journey through an airport, based on biometric identification, to offer enhanced service quality all the way to boarding. The solution makes checkpoints faster and less intrusive for travelers at bag drop, airside access and passport control, as well as boarding control point. The system comprises a central system that manages the passenger identification (Applicant Management) through the various identity checks needed for authentication and identification of the passenger.

European Telcos join forces to combat cyber crime

AETIS – The Global Association for Telecommunications has joined forces with Proximus, KPN, Swisscom and A1 Telekom Austria, in an initiative to professionalise the exchange of cyber threat intelligence among European telecoms providers. With the support of Dutch innovation body TNO, these telcos established a technical platform to automate the exchange of cyber threat intelligence in real time. This project will enhance the efficiency of the community as well as the quality of the actual threat intelligence shared. The pilot project was recently concluded and laid the foundation for a more elaborate operational setup, potentially involving 20+ European telcos. ETIS states the cyber threat landscape is rapidly evolving with increasingly severe vulnerabilities emerging at a tremendous pace. In early 2013, ETIS established the CERT-SOC Telco Network, a community of cyber security specialists from its member telcos across Europe. The pilot participants concluded that the new setup for their threat intelligence exchange is a major step forward as it showed tangible evidence that participating telcos were able to increase their cyber resilience based on the intelligence received from their peers. Work is underway to expand the new environment with more telco participants such as TDC, Telenor and Deutsche Telekom set to join.

mWallet adoption in Europe expected to boom

Intelling's new Smart Insights Report 'mWallets to meet European adoption' establishes that the Pay Wallets, Apple Pay, Samsung Pay, Android Pay and others, will easily adapt to European payment market and be massively adopted over the next few years, generating over EUR 1 billion revenue for the payment industry by 2021. The newly published research analyzes in detail the evolution of mobile payments market in Europe as well as the hurdles of the Pay Wallet rollouts in other markets. Pay Wallet providers: Apple, Samsung, Google, ... have already taken measures to adapt their offer to the technical and business specificities of the European markets. Major findings show in the US and in South Korea, the Pay Wallets have experienced some hiccups during their introduction phase but are now meeting a growing adoption, but in Europe, both financial institutions and mobile network operators have attempted to introduce mobile payment solutions but have failed to reach mass markets so far. However, mobile wallet transactions number in the European Union are expected to grow at a CAGR of 61.8% over 2016-2021 with a forecast surpassing the EUR 1 billion bar by 2021.

Infineon brings NFC security module for smart wearables

From fitness trackers and smart keys to chains, watches or wristbands – smart wearables of all kinds are increasingly including mobile payment functionality. Wearable manufacturers are thus challenged to equip even the smallest of devices with security and NFC technologies. The latest lies in a unique NFC security module series launched by Infineon Technologies in collaboration with Beijing-based Mobile Payment Solutions (MPS). This new plug-and-play solution significantly reduces design efforts for device manufacturers by bundling a high-end Infineon security chip with NFC antenna components and software on smallest PCB footprint. The smallest module of the series measures only 4mm x 4mm.

On-card biometrics for built-in access control

Biometric smart card developer Zwipe has announced a new access control solution called Zwipe ID with a built-in fingerprint authentication system. The new device is compatible with MIFARE DESFire and MIFARE Classic Access Control systems. Zwipe ID employs on-card enrollment and keeps the user's biometric data on the card; and the company says its new offering can recharge energy via the access control readers with which it interacts, meaning a battery is not required.

HSBC offers voice and fingerprint ID system

HSBC has announced it will introduce voice recognition and touch security services in the UK in a major move towards the introduction of biometric banking.The bank says its internet banking customers will no longer have to remember a password or memorable places and dates to access accounts. Barclays has already introduced voice recognition software, but it is only available to certain clients. RBS and NatWest have offered finger print technology for the last year. According to news sources, the move comes weeks ahead of the launch of Atom Bank, which will allow its customers to log on via a face recognition system. HSBC says its service will be offered to up to 15 million banking customers.

UK Government brings in business leaders for policy advice

In a move to co-opt business leaders to advise on policy, the UK Government has appointed a Facebook director and the former head of Amazon UK to a new advisory committee on the digital economy. Minister for the Cabinet Office Matt Hancock said he had appointed Facebook's Richard Allan, the director of policy, Europe, to a new advisory board that will help shape the government's digital services. Brian McBride, Amazon's former UK managing director, has also been appointed to the group, which will be called the Government Digital Services advisory board. .

Google releases cloud vision image recognition API to open beta

Technology to enable the development of applications capable of detecting faces, text, dominant colors and other features in images, will be introduced by Google, the company has announced. These capabilities are planned to become more broadly available through Google's Cloud Vision API, technology it previewed last year and recently moved into open beta. Cloud Vision API is designed for developers looking to add image recognition capabilities in their software. According to Google, it gives them a way to embed capabilities in their software for automatically categorizing images, detecting faces and sentiment, and detecting text inside images.

Cognex enters mobile terminal market

Machine vision provider, Cognex, is expanding its addressable market by offering smartphone-based mobile terminals powered by Cognex's advanced barcode reading technology. The company's series of mobile terminals offers manufacturers, logistics companies and many other organizations that currently rely on expensive, inflexible and purpose-built mobile terminals, a revolutionary new method for performing tasks such as inventory management, logistics and field service. The MX-1000 combines the ease-of-use, low-cost and flexibility of off-the-shelf smartphones together with a rugged hand-held assembly that holds both the phone and a specially designed Cognex barcode reader that outperforms competitors' laser-based and camera-based systems

NATO selects Italtel for portable data center

Italtel, a leading telecommunications company in Network Functions Virtualization (NFV), managed services and All-IP communication, has been awarded an international tender by the North Atlantic Treaty Organization (NATO) to build two transportable data centers. More than 250 companies belonging to the 28 member countries of the Alliance were notified about the tender for the project – the demand for which was generated by the Italian Army. The acquisition was delegated by TELEDIFE (the Italian Defence Telecommunication Procurement Directorate) to the NATO Communications and Information Agency (NCIA), which developed the technical specification due to its knowledge and previous experience of current systems in place. The data centers will be deployed at the NATO Rapid Deployable Corps Italy (NRDC – ITA), in Solbiate Olona, to align its Communication and Information System (CIS) infrastructure with the requirements of its recently-awarded role of land-heavy Joint Task Force (JTF) Headquarters, which involves leading NATO joint operations within NATO Areas of Responsibility, often performed out of the national borders.

Handheld signs with Saab

A two-year agreement for ultra-rugged tablets for world-leading military, aerospace and emergency services solutions has been signed by Handheld Scandinavia with Saab – a global defense and security solution provider. The agreement includes possible extensions and covers Handheld's existing range of tablets as well as future products. Saab has integrated Handheld's Algiz 10X rugged tablet with Paratus, Saab's modular information system for emergency care. The system has been deployed in ambulances throughout Sweden. Most recently, Saab deployed Algiz 10X rugged tablets equipped with SITHS smart card readers. SITHS (Secure IT for health care) is based on a two-factor electronic authentication protocol and is the current standard for all National Quality Registries in Sweden.

BNP Paribas partners with Ingenico for e-merchant business

By partnering with Ingenico ePayments, BNP Paribas is the first French bank to support its customers in their online sales development in Europe. E-merchants accept new payment methods in different currency. BNP Paribas is an international bank and a leading e-commerce player in France, with a market share of nearly 30% of all e-commerce transactions. The partnership between BNP Paribas and the Ingenico Group helps the Bank's customers to boost their online sales in Europe by accepting both international and local methods of payment in 14 European countries in eight different currencies

Vehicle surveillance market accelerates

A recently released market research report from Markets and Markets reveals the vehicle surveillance market size is expected to grow from USD 49.93 Billion in 2015 to USD 103.21 Billion by 2022, at a CAGR of 11.1% between 2016 and 2022. The report concludes that the dominant portion of this market is the in-vehicle surveillance market which is being driven by various factors in the car, insurance, safety and security industries. The research company divides the vehicle surveillance market into three key sections, in-vehicle surveillance, under-vehicle surveillance, and out-vehicle surveillance. Factors such as regulations in different countries for compulsory driver assistance or passenger safety products, plus a wide range of advantages provided by in-vehicle surveillance systems, increasing sales of premium cars, and an increase in traffic fatalities is creating a demand for more traffic control solutions and is driving the vehicle surveillance market forwards.

Konica Minolta acquires Mobotix

CAn agreement has been signed by Konica Minolta to acquire approximately 65% of the share capital of the German IP video surveillance product manufacturer, and Mobotix. With more than 400 employees and a sales of more than 80 million Euros, Mobotix, has a number of cutting-edge technologies including decentralised processing (edge computing) IP cameras, image data compression, and image data analytics technologies. In addition, Konica Minolta and Mobotix intend to enter into a collaboration agreement regarding future technological developments in the field. Konica Minolta aims to provide next-generation decentralized network security solutions by leveraging its industrial optical systems, including the 3D-LiDAR to scan, without errors or failed reports.

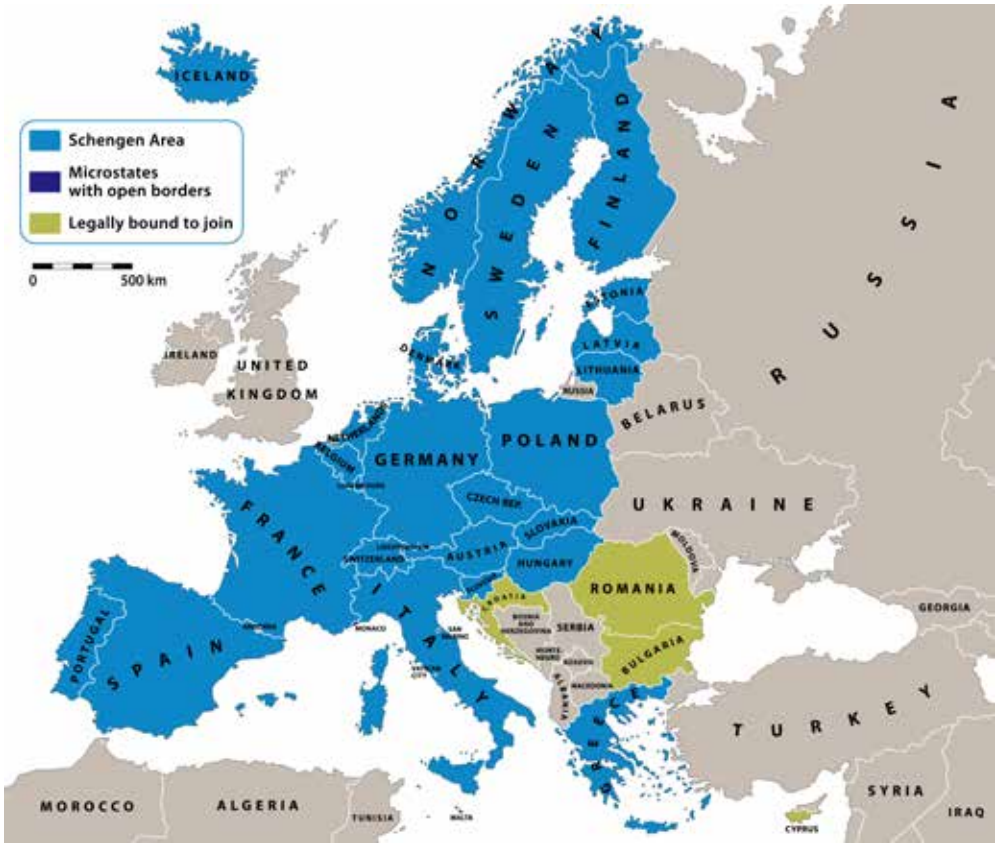
Morpho teams up with Visa Europe to promote innovation in payment

Identity and security solutions provider, Morpho (Safran), is contributing its expertise in biometrics is supporting Visa in new ways to pay using technologies such as biometrics recognition. Morpho and Visa Inc. announced a strategic partnership to develop new payment solutions, including biometric recognition. These technologies will be applied to existing means of payment such as credit or debit cards, mobile, ATMs and Points of Sale (POS) terminals, to enhance transaction security for financial institutions and customer convenience. The biometric solutions from Morpho combine security and facility for consumers when making purchases. The first combination includes the use of MorphoWave technology for Visa proximity payments, the world's first biometric solution capturing and matching four fingerprints with a single hand movement in less than a second. The second features authentication of a Visa online payment with facial recognition via a smartphone. With the current explosion in e-commerce and m-commerce (mobile commerce), payment and digital identity specialists are teaming up to advance new authentication and security solutions tailored to digital and mobile banking.

Maintaining Schengen for a borderless Europe

Recent devastating terror attacks in Paris and Brussels have given rise to serious debate about whether to keep Europe borderless or not. The big question stands: should Schengen remain?

by Douglas Webber
Insead



Europe's Schengen Accord is one of the most tangible achievements of European integration and a boon for cross-border business. Resurrecting border controls will be politically and economically costly.

Seldom if ever has the name of such a small village become so famous – or notorious – in Europe and the world. Located on the Moselle River in Luxembourg, Schengen counts no more than 425 inhabitants. But lying as it does at a spot where the borders of Luxembourg, France and Germany converge, it was an appropriate choice for signing an accord to abolish border controls when little Luxembourg was the president of the EU (European Union) Council of Ministers in 1985.

Few measures adopted by the EU have had a more tangible impact on the daily lives of its citizens than 'Schengen'. Historically, border controls between European states have been the exception rather than the rule; so the Schengen Accord was far from revolutionary. Anybody who reads the memoirs of the great Austrian writer Stefan Zweig, for example, will see that, before the First World War, travellers could traverse Europe – and venture even further afield – without as much as a passport. For Zweig, the limits imposed on the freedom of travel illustrated more powerfully the 'enormous regression' that the world suffered after the 1914-18 war than anything else. Border controls, passports and their like –stood for the growing power of the nation-state and the growing sway of nationalist ideologies that Zweig and other cosmopolitan Europeans of his day so heartily detested.

Unsurprisingly then, the idea of abolishing border controls was

championed after the Second World War by those political forces that sought to secure the peace in Europe by vanquishing nationalism and building something like a federal European state.

The primary driving force behind Schengen was the fervently pro-European German Chancellor, Helmut Kohl, who, as an adolescent, had already participated in the symbolic dismantling of border posts between France and Germany in his Rhineland neighbourhood. He and the French president François Mitterrand had to push the accord through against the opposition of the interior and internal security bureaucracies of their respective governments.

European integration

Schengen shared and still shares various traits with the other most tangible symbol of European integration, the Euro. It too began as an experiment in 'multi-speed' integration. With the UK in particular unwilling to participate, it was launched initially with just five of the then 10 EU member states.

The other three signatories – the Benelux states – had in any case abolished controls between their borders in the late 1950s. Its architects anticipated that, as with the Euro, other member states would join in future as they recognised the advantages of doing so. And so they did. Today the Schengen Area embraces 26 member states, including several non-EU members, notably Switzerland and Norway.

But Schengen also resembled and still resembles the Euro in as far as it remained incomplete and inherently unstable, unless and in as far it was flanked by other measures involving closer European cooperation or integration.

For the Euro, this was the case for fiscal policy and redistribution, as the ongoing Eurozone crisis has sorely demonstrated. For its part, Schengen, if it was to work well, implied inter alia the maintenance of effective controls on borders with third countries, the adoption of common visa and political asylum policies and the sharing of police information and intelligence among its member states.

Like the global financial crisis buffeting the Eurozone, the migration crisis provoked by the post-2011 violence in the Middle East and North Africa and the terrorist attacks in 2015 struck Schengen like tornados pummelling a half-built house. In their wake, one after another, in a domino effect that has swept across Europe, numerous Schengen states have re-instituted border controls. Whilst temporary border controls in such circumstances are compatible with EU law, permanent controls would not be.

Cross-border traffic

The advantages of Schengen are clear. Border controls are a nuisance for travellers and a cost for business. Given the volume of cross-border traffic in the Schengen Area today (in 2012, for example, there were 460 million arrivals from intra-EU flights at EU airports), the inconvenience caused by the general re-imposition of border controls would be massive.

Freedom of movement in the EU, of which borderless travel is one component, promotes trade and helps to tie Europe together. The benefits of Schengen would not justify the accord's existence if they were achieved at the cost of security.

However, there is no evidence that the abolition of border controls has led to higher crime or lower crime detection rates – and little reason to think that, should these be resurrected, Europe will consequently be safer and more immune to terrorist or other violence.

Schengen or not, hundreds of roads leading into France, for example, from neighboring countries – Belgium, Luxembourg, Germany, Switzerland, Italy and Spain – would be bound to remain unpoliced.

• The migrant crisis in Europe has seen massive influxes and buildups on the Union's outer perimeters

• Germany, Sweden, Austria, France, Denmark and non-EU member Norway have reinstated temporary border checks

Effective policing

The most effective response to the current crisis of Schengen would actually be 'more Europe': more effective policing of the member states' borders with third countries (if necessary by members of a European border police force); the more comprehensive sharing of information and intelligence among member states' police and intelligence services; and a stronger collective European engagement in the conflicts ravaging North Africa and the Middle East.

This is the thrust of proposals to reinforce Schengen made by the European Commission in December 2015. Supported as they are by France and Germany, these proposals stand a good chance of being adopted. But their effective implementation 'on the ground' will be a much longer, tougher and uncertain process. It will require more than a couple of hundred of extra EU border guards to secure the borders of Greece in the Mediterranean Sea.

Meanwhile, almost everywhere in Europe, in particular in France, but also increasingly in Germany, national-populist movements that would consign Schengen to the dust-bin of history have more and more wind in their political sails. It is possible but by no means certain that Schengen, as we have come to know it, will survive their assault.

The collapse of Schengen would provide even more political momentum to these movements than they have already. If the borders in Europe should indeed go back or stay up, the costs may extend well beyond the longer time travelers spend crossing European border checkpoints.

Re-evaluating border checks

EU member states have asked the EU Commission to prepare for a two-year suspension of the EU's borderless Schengen agreement. Under the proposal, border controls would be set up among the 26 Schengen-member states for a minimum of two years, which would put an end to the passport-free travel zone—at least temporarily. Yet according to reports, EU nations, on the whole, still want to hold on to the benefits of the Schengen Agreement in the longer term. In recent months, a number of Schengen members including Germany, Sweden, Austria, France, Denmark, Belgium and non-EU member Norway, have reinstated temporary border checks in the passport-free area – measures which can stay in place until May. But under the Article 26 procedure those controls can be prolonged for up to two years if a member state struggles with 'persistent serious deficiencies in the carrying out of external border control' that places 'risks' on the overall functioning of the area. An evaluation of Schengen has already been launched if it finds that there are systematic problems, member states would be permitted to reintroduce, or maintain, border controls. Greece, which according to Frontex has seen the total number of migrant arrivals in 2015 reach 880,000, was particularly targeted for criticism. EU interior ministers even discussed plans to seal off Greece from the Schengen travel zone altogether. Under Schengen, any person, irrespective of nationality, may cross the internal borders without being subjected to border checks. However, the competent national authorities can carry out police checks also at the internal borders and in border areas, provided that such checks are not equivalent to border checks. This is valid for cases when, in particular, the checks do not have border control as an objective and are based on general police information and experience. If there is a serious threat to public policy or internal security, a Schengen country may exceptionally temporarily reintroduce border control at its internal borders for, in principle, a limited period of no more than thirty days. If such controls are reintroduced, the other Schengen countries, the European Parliament and the Commission should be informed, as should the public.

European parliament approves stronger data privacy rules

Tougher rules on data protection, aimed at boosting privacy and giving authorities greater powers to take action against companies that breach the rules have been voted through by The European parliament. The rules, including the General Data Protection Regulation (GDPR), form the new backbone of laws for data regulators to pursue companies with heavy fines – as much as 4% of annual turnover for global companies – for incidents such as data breaches, which have become increasingly common. The new data privacy laws comprise of the GDPR, which governs the use and privacy of EU citizens' data, and the Data Protection Directive, which governs the use of EU citizens' data by law enforcement. Together they aim to create strong data protection law for Europe's 500 million citizens; streamline legislation between the 28 member states pushing a digital single market and boost police and security cooperation. It is due to replace national rules that have only allowed for small fines in cases of violation.

Germany to lift border controls

With the number of migrant arriving n Germany from Austria slowing down to a trickle, the German interior ministry has said border controls on the Austria-Germany border would be lifted by mid-May. Germany is facing a problem on another front, as more and more migrants are arriving from Italy, using the Brenner crossing, a major gateway for goods and people heading north from Italy. According to the current estimate, the Ministry said the number of migrants entering Germany through Austria had fallen to zero, in contrast to last year, when thousands arrived daily. In March, the average had dropped to roughly 140 per day. Reports say that by tightening its border control measures, Austria played a key role in blocking the 'Balkan route', used by hundreds of thousands of migrants to get from Greece to richer EU countries in northern Europe.

New York's JFK airport deploys Vision-Box biometrics

U.S. Customs and Border Protection (CBP) at JFK International Airport have started using facial recognition technology to match travelers' faces to the photo on their passport. This technology is a significant step forward in conducting biometric verification of every person requesting admission to the United States. In a critical step forward with far-reaching implications affecting the security of airline passengers around the world, U.S. Customs and Border Protection (CBP) deployed a system for biometric authentication of electronic passports. This technology allows for a highly accurate biometric matching of a traveler's face with the facial image stored on the identification document's e-chip, thus preventing document swapping. Vision-Box, a leading company in the area of biometric traveler facilitation, is providing the core biometric technology, the vb e-pass desktop, as part of a facial recognition solution provided to CBP by Unisys Corporation.

Frontex believe terrorists hiding among asylum-seekers

The EU's border police, Frontex, has said that terrorists may have entered Europe by hiding among asylum seekers. Frontex noted that two of the bombers in last November's Paris attacks made it to the continent in a smuggling boat from Turkey. As the vast majority of migrants arrive undocumented, screening activities are essential to properly verify their declaration of nationality, according to the report. Frontex's recently released Risk Analysis for 2016, stated the attacks clearly demonstrated that irregular migratory flows could be used by terrorists to enter the EU. .

Thales opens cyber security operations as cybercrime grows

As cyberthreats grow and cyberattacks become more sophisticated, Thales continues to develop its cybersecurity operations infrastructure, incorporating the latest technologies and innovations to protect the information systems of customers. Now the company has announced the opening of a new Cyber Security Operations Centre (CSOC) in Elancourt, near Paris. The offering is built around a commitment to provide personalized support to each customer, in particular through a range of new value-added services. More than 30 major organizations already rely on Thales's expertise to protect their information systems from cyberattacks. While information systems become more interconnected and mainstream markets embrace disruptive technologies.

Connecting the automated city

The increasing intelligence of cities is a global, accelerating, and unstoppable phenomenon with many around the world becoming smarter in terms of connectivity and citizen services

by Cesar Cerrudo
ICIT

Cities have been incorporating new technologies for several years, but lately the rate of technology adoption has increased. Newer technologies along with faster and easier connectivity allow cities to optimize resources, save money, and at the same time provide better services to its citizens. Depending on the amount of new technology, some cities are smarter than other cities, but most cities around the world have implemented at least some technology. Others have implemented much more.

Maybe a particular city is not described as smart, but it likely still uses some level of technology. Instead of being filled with smart, highly-integrated systems, it may just use a few simple technologies. US cities like New York, San Francisco, Los Angeles, Washington DC, Seattle, and Miami are becoming smarter by the day, a trend seen around the world. We also can see this in Europe, in London, Barcelona, Amsterdam, Paris, Stockholm, and Berlin; in Asia-Pacific, in Singapore, Seoul, Tokyo, Sydney, Melbourne, and Hong Kong; in the Middle East, in Abu Dhabi, Dubai, Saudi Arabia, and Qatar, and in the South American cities of Rio de Janeiro and Santiago.

In the truly smart city of the future, everything will be connected and automated. While this is not yet a reality, many cities are committing big budgets to get smarter. For instance, Saudi Arabia is investing US $70 billion into smarter cities and in Dubai, 1000 government services will go smart in few years. Barcelona is already ranked as the world's smartest city and In South Africa, a $7.4 billion smart city project just started.

According to some estimates, by 2020 the potential market for smart cities could be more than $1 trillion. Estimates that are more conservative place it at hundreds of billions of dollars, but regardless we can agree that vendors are seeing a great opportunity with smart cities and the buzz around it is growing.

City services

Main city services become smarter by deploying new technologies such as smart traffic control with traffic lights and signals that adapt based on volume and current traffic conditions. Citizens can use a parking application to find available parking slots and to review pricing, including pricing changes based on time of day, availability, location, etc. Managed centrally, streetlights can adapt to weather conditions, report problems, or be automated by time of day. Streetlights can even turn off and on based on the detection of moving cars and people. In smart public transportation, real-time data informs citizens about schedules (bus, train, and subways), arrivals, and delays of buses, trains, and subways. Contactless payment systems enable citizens to easily pay, using a smart phone, smart card, or RFID enabled device. These systems greatly increase convenience and efficiency by decreasing payment based congestion and delays.

Smart grids deliver energy based on user demand. Smart meters optimize user utility by coordinating energy supply schedules with the smart grid at specific times for the lowest cost. The smart grid can even turn off your home's water heater during peak hours when electricity is more costly. Smart buildings use similar techniques to conserve energy and buy electricity when rates are low. Smart pipes measure water quality, detect leaks, distribute water, and detect problems. Similar techniques are used for gas and oil pipelines to regulate flow and prevent disasters.

Security

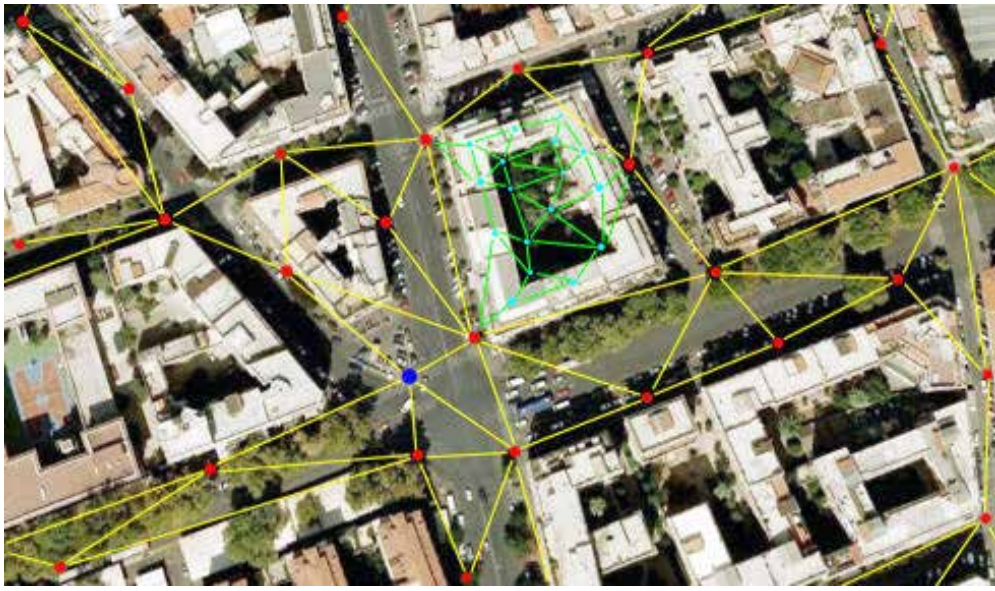
And as far as security is concerned, traffic and surveillance cameras, gunshot detection sensors, and other security devices provide real-time information on events and their locations within the city. People-counting technology, such as tracking of mobile phones or communication (such as Wi-Fi or Bluetooth), is used to determine the number of people in a given area like a street, park, or building.

Those technologies are backed up by others such as city management systems and sensors for a range of applications such as weather, pollution levels, seismic activity, smell, floods, sound and more. They continuously feed smart city systems with data and for citizens in a smart city ecosystem, we could say mobile apps foster interaction of citizens with the city. Citizens retrieve information from city systems, sensors, and so on via mobile apps and make decisions based on information.

Smarter city life

Let us say someone wakes up on a regular working day, takes a look at his smart phone or tablet, and starts to look at different mobile apps to choose the best alternative to go to work. He checks schedules and delays for trains, buses, and subways. He also checks for temperature, pollution level, and weather conditions. (This could be something simple like packing an umbrella or a jacket, or avoid going out because of pollution level.)
Sensors everywhere feed city systems and send data to mobile apps. Let us say that the person chooses to go by car since there was a delay in public transportation and/or it's a rainy day. On the way to work, he checks a mobile app for the best route to avoid traffic and checks another app to select parking based on availability and pricing. Traffic flow is good because of smart traffic control systems that adjust traffic lights based on current traffic conditions. Because of rainy weather, smart street lighting will leave streetlights on until there is more daylight. If rain causes floods, flood detection sensors will immediately alert city management and citizens too. City management closely monitors the entire city with the help of surveillance, sensors, and traffic cameras. The rain causes public transport delays, and relevant information is pushed out to mobile applications so that people can choose transport alternatives. Overall, smart technology is significantly changing life in metropolitan areas.

• Tracking technologies are backed up by city management systems and sensors for a range of applications



Enabling RFID adoption in omni-channel retail

As retailers adapt to the ever-changing needs of today's empowered consumer, RFID technology is playing a larger role in IT projects with omni-channel and customer-facing initiatives emerging as the primary drivers of RFID adoption

by Checkpoint Systems

Sense and respond technology enables retailers to be more nimble and more knowledgeable about customer needs. Using RFID for real-time inventory is quickly becoming a prerequisite for omni-channel retailing. Retailers need to know what merchandise they have and where, so that they can efficiently to source items for a customer order and either ship them from a single location or reserve them at the nearest store. In an omni-channel world, RFID enables retailers to deliver on their promises to customers.

Being able to pick and reserve items for a customer order quickly and efficiently, from stores and DCs with shoppers receiving items more quickly, boosts fulfillment while also allowing for shipping costs to be waived when picking up in store. Store pick-up allows retailers to fulfill online orders directly from stores to shorten the distance between order and customer and ensure items are ready for pickup upon customer request.

Other RFID use cases include returns processing with the ability to verify customer returns at the correct sale price and make them available for purchase. Shoppers can therefore receive faster credit for returns that can be applied to new in-store purchases with shorter wait times at customer service. In-store ordering enables customers to order products from in-store kiosks or smartphone apps while browsing in store. This means shoppers can save time by ordering complementary products for purchased items, or different colors/sizes for merchandise that was tried on in the fitting room

Combating risk

Loss prevention leaders are implementing RFID to protect against internal theft, diversion, counterfeiting and spoilage, as well as to secure high-risk merchandise. Many LP professionals are also building RFID infrastructure into new stores and remodels as part of the construction plan to complement store design. In shoplifting scenarios, RFID brings item-level etail on

what was stolen, enabling re-stocking to improve shelf availability; differentiated alarms provide quantity and value of items stolen. RFID also provides protection for multiple merchandising formats including malls and luxury stores with the ability to analyze patterns of theft over time and respond.

As far as internal theft is concerned, use cases for los prevention sees extending EAS to the dressing room, back room and other 'pre-POS' areas of the store, improved inventory visibility throughout the store and the ability to analyze patterns of theft over time and respond. Administrative error can be reduced through automated cycle counting to identify anomalies and sources of shrink more quickly and easily with electronic proof of delivery at DC and stores. Cold chain tracking and prioritized receiving reduce spoilage, while chain of custody tracking with electronic proof of delivery at DC and stores combat counterfeiting.

Tag volumes

As RFID technology becomes more prevalent in retail, and higher volumes of tags are in circulation, standards are emerging, tag costs are decreasing, and tag selection is becoming faster and simpler. Here are a few considerations when evaluating RFID tags.

- consider 'off the shelf' tags that are already tested for use on specific materials(e.g., GS1 Category M tags which are certified for apparel and footwear
- does it have a barcode or loss prevention device? How is it attached? Can it serve a dual purpose?
- densely-packed merchandise (e.g. cosmetics on peg hooks) may require short read ranges
- cartons in DCs may require long read ranges –transport containers may require weatherproof tags
- high volumes of items in DCs or source manufacturing may be tagged in bulk, using conveyor tunnels, commissioning tables
- printers and handhelds may be used for low volume applications
- consider pre-encoded tags or tagging services to outsource the process

Costs

Passive RFID tags cost less than 10 cents at high volumes, while RTLS (always on) tags can cost $30 or more –generally used for high theft applications. It is worth considering combining RFID/Barcode/LP tags to free up RFID budget for training, systems integration, professional services that will save money in the long run. Also, narrow down short list based on business case and pre-certified tags by product category and consider standardizing on a few tags to simplify sourcing and testing. Deciding on a standard provides more flexibility than selecting a specific tag, and mitigates the risk of using a single vendor

Retail deployments have unique complexities, including: distributed operations spread across thousands of locations, high volumes of inventory, frequent product introductions, multiple store format variations and a variable work force. RFID has been widely deployed in apparel to improve shelf availability of complex SKUs. It is also quickly gaining traction in other retail formats. And as retail formats continue to merge, RFID-readiness has more to do with the merchandise being sold than the primary format of the retailer.

For a typical retailer, RFID enables cycle counts to be completed about 25 times faster than manual bar code scanning; improvement of inventory accuracy, by 20-30%, enabling many retailers to achieve 99% inventory accuracy; and a decrease in out-of-stocks (OOS), by 15 to 30% resulting in sales uplift from 1 -10% or more. Every business function has different priorities and measured goals for revenue and profitability. Aligning

• RFID has been widely deployed in apparel to improve shelf availability of complex SKUs

the goals of an RFID project beyond a single functional area helps justify the cost of deployment, as well as encouraging adoption by all stakeholders.

Measurable deployment

The rate of change in Retail is at an all-time high. Focusing RFID projects around key merchandise categories, customer-facing processes (where reputation is at risk), and significant high risk/high opportunity programs is important to ensuring a successful deployment that delivers measurable results for the organization.

Several retailers have opted to roll out RFID technology in new stores and flagship stores first, where there is high visibility, Other retailers have been successfully integrating RFID programs into IT projects for omni-channel, e-commerce or in-store experience.

• Item level RFID is expanding into in-store self-checkout systems

Complementary technologies enabling secure contactless payments

As EMV upgrading in the contactless payments world in the US gathers pace, renewed interest in NFC has sparked questions about migration strategy and the impacts and benefits for embracing both technologies

by Randy Vanderhoof
Smart Card Alliance

Although contactless payments were introduced to the U.S. payment ecosystem in the mid-2000s, adoption did not achieve critical mass. Major initiatives encouraged the use of mobile NFC devices to make contactless payments, starting with the introduction of Google Wallet in 2011 and followed by Softcard in 2012. The launch of Apple Pay in 2014 and the launch of Android Pay and Samsung Pay in 2015 have reignited interest in contactless payments using mobile NFC devices, cards and other form factors.

As merchants upgrade their terminals to accept EMV-compliant contact chip cards, one option is also to include support for contactless payment using mobile NFC devices and contactless and dual interface chip cards (particularly as many new POS devices come equipped to support contactless payments). EMV chip card acceptance addresses card-present fraud and is being driven by the fraud liability shift dates. Support for NFC can add value in retail locations where improving the speed of payment or leveraging other services associated with mobile device payments that can drive business.

EMV chip migration and NFC

Card payment options for consumers have changed radically since the 1960s–1970s, when the only choices were magnetic-stripe plastic cards and relatively simple merchant terminals and ATMs.

To encourage adoption of EMV chip technology in the U.S., the global payment networks announced that beginning in October 2015, liability for counterfeit and, for some payment networks, lost or stolen card transactions at most POS locations would shift to the party that was not chip-enabled. For example, if a cardholder presents a chip card and the merchant cannot process chip cards, liability potentially shifts from the issuer to the merchant. Announcement of these liability shift dates prompted a flurry of activity in the U.S. market, and currently the market is well on its way to implementing chip cards and EMV chip-enabled POS terminals successfully.

Initial card issuance efforts focused primarily on consumer and commercial credit cards, with debit cards now following quickly. Although the early adopters were mainly large issuers, many of the 10,000-plus financial institutions in the U.S. have either begun issuing chip cards or have

active issuance projects underway. New ways of doing business typically involve challenges, and consumer and merchant education are critical to a successful merchant EMV adoption effort. In addition, consumers have expressed a desire to make payments in a more secure manner, and certain people are always willing to adopt new technologies.

The U.S. has also benefitted from observing trends in other countries that have rolled out chip cards. The U.S. market recognizes that while counterfeit fraud will be reduced, card-not-present fraud may increase. Efforts are underway to identify and implement processes that hopefully can address this concern in the U.S.

Issuers must address several strategic questions as part of their chip card rollout. U.S. issuers are free to issue either PIN-preferring or signature-preferring cards (a "chip and choice" environment). Some issuers have decided to issue both, depending upon their product portfolio (e.g., corporate credit cards, consumer credit cards, debit cards). A second consideration for both issuers and merchants is what payment interfaces to support: both contactless and contact EMV payments, or contact payments only.

Contactless payments

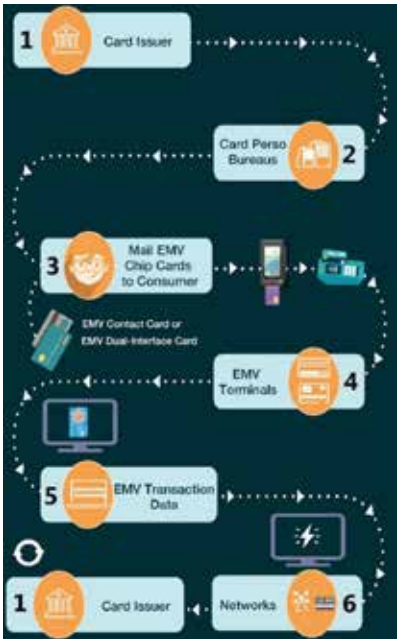
Contactless chip cards were first issued in the U.S. in 2004. However, a combination of factors, including the convenience of magnetic stripe transactions with no signature required, minimal incremental spend, and modest merchant uptake, led to sluggish adoption rates in comparison with the rates in countries implementing contactless payment after EMV chip migration.

While focused on contact chip card issuance in the initial EMV chip card roll-out, issuers are now considering both rolling out dual interface cards and implementing new mobile strategies. Terminals that support both contactless and contact payments are readily available, with many supporting both interfaces as standard features. Many in the industry believe that as merchants and acquirers replace terminals to support contact EMV chip cards, merchants may also choose to support contactless payments.

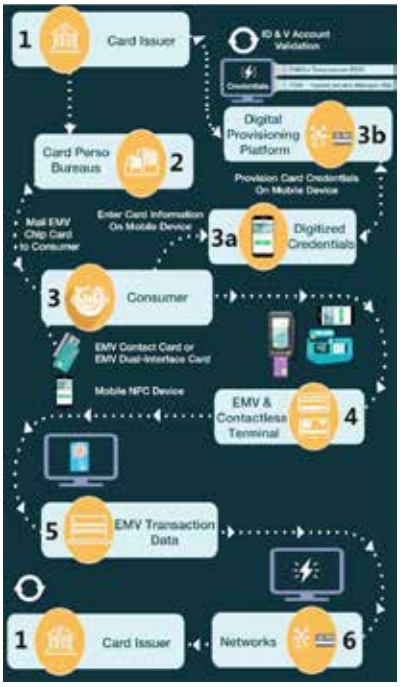
Rolling out contactless payment using mobile NFC devices in the U.S. has both advantages and challenges. Since EMV chip card payments and contactless payments made using mobile NFC devices use the same transaction data, implementing them simultaneously rather than separately minimizes implementation time and complexity, including the time to test, certify, and deploy. Both issuers and merchants therefore have a perfect opportunity to position themselves to support EMV contact chip card, EMV contactless chip card, and mobile NFC device contactless payments. In addition, there are increasing numbers of mobile payment offerings in the U.S. that incorporate NFC technology. The primary challenge, other than the cost to issuers of dual interface cards, is the level of merchant acceptance. However, as noted above, merchant acceptance is expected to increase substantially in the next one to two years.

Liability shifts

There is no 'one size fits all' recommendation about whether and when to implement contactless payment; different market segments have different requirements. The introduction of Apple Pay, Samsung Pay, and Android Pay has renewed focus on the use of mobile NFC devices to make contactless payments. This development and the EMV liability shift have motivated many merchants to consider how to best future-proof their solutions. However, contactless payment using mobile NFC devices is best regarded as a companion solution rather than a replacement for the card form factor. The U.S. EMV migration is going strong. In parallel with this mass migration, new mobile NFC devices have been introduced in the U.S. market that support contactless payment and that can be used at the same POS systems that accept contactless payment cards.



• EMV chip card provisioning and transaction flow



• EMV chip card and mobile NFC provisioning and transaction flow

Mining data in the transparent factory

In the world of modern manufacturing, the transparent factory sees a new approach to the primary elements of information visibility using real-time dashboards, analytics, reporting and mobile visibility

by Aegis Sotware

Visibility is key and that visibility needs to be clear, precise and timely. The best manufacturers have simple, instant visibility to product, process, quality, test, and materials information factory-wide. The benefits of such visibility are well known to the manufacturing community, and yet achieving it has proven elusive for many.

Data is at the core of every successful manufacturing process, so it is essential to start with the assumption that all the systems and operations within the factory gather and maintain information in a meaningful and timely fashion. This means connecting all the data from inbound materials through materials management, production, test, quality control, packing and all the way to dispatch, and even into after market services. When talking about visibility, the debate is often restricted to the processes within the factory walls, but the greatest benefit is always achieved when a holistic visible supply chain approach is adopted. Indeed applying disciplines like six sigma, Industry 4.0, paperless factory or lean techniques always works best when applied throughout the supply chain. So, the basic requirements are the ability to collect and store data centrally, but that data is largely useless if it does not enable improvement, corrective action and the pursuit of manufacturing excellence. This can only be done if the data is properly mined and appropriately displayed to the right people at the right time. The right data, at the right time, delivered to the right person in a manner that they can act upon is the best formula to achieving real operational excellence.

Analysis and interpretation

The phrase 'I can't see the forest for the trees' is often used when data is delivered to a single source, in a poorly organized format. The ability to process and act upon data starts with the ability to visualize that data in a way that can be analyzed and inter-

preted. This does not mean delivering all the data to one person with a huge number of performance indicators or measurements. It means delivering the data needed to do the best job. For a line operator the data required may be minimal and may reflect simple elements like machine performance, up-time or shortages.

An engineer might need data on the performance of a particular product in test, analyzing the reasons for failures. And the production planner will need to see data that allows them to better plan and consider what-if scenarios around increased volumes or supply chain disruptions.

Those with a vested interest in timely precise data, span the entire organization from the shop floor to the boardroom and everyone in between. The data that helps the operator accelerate a changeover will contribute to the data that allows the COO to make the right capital equipment investment or outsourcing decisions. The visible factory is an enterprise-wide strategy with enterprise wide value.

The types of data visibility required to achieve a transparent factory are related directly to the activities and roles of those who require information in their day-to-day jobs. The data needs are either real-time or historic, and these are delivered to the user in several formats such as dashboards, analytics, reports and most recently mobile applications for those needing access to data on the move.

Real-time information is most commonly delivered in what we currently call dashboards. A process engineer or a line manger will often use this kind of data presentation to maintain and improve the performance of the line. The data has to be instantaneous, with any delay likely to cause or extend down-time, with the subsequent impact further along the line.

Quality and test

Historical data is needed for production control, engineering, quality, test and for management to monitor, analyze and adjust production based on current and predicted status. This is where traceability enters the equation. Traceability, like visibility, is an essential cornerstone for any manufacturing excellence program that seeks to add value, reduce costs and mitigate risk to an enterprise. Most recently viewing methods have become a critical factor when data is being utilized by an organization. Mobility

• Mobile applications enable users to query traceability, WIP and quality data from anywhere in or out of the factory

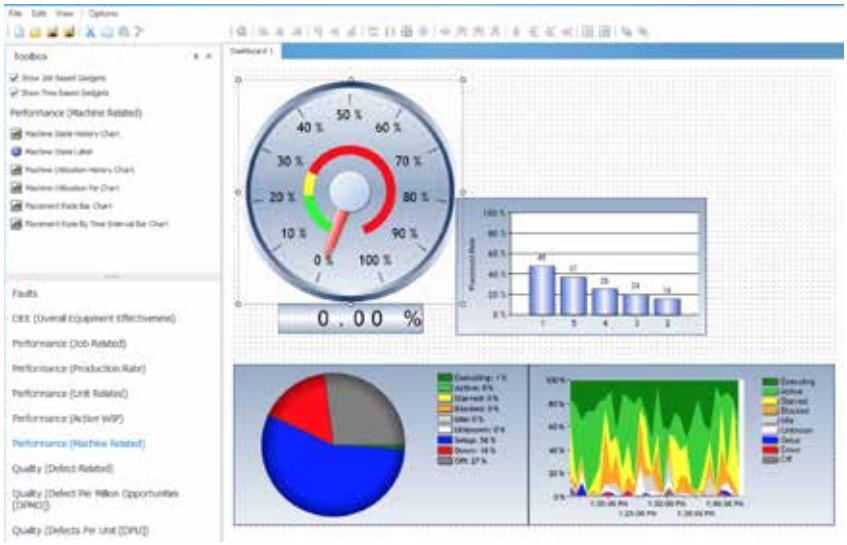
is the norm in modern business and the team's ability to stay connected to the data via mobile analytics has become key. The use of smartphones and tablets has skyrocketed, with the addition of people utilizing their own devices in a work environment. This means any system absolutely must be visible through smartphone and tablet based applications.

Configurable dashboards are an essential feature of a successful system and are at the heart of the transparent factory. This needs to be as simple as dragging and dropping elements into a design space, telling each element where to derive its data and exactly how to display it. This needs to happen without input from the IT team and certainly without any coding, SQL or IT knowledge. Without this simplicity and flexibility the system will not keep pace with the enterprise and the teams requirements for differing and changing data presentation.

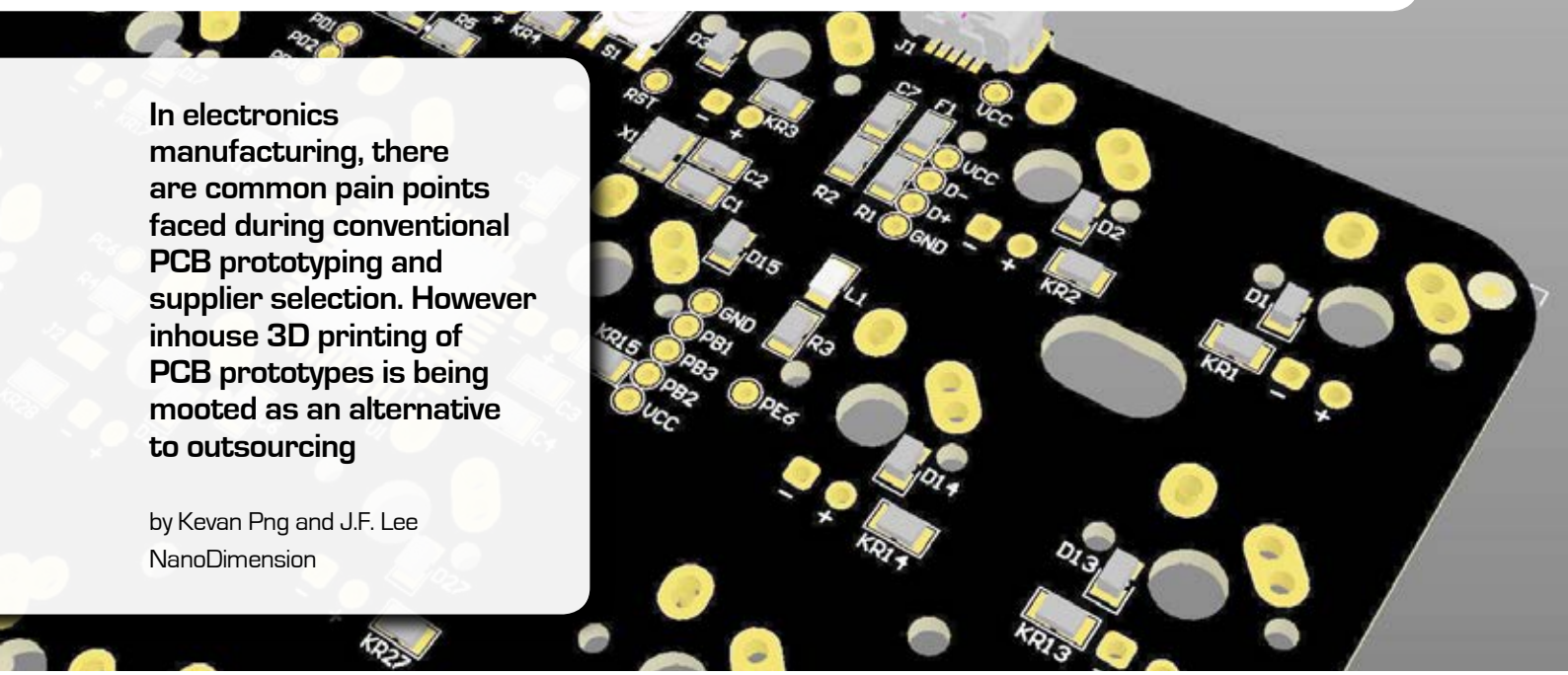
Customization vs empowerment

When it comes to resolving all the issues that the transparent factory generates, there are two polarized approaches. One solution is customization and the other is empowerment. While the customization model may appeal at first, offering multiple solutions that deliver a unique dashboard or report for every eventuality perceived during the installation of the solution, the approach of empowerment of the factory personnel to create their own data outputs and dashboards brings so much more than custom or tailored solutions.

• Real-time dashboards are constructed in a simple drag-and-drop environment where no SQL or coding skills are necessary



Testing time for prototypes in electronics manufacturing



In electronics manufacturing, there are common pain points faced during conventional PCB prototyping and supplier selection. However inhouse 3D printing of PCB prototypes is being mooted as an alternative to outsourcing

by Kevan Png and J.F. Lee
NanoDimension

Printed circuit board (PCB) prototyping is a key component of the product development process in professional electronics manufacturing. However, because of the traditionally complex steps involved in producing prototype boards, many manufacturers outsource production of their prototype boards to external prototyping specialists. Such outsourcing generally incurs high costs and/or relatively long turnaround times depending on board design complexity and the logistics involved in shipping the board to its destination. However there are option such as 3D printing for rapid-prototyping, to produced PCBs in-house, within hours, ready for the next round of testing and design refinement. Without the need to send designs to third parties, intellectual property (IP) security risks are also eliminated.

In the extremely competitive landscape of electronics manufacturing, innovation is key to survival. Existing technologies might be easy enough to replicate, but it is the constant and deliberate effort invested in developing ever more effective technologies that determines who thrives and who doesn't. Prototyping and testing are thus critical steps in ensuring that a company's next generation of finished products satisfies all functional requirements before being sent out to market. A 'prototype' in the general sense refers to an early sample of a product that is built to test the feasibility of a design idea. While most product prototypes are simple structural mock-ups used to identify ergonomic deficiencies and improve user experience, PCB prototypes have an additional requirement to fulfil – they need to have close to full working functionality.

The designs might make theoretical sense on paper, but designers and engineers must test physical boards under environmental or situational load in order to determine their robustness and conductivity in actual working conditions. Coupled with the fact that professional board designs tend to have multiple complex layers, this means that making prototype boards by conventional subtractive

manufacturing methods can get very complicated and are environmentally wasteful.

Industrial etching

While rapid prototyping equipment does exist, they have not proliferated the market. As evinced by the continued reliance on external prototype fabricators that are concentrated in the Far East (Taiwan and Southern China), electronics companies in the West have determined that the costs of owning and maintaining currently available rapid prototyping machines outweigh that of having to endure the logistical issues that inevitably arise from having to ship PCB prototypes across continents. One reason for this is that there is currently no easy way of etching the traces for each layer of a PCB. Conventional industrial etching methods all have their own set of complications: high levels of wastage, high power consumption, risks of storing large amounts of chemicals, replacing dulled milling components etc.

Overall, this explains why electronics companies and designers prefer not to get involved in the technicalities of PCB prototype manufacturing, opting instead to work with overseas prototype vendors and non-disclosure agreements to protect their intellectual property. This may work, but a crucial part in the selection process is to choose vendors who have the professional-level capabilities needed for electronics rapid prototyping applications and can keep the risk of failed prototype PCBs to a minimum. Remember, a failed PCB includes the costs of project delays and port/customs hold-ups which could result in long turnaround time, and significant delays, in time to market.

Outsourcing PCB prototyping

Sending a circuit board design (most commonly in Gerber format) to an

• Most of the world's PCB manufacturing occurs in Asia, with about 40% in China alone

external fabricator for production is a simple enough process. With many fabricators offering online services like instant price quotes and portals for submissions of board designs, one is spoilt for choice. Once a fabricator has been chosen, designs sent out, and agreements made, it becomes a matter of waiting for the board to be ready. Of note, however, are the geographical and production capability limitations of different manufacturers. Most of the world's PCB manufacturing occurs in East Asia, with about 40% of the market cornered by China alone. Although the fabricators in East Asia generally offer lower prices than those in Europe and the Americas, their location presents certain logistical difficulties (turnaround times) for designers in the Western Hemisphere. For simple board designs of at most two layers, the fastest companies in China can usually manufacture and ship to doorstep in Europe within three days, but orders with such fast turnaround times naturally cost a lot more than standard orders with a two-week turnaround time. One common demand of external PCB fabricators is to have a minimum order quantity (MOQ), which helps these fabricators offset the relatively high setup costs involved in preparing a custom design for prototyping. This MOQ often exceeds the practical amount of boards that designers and engineers need for testing purposes.

Considering that the design process involves incremental improvements, and hence successive generations of prototype PCBs, a company can spend substantial amounts of time simply waiting for boards to reach them.

Additive manufacturing

The entire manufacturing industry is in the midst of a revolution led by additive manufacturing, a process better known as 3D printing. As the term implies, additive manufacturing involves the gradual deposition of a material, layer by layer, to build a physical object. Even though the build quality of most 3D prints cannot match those of mass-produced objects made by industrial grade machinery, they have emerged as a cost, and time, effective way of making prototypes for validating ideas and theories. In particular, designers in the medical, aerospace, automotive, and architectural industries have benefited the most from 3D printing, as it has given them more creative freedom to explore ground-breaking ideas in design as well as fast ergonomic verification, more form and fit tests, and additional opportunities for customer feedback and better quality products.

For a complex, 10-layer board that would typically require several weeks to produce at an external fabricator, the Nano Dimension DragonFly 2020 3D Printer, for example, could shorten turnaround time to a day in-house. While an in-house system is an expense that needs to be justified, high resolution systems such as this can guarantee that complex, multi-layer PCB prototypes can be produced at a much lower cost and in less time.

• Designers in the aerospace and automotive industries have benefited from 3D printing for prototypes

Connecting cars with managed data

Whether the car of the future runs on electricity, hydrogen, or old-fashioned gasoline, it will emit billions of bytes of data. And the battle to control and exploit that data is just getting started

by Will Knight and Tom Simonite, MIT Automotive

Japanese carmaker Toyota recently announced a new subsidiary, called Toyota Connected, that will manage and mine the data collected from its vehicles, and the company said it would collaborate with Microsoft on the venture. The data collected and delivered might include mapping data, engine statistics, and records of driver behavior. Most immediately, this could mean updating vehicle features or patching bugs remotely. But the goal is also to develop new kinds of interfaces that predict a driver's intention.

Over the past decade, cars have become vastly more computerized and connected. Tesla epitomizes this trend, issuing software updates via 3G to its customers' cars to update the interface, add new apps, and even to tweak the performance of the engine or brakes.

Toyota says consumers' preferences are being shaped by consumer technology and the experience they have with mobile devices is what they want in their vehicle. The technology could introduce new security risks, and raise drivers' ire over the collection and use of their personal data. But the company says data would never be collected without a driver's permission.

In its research lab, Toyota has shown that tracking driver location and driving behavior—and combin-

ing that data with other sources of information—can predict where someone is headed. When people drive outside of their normal driving patterns technology can guess with 80 percent accuracy where they are likely to go, based on their likes or dislikes., according to Toyota. This could mean, for example, a car that realizes when its driver is headed to a football game, and then offers to automatically map out the route and prepay parking."

Tapping into data

As cars become more data-guzzling carmakers will face increased competition. Companies including Google and Apple have spotted an opportunity to tap into the data coming from cars, and they are already making forays into the vehicle interface using dashboard systems that mirror a customized iPhone or Android device.

Via Android Auto, for instance, Google Now will already try to predict the destination for a journey, based on messages found in Gmail or recent Google searches, and then automatically offer directions. Meanwhile cloud computing providers, including Microsoft, are keen to provide the on-demand computer power for services such as high-resolution maps often used for automated driving.

News that Amazon and Microsoft are bidding to run crucial maps infrastructure needed to operate the most independent kinds self-driving cars is a reminder that cloud giants' influence is growing in new directions. These companies are positioning themselves to power the public infrastructure that keeps the world running.

Reuters reports that Amazon and Microsoft are in talks with BMW, Audi and Mercedes about putting their cloud computing power behind the HERE mapping service that the trio of car makers bought from Nokia for $2.85 billion last year. These maps record the position of every curbstone and traffic light pole.

Google is the only other company with comparable maps. It and HERE made them by driving around cars festooned with sensors and cameras. But unlike Google, any car company wanting to get large numbers of autonomous vehicles that use these maps onto the roads will also need the help of a cloud computing company. Google has said it wants to collaborate with the auto industry to get self-driving vehicles into widespread use, and will likely end up providing its own maps to auto makers.

Cloud giants

Amazon, Google, and Microsoft are positioning their cloud computing services to dominate the infrastructure that will power self-driving cars. Consumers depend on Amazon, Microsoft and Google much more than they know.

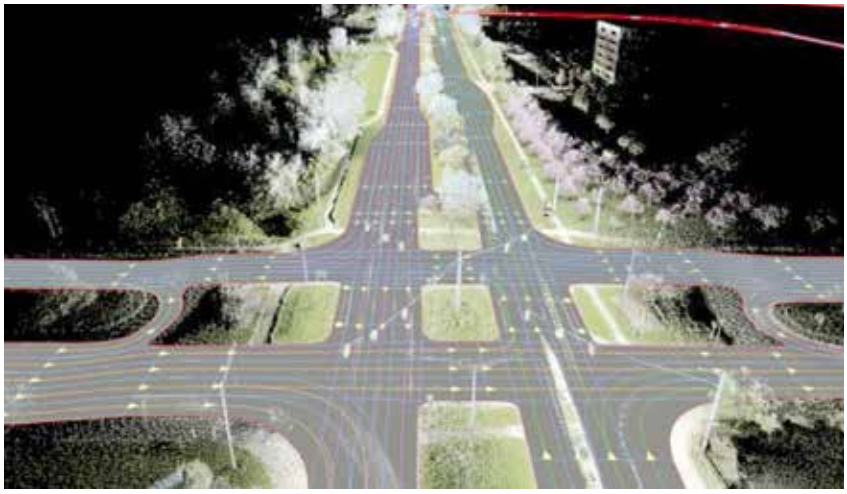
As businesses and governments move more of their underpinnings into the cloud, the three leading cloud providers are becoming the invisible foundation of daily life.

• Amazon and Google are working closely with NASA on a project for controlling drone traffic using drone quadcopters

The dream of commercial drones thronging the skies to deliver packages, monitor crops and perform other useful jobs could depend on infrastructure provided by cloud companies. Amazon and Google are working closely with NASA on a project seeking to invent a nationwide system for controlling drone traffic, which will likely involve a major cloud component.

The FAA and NASA appear open to that being run privately, with oversight from regulators. Google's proposed design for drone traffic control includes private companies operating that part of the system, while Amazon has sketched out its own preferred design. If a future where flocks of drones fly over roads filled with autonomous cars arrives, the infrastructure making it possible will probably rely heavily on the cloud giants.

• New mapping infrastructures are needed to operate the most independent kinds self-driving cars



Uniform retention force ensures secure PCB assembly

An expanded line of card retainers from Elma Electronic provides uniform retention force across the entire length of the device to ensure printed circuit boards (PCBs) are held securely in place. Now available in more length and profile options, the SureLock family of multi-segment, extruded aluminum retaining devices is ideal for rugged applications where PCBs slide into a channel in the cold plate assembly or enclosure. A simple turn of a screw expands the SureLock retainer to securely hold the card assembly in place, eliminating tooling costs in most implementations. An added benefit is a uniform retention force across SureLock's entire length to continually protect cards subject to extreme shock and vibration, as typically found in rugged, harsh or otherwise challenging computing environments. For embedded electronics in mobile applications that require conduction cooling, SureLock not only holds cards securely in place, but facilitates heat transfer as well. Widely used in ruggedized military and defense applications, this growing family of PCB retainers is finding a home in other areas, including small form factor industrial systems, according to the company. The lightweight, aluminum construction not only makes the SureLock Series highly useful in compact, mobile applications, but also facilitates conduction cooling by transferring heat from a circuit card to a cold plate or to an enclosure's extruded side walls.

New variant in high throughput inspection from Viscom

A new variant of its S3088 ultra 3D AOI system has been introduced by Viscom. The S3088 ultra gold reaches image data rates of up to 3.6 gigapixels per second. The core of this system is the innovative high performance camera module XMplus with its outstanding, high throughput camera technology. As one of the leading manufacturers of high quality solutions for optical and X-ray inspections in electronics manufacturing, Viscom is constantly driving new innovations. The new S3088 ultra gold 3D AOI system is a further development of the S3088 ultra. It features an individually configurable design, that can cover the varying requirements from small series production to high-volume-low-mix manufacturing. The central innovation is the 3D camera module XMplus with more than 120 megapixels.The S3088 ultra gold also boasts an image field size of 50 x 50 mm and inspection speeds up to 65 cm2/s.

Comprehensive wire bonding from Kulicke & Soffa

Leader in the design and manufacture of semiconductor, LED and electronic assembly equipment, Kulicke & Soffa, have introduced a comprehensive solution for Fine Aluminum (wedge-to-wedge) wire bonding - with the newly launched VitaCap series of capillaries and IConnPS Plus Ball Bonder. VitaCap is made from K&S' ITA ceramics material, engineered for high quality Aluminum wedge bond and tail bond formation on any wire direction. Its unique features fit well with IConnPS PLUS™ Ball Bonder's special wedge-to-wedge feature. Together, they deliver an innovative wire bonding platform for applications that uses fine Aluminum wire diameters (0.6-2.0 mil), supporting the automotive, RF, medical, LED and consumer segments.

RNCS-AS thin film precision chips resist sulphur and moisture

Stackpole has developed a series of thin film precision chip resistors that are resistant to the effects of both sulfur and moisture. Typically thin film nichrome resistors have difficulty withstanding high humidity environments under low power. Stackpole's proprietary materials and processing protects the nichrome element and performs as well under high humidity testing as much more expensive technologies such as tantalum nitride film chips. In addition, resistors that have printed palladium silver inner terminations are susceptible to contamination by sulfur causing resistors to open. Stackpole's unique termination material and design minimize the effects of sulfur yielding a part that is ultimately extremely robust and reliable under a wide variety of environmental conditions. The RNCS-AS Series is AEC-Q200 qualified and is a good choice for applications requiring precision and accuracy under unknown or unpredictable operating conditions.

New wheel inspection system from Yxlon

Following intensive test operation during production involving more than 250,000 inspected wheels, Yxlon has officially launched the new WI26 G wheel inspection system with ADR and the new Yxlon Panel 460 detector. The design for the new WI26 G has been geared for speed, inspection decision-making at its best, and minimum maintenance requirements. At less than 20 seconds of inspection time per standard wheel, an annual throughput of 1.5 million inspected wheels is being applied as the basis. Which makes the WI26 G the fastest X-ray system in its class. WI26 G is equipped with the Panel 460, a detector that supplies what is currently the best image quality for reliable inspection decisions. The efficient wheel feed and discharge via a new type of loadlock and transfer construction design ensures complete shielding against radiation and implements wheel identification directly during insertion.

LPKF plots next-generation circuit boards

PCB prototyping is an essential step in electronics development. With the ProtoMat E34 and the ProtoMat E44, LPKF offers multifunctional machines for structuring, drilling, and milling of circuit boards. The plotter eats through the copper of the base material at up to 40,000 RPM. LPKF's E series ProtoMats are the low-cost entry-level solutions for professional PCB prototyping without the need for etching chemicals. They are also extremely user-friendly and compact, with a footprint barely larger than a DIN A3 sheet. Even when only used occasionally, the ProtoMats in the E series show their advantages. They offer a similar precision to that of high-speed systems in the ProtoMat S series but concentrate on the core task. The LPKF ProtoMat E34 has a spindle speed of 30,000 RPM, and the E44 even reaches 40,000 RPM. In both systems, a chuck with a micrometer screw gauge for precise height adjustment is available to speed up tool change.

Panasonic moves to IoT readiness

As part of Panasonic's 'beyond SMT' move to IoT-readiness by incorporating and integrating storage systems, stencil and PCB cleaning, conveyance, screen printing, SPI, placement, AOI and reflow, the company has launched the NPM-VF. The new machine, based on the NPM concept,for dispensing, placement, and inspection heads is designed to provide superior flexibility and application versatility to automotive and other industrial users—in particular, industry segments faced with extreme odd-form or application challenges. The new platform incorporates many features of the NPM Series like tape feeders and nozzles. The NPM-VF is projected to achieve a high level of success in the marketplace, with several orders already in-hand.

Varitron installs second ACE selective soldering system

ACE Production Technologies, a leading supplier of selective soldering systems, is pleased to announce that Varitron Group has invested in a second KISS-103IL in-line selective soldering system. The KISS-103IL is a fully-configured SMEMA compatible selective soldering platform equipped with 'Super Quick' processing speeds and the unique dual solder nozzle systems enabling the use of multiple nozzle shapes within the same program. It comes standard with the ACE automated fiducial location and correction system that offers seamless fiducial recognition and true automated X-Y alignment and corrects any skew of the printed circuit board. The company said other innovative features include the new SWAK-OS machine operating software which is a revolutionary graphics-based programming and editing machine control system that features fast program loading and program recall with minimal operator intervention. The integrated board scanning function that automatically captures and saves an image of a printed circuit board to the selective soldering program.

Identifying animals as sentient beings

Legislation surrounding animals as an essential resource - and also as members of our societies whenever included as our domestic companions - is being modernized in many countries. A holistic approach to the issue is far from being viable to date, but a new vision is coming of age

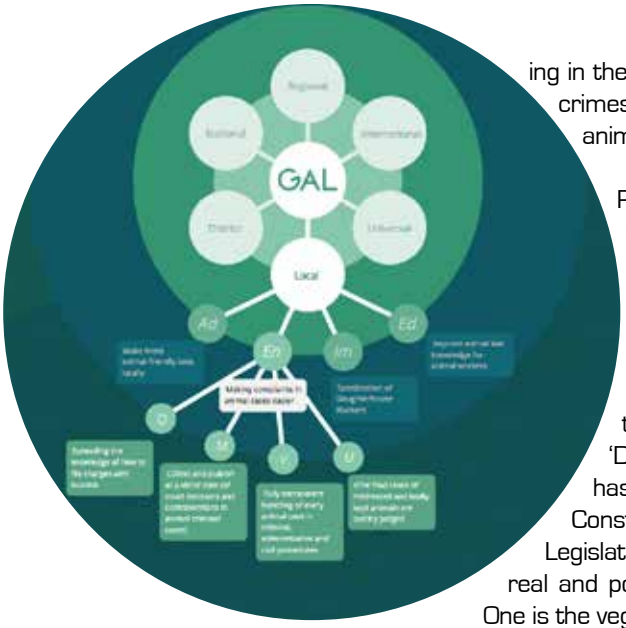
by Victor March

In several countries, pets have officially become part of our families and are given passports to cross national borders. Owners of cats and dogs may no longer to relate to them in the narrow logic of property law: their duties now being regulated, they turn into official caregivers. Animals, however, will most probably remain 'citizens of a minor government', until policy makers engage in harmonizing a vision where animal welfare is included in our societal legislation at a constitutional level.

As an expert attorney in the field of animal welfare and succession rights, Antoine F. Goetschel monitors current trends in legislation, keeping track of how policy makers develop more inclusive thinking with respect to animal rights.

Where does the animal stand in the eye of the legislator?

Today's society sees economic growth as the key to prosperity, and economic growth has its own logic. Our economy revolves around serving an ever more demanding consumer, who expects more to be made available faster and at cheaper prices. Countries, as additional stakeholders, need income from healthy industries. The priorities of policy makers must take all this into consideration. When daily facts or notorious episodes do not intervene to stir public opinion (unless sufficiently intriguing to warrant electoral considerations), the legislator often remains deaf to the discussions held in the interests of animals themselves. Speaking for animals loses its appeal as soon as we abandon the comfort zone of public debate and of wishful-thinking 'on-the-street' advocacy. Industry sectors which use animals as assets to be exploited or transformed – such as modern cattle-farming, animal testing, as well zoos and in sports such as dog and horse racing or hunting – can count on the proper representation they need. They can and will pay for research and communications to be carried out in their interest, especially when it comes to political decision-making about their future. The industrial agenda prevails just as much as its lobbying is backed - when meaningful financial advantages can be derived. Results of animal friendly ovements since the 1970s are tangible at a local up to global level. In several countries, legislation has been revised to reach an intermediate step:



• The Global Animal Law (GAL) project matrix showing proposals towards a better world for animals through legislation

civil codes provisions are giving a new status to animals. This step is indeed fundamental if countries are to provide animal welfare legislation at all: it all starts with adopting the Animal Rights Issue on a constitutional level to balance animals' interests against fundamental rights such as freedom of economy (in particular: animal farming and testing or the fur trade as an example) or personal freedom (hunting, visiting zoos etc.).

Is there a roadmap towards animal welfare?

About a third of countries worldwide still do not foresee any kind of animal welfare legislation. And, to make things even more complicated, law enforcement is particularly challenging in these countries, whenever crimes and offences involve animals.

Picturing what can be realized in future and on a broader scale, one can leverage known examples of legislation already in place. An example is the constitutional protection of the 'Dignity of Animals', which has been part of the Swiss Constitution since 1992. Legislators are influenced by real and powerful societal trends. One is the vegan issue, a debate that will not likely result in the banning of meat consumption, but most probably lead to much higher if not universal consensus in the banning of food production methods that see animals systematically mistreated.

What are the drivers behind pet ID and livestock identification?

Originally, Pet ID was merely intended to enforce taxes on dog owners. The system was expanded in a second phase and evolved to become a useful tool for identifying so called 'dangerous dogs', as well as their owners and breeders. Strong advocates of the Pet ID project were also veterinarians and their interest groups, who helped underline the animal disease issue in a growing international context. But beyond these considerations, Pet ID truly turns out to be a desirable program also from the animal's safety and social wellbeing standpoint, as it supports each pet's individual healthcare program and the swift reunification to the registered owner if the animal is lost.

Conversely, in the very different context of livestock identification, the animal's interests are neglected altogether. The main driver of the program is granting accountability in a system designed to support volume production of safe and convenient meat. It also allows end-to-end traceability of animal-based products, as demanded by consumers and governments alike for the sake of liability and public safety. Surprisingly little is done to leverage animal ID for controlling food production methods, to discourage unethical practices or expose conditions that are intolerable.

• Livestock identification allows end-to-end traceability of animal-based products but, according to GAL, the animal's interests are neglected altogether

Meet Antoine F. Goetschel

As sole practitioner at Hoeschgasse Consultants and President of the GlobalAnimalLaw.org GAL project, Antoine F. Goetschel specializes in human-animal-relationships in Swiss and international law. As an expert attorney in the field of animal welfare and succession rights, he has represented the interests of animals in criminal cases as a public official. He was also instrumental in the establishment of the Foundation for the Animal in the Law.

What countries have the most modern legislation looking at the rights of the animal?

Only very few countries foresee a basic national law or civil code provision giving a new status to animals and a national constitutional principle. Among these there are Switzerland, Austria and Germany. Countries with a basic national law and constitutional principle are Brazil, India and Egypt, whereas several countries such as the U.S.A. and Argentina have a basic national law and a provincial or local constitutional principle.

Tesco gives high tech boost to retail technology

Despite the stop-start nature of the roll-out of RFID in retail since the turn of the millennium, there is once again a real buzz around the technology. Tesco says it is at the forefront of this and is one of very few industry players currently embroiled in a wide scale RFID project. The initiative is being driven by the retailer's company-wide target to be as customer focused as it can be. By having a reliable system that offers a single view of its stock levels at all time, the retailer believes it is now armed with more knowledge that its shoppers require. In addition, Tesco Labs – the grocer's division dedicated to innovation and customer-facing tech – announced that it has created a solution for shoppers that meets the drive towards owning and using multiple connected devices. Tesco has launched a channel on the digital platform, IFTTT, a service which allows consumers to connect their favourite apps, for example if they change their Facebook profile image then it can change their Twitter pic automatically. The grocer's venture on IFTTT – which stands for If This Then Than – allows consumers to automate their shopping, so if the price of product changes or goes below a certain price, it can be added to their online shopping basket.

It is early days in the development of what is effectively an Internet of Things-style technology experiment, but observers say the trial is a step towards predictive online shopping and an exploration of the potential in consumers setting up automated eCommerce.

Technology is also changing the role of store staff through the supermarket's Inform app, which is currently being introduced to shops across the UK. Store managers download the app onto their personal iOS or Android devices – it will also be available on the Windows phone soon – and it can then be used to scan barcodes on a product or shelf-edge label to gain information about stock levels and availability. Bring your own device (BYOD) strategies can also help improve adoption levels when it comes to introducing new technology in a store environment.The tech can be used for troubleshooting or getting an item back on sale as quickly as possible, as well as being an effective tool for informing customers about stock availability – perhaps more so than the tried and trusted "I'll go and look out the back" method employed for years by shelf stackers at the major grocers.

And as part of the grocer's drive to strengthen its relationship with suppliers, there could be further developments in the mobile and digital space. Tesco wants its suppliers to play their part in improving the online merchandising proposition, by considering video content, multiple images and, in some cases, 360-degree and relative size imagery. The supermarket has also opened up discussions with suppliers about the potential of providing advertising capability on the Tesco mobile site. No official announcement has been made but it is clear Letts is looking to maximise the potential of mobile commerce.

Global food traceability market driven by strict regulation

The global market for food traceability is technology driven and is seeing introduction of new technologies and applications across different levels such as in packaging, logistics, storage, handling, and retail. The different technologies currently available in the market are barcode, RFID, biometrics, GPS, and infrared. The market has been analyzed in a detailed market research report by Transparency Market Research. The report provides a granular analysis for understanding the changing competitive dynamics of the market and presents a forward looking perspective about the several factors instrumental in shaping the market's future growth prospects. According to the analysts, the concept of traceability has seen a significant rise in popularity and adoption in the food safety and quality industry in the past few years. These days, almost every step of logistics, right from packaging to distribution to the consumer, uses a type of food traceability technique for a variety of reasons. However, the primary driver of the global food traceability market is the rising importance of the ability to track the origin of food products. This is mainly due to the globally increasing incidences of food borne diseases and the implementation of strict food quality regulations making it compulsory for producers to monitor food quality at every step of manufacturing. The market is exhibiting steady growth on a global front and is expected to expand at a healthy pace over the report's forecast period.

Landmark Cambridge alliance boosts UK food safety

Cambridge technology innovator Checkit has joined forces with the city council to develop a next generation cloud-based food safety management system designed to revolutionise food safety compliance. Checkit is a spin-off from product design hothouse Elektron Technology and has become a leader in automated monitoring and work management solutions across food, safety and facilities management. The system, which builds upon the Food Standards Agency's Safer Food Better Business, enables all food businesses – whether a single restaurant or a UK-wide chain, hospital or even a school – to replace their paper-based system with interactive digital checklists and automated cloud-based monitoring, to give improved compliance, control and visibility.

India to bring FCI foodgrain management online

An online system to automate all the operations of Food Corporation of India (FCI) depots in India has been launched. Capturing data online on a real time basis, the system will bring total transparency in the working of FCI. The system will provide various types of data regarding stock position, movement, quality and quantity on line. It will generate SMS alerts to depot officials, area manager and other decision making authorities. All the data will be available on dashboard and help in automatic reconciliation and generating of MIS reports about foodgrain management. The Government said that almost 100% of ration cards have been digitized and about 80,000 Fair Price Shop (FPS) have been provided with biometric Point of Sale Device for distributing subsidized foodgrains. Such devices will be installed at 3 lakh FPS by March 2017 and by March 2019 all the ration shops in the country will have these devices to make Public distribution system totally leak proof.

RSPCA urges dog owners to chip as law changes

As of April 2016, it will be compulsory for dogs to be microchipped in Wales. The move is in a bid to cut down on the number of strays and dogs being abandoned and the RSPCA is urging owners to get their pets chipped immediately to be ready for the law change. The chip gives pets the best chance of being identified and returned home if they become lost or stolen. The charity is also calling on members of the public who already have their pets chipped, to ensure that their contact details are up to date. Microchipping is a quick procedure where a small chip is placed underneath the animal's skin. The chip stores an ID number with the owner's details which are stored on a database.

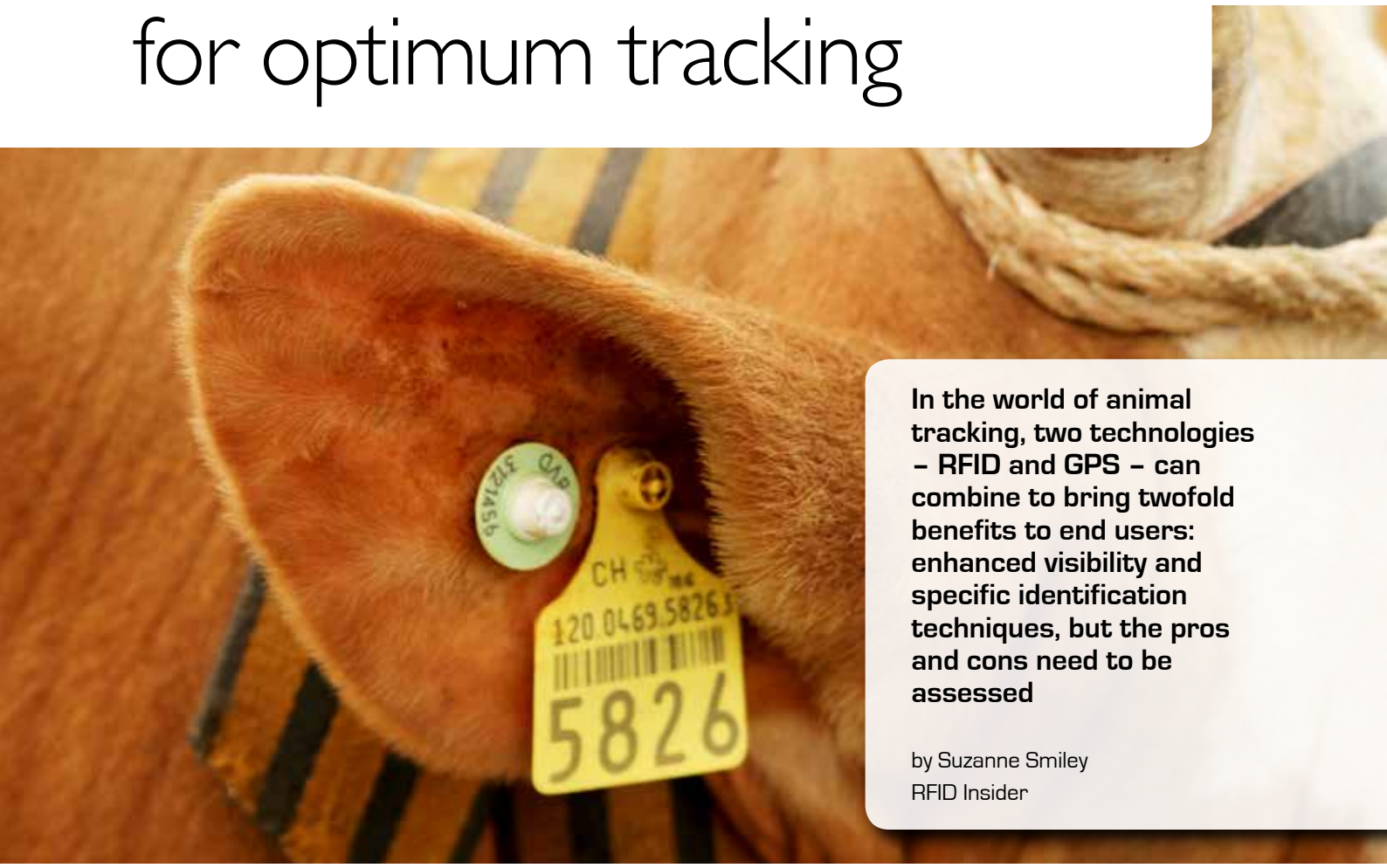
Large animal detection featured in new cars

Volvo has launched a large animal detection system showing how technology coming to its vehicles in 2017 can detect animals, such as a cow or a moose, and take action to ensure there isn't a collision between the animal and the vehicle. The radar constantly sends out a signal and is constantly looking for something and it will sense when there is an object. The camera then takes video of it and attempts to identify what the object is, according to Volvo. A central control unit determines if the object is a threat and if so, how to proceed. If a driver does not react, the car will take action at the last possible second, automatically applying the brakes one second before impact.

Northgate Gonzalez markets adopts ReposiTrak

Park City Group's ReposiTrak, a provider of compliance management and track & trace solutions for food, pharma and dietary supplement safety, has announced that Northgate Gonzalez Market has chosen its solution to manage regulatory and business documentation compliance within their supply chain. Family-owned and operated, and headquartered in Anaheim, CA, Northgate operates 40 high-volume stores in the US state of California. Northgate has grown over the years by catering to the growing Latino community, providing customers with their favorite products from the U.S. as well as those products familiar to their culture in addition to many other prepared foods.

Combining technologies for optimum tracking



In the world of animal tracking, two technologies – RFID and GPS – can combine to bring twofold benefits to end users: enhanced visibility and specific identification techniques, but the pros and cons need to be assessed

by Suzanne Smiley
RFID Insider

Deciding to tag animals with RFID can be both a business decision as well as personal. Tagging livestock with RFID can be an important tool in a farmer's arsenal to identify each animal along with its pedigree and medical information. An LF reader or wand scans the animal during veterinary visits or inventory counts, and with the help of software, uploads significant information on each animal to a database. New equipment and software is available that builds on the LF RFID identification premise, but offer new data and options. These new livestock tracking RFID systems use UHF RFID and GPS to track the animal's movement in order to identify feeding and travel habits, and even monitor heart rates.

Livestock and farm animals are not the only animals currently tracked using RFID. Veterinarians are now pushing for all household animals to be tracked using RFID in order to create a system to identify lost and found pets. If all household animals are tagged with LF RFID chips, when they are found, vets can scan their tag to see information such as identification and the owner's contact information. RFID chips that identify all pets on a nation-wide database can help reunite lost pets with their owners.

Another important reason for tagging animals using RFID is to manage exotic and endangered animals on preserves or other wildlife habitats. LF RFID, UHF RFID, and GPS systems are all used in animal management.

The specific system selected is usually dependent on the information needed and safety of the animals.

Low frequency

The main application for Low Frequency (LF) RFID is animal tracking. LF is a band on the radio frequency spectrum that typically operates between 125 kHz and 134 kHz. Technically, LF applications can operate on a larger bandwidth from 30 kHz to 300 kHz; however, the specific band varies from country to country and depends on frequencies set aside for radio and marine life tracking. LF RFID communicates in a similar fashion to HF/NFC RFID in that it uses electromagnetic coupling to send and receive signals. In summary, only small amounts of data can be stored on the LF tags, which are typically smaller than other types of RFID tags. Also LF systems have shorter read ranges than both HF and UHF RFID. In addition, LF tags require less energy to operate and are able to operate around liquid or metal items.

Active RFID

Active UHF RFID technology is different from other types of RFID because it uses a battery as an internal power source. This type of RFID technology operates on the UHF band on the RF spectrum usually at or around 433 MHz or 900 MHz. Active RFID systems have a typical read range of over 100 meters and are used in applications such as remote monitoring, IT asset management, and auto manufacturing.

Active RFID tags send 'beacons' or signals to a reader at predetermined time intervals, which are dependent on the exact frequency and programming of the tag (usually every 3 – 5 seconds). These tags can store large amounts of data and are available in specific formats for rugged applications.

GPS

Global Positioning System (GPS) is a U.S. owned technology that helps locate and track GPS-enabled devices and tags by using satellites. According to the U.S. government, all satellites fall into three segments: the space segment, the control segment, and the user segment. The user segment controls satellites used for signaling GPS receivers and other satellites for 3D positioning.

From space, GPS satellites broadcast their exact location, status, and time and the signal is picked up by GPS devices on Earth. The exact time that the device receives the signal is documented and used to calculate the distance between the GPS device and the satellite. The GPS device on Earth picks up at least four different satellite signals, calculates its distance from each one, and then uses an algorithm to determine its exact location.

Combining technologies

Many times when people think of GPS technology, they typically think of the GPS devices in their cars or phones; but, asset tracking with GPS technology is becoming much more prevalent. GPS tags or receivers are now available for applications including and similar to large asset tracking of cargo and shipping containers or machinery.

Active RFID cannot provide the extreme read range that GPS tags can provide, but it works well for applications that involve tracking items in a fixed area such as a laydown yard or across multiple warehouses.

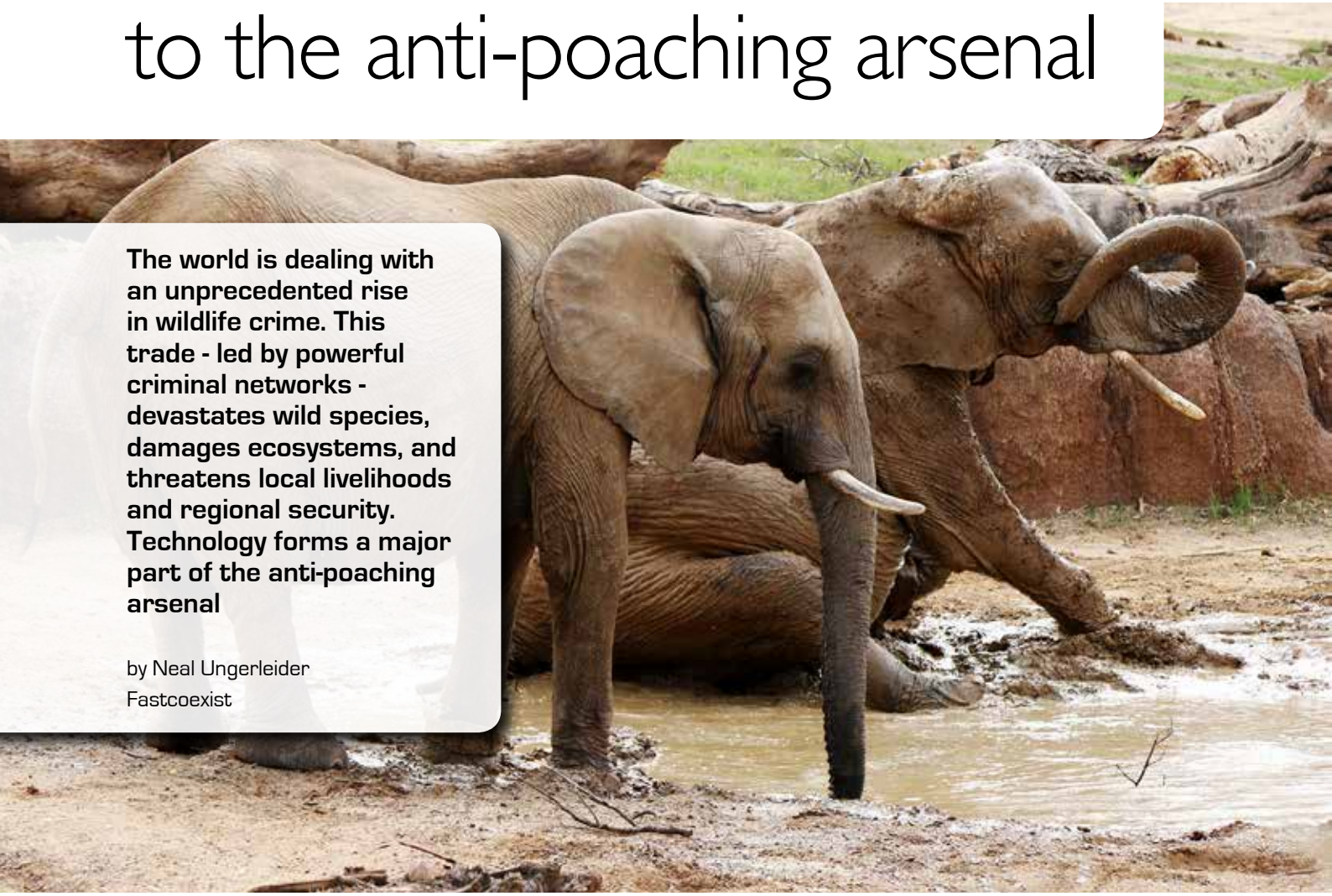
GPS and RFID technologies have been combined in the past. Together these two technologies allow companies the enhanced visibility that comes from GPS as well as the specific identification techniques that come from RFID. In order to track assets, both technologies require software to produce expected results.

• Tracking device that contains satellite information and helps with the environmental health of animals

Active RFID tags with embedded GPS receivers can provide GPS location coordinates as part of their normal beacon payload. This tag type can either be read through an active RFID reader or through a beacon directly to a satellite. The signals can then be received by a satellite base station where a software application can query to obtain the location information. So a combination of the two technologies offer new data and options for improved tracking, safety and identification.

• Pet fitness gadget, Whistle, that charts physical activity combines with Tagg, a GPS-enabled pet tracker

Bringing high-tech firepower to the anti-poaching arsenal



The world is dealing with an unprecedented rise in wildlife crime. This trade - led by powerful criminal networks - devastates wild species, damages ecosystems, and threatens local livelihoods and regional security. Technology forms a major part of the anti-poaching arsenal

by Neal Ungerleider
Fastcoexist

Fighting wildlife crime requires new and innovative monitoring and enforcement systems, as well as strategies to reduce demand for ivory, rhino horn and other wildlife parts.

Three years ago, Google awarded the World Wildlife Fund (WWF) a $5 million Global Impact Award to create an umbrella of technology to protect wildlife. This project gave governments battling wildlife crime a vital advantage: new integrated network of technologies to help reduce poaching and minimize risks to field staff on the ground.

Since then, the Wildlife Crime Technology Project has focused on creating a seamless system of four technologies: unmanned aerial systems (UAS) for surveillance and rapid response; digital monitoring systems that monitor high-risk areas and boundaries of protected areas; affordable wildlife/patrol tracking devices connected through mesh networks; rifle shot recognition software in portable devices with real-time connectivity.

• Up: an automated waterhole surveillance system has 24/7 live video streaming
• Right: unmanned aerial systems (UAVs), or drones, use thermal energy to look for poachers

Smart watering holes

WWF implemented this system across four sites in Africa and Asia that are home to elephants, rhinos or tigers. Namibia was selected as the initial pilot geography for the project. This includes an automated waterhole surveillance system with 24/7 live video streaming being installed at three waterholes and reported as fully operational in Namibia's Waterberg Plateau Park.

Rhino RFID

Back in 2012, Coexist examined the WWF's plans to use drones to fight poachers in Africa and Asia. Falcon UAVs equipped with a variety of cameras and sensors were used for daytime and nighttime reconnaissance flights, rhinoceroses were tagged with radio-frequency identification (RFID) chips, ground-based sensors connected to a real-time communication system were placed in key areas, and local officials tested a spatial reporting and monitoring platform that can track the movements of poachers, rangers, and animals.

Traffic North America (a wildlife trade monitoring program run jointly by the WWF and World Conservation Union) says that the new system allows rangers in Namibia to communicate with each other much more quickly, and gives them access to some exciting new tech tools as well. The integration of different technologies sees UAVs in the air at the heart, using thermal energy to look for poachers.

The Wildlife Crime Technology Project's efforts in Namibia are done in coordination with the Namibian Ministry of Environment and Tourism, which will ultimately deploy the monitoring systems. Success will depend on quick communication and integration of various data streams, using low-maintenance technology that can work in rugged African areas and has a learning curve that can be mastered quickly by rangers (the poachers, many of whom are veterans of military conflicts in Angola and elsewhere, generally have extensive equipment and supplies).

Digital communication

A South African vendor supplied the WWF and the Namibian rangers with a radio frequency (RF) network that sends information from the UAVs, the RFID tags, and sensors at watering holes to a central location. The RF network is also integrated with an encrypted radio and digital communication system for rangers. This was an issue for the rangers in the past—in their particular test area in the Zambezi Region, they generally worked on a high plateau while the command center was in a valley below that inhibited communication.

These technologies interact with each other in unexpected ways.

• Each collared rhino's geolocation and movement data is encrypted

When the WWF's drones fly over rhinos, they are able to identify the rhinos on the ground via the new RFID microchips. The drones are also able to track movement of animals and migrations much more effectively than previous tools. But technology cannot do everything on its own and according to the Namibian Ministry of the Environment and Tourism, the technology needs to be used by rangers on the ground in near-real time for maximum effectiveness. The WWF's arsenal helps rangers do their job much more effectively but in the end, it is the human talent that counts.

Lion tracking

Cecil the lion, who met his untimely death at the hands of an American 'big game hunter' was one of a number of African animals fitted with special tags that track and report their locations, helping conservationists keep tabs on their dwindling populations. Radio tracking, GPS transmitters, and even drones are now used to monitor wildlife throughout the world, from wandering albatrosses to rhinos to sea turtles.

It is difficult to pinpoint exactly how many lions wear tracking collars throughout all of Africa. Conservation programs in the countries where lions live, including Kenya, Namibia, Tanzania, and Zimbabwe, each report tagging between a handful and several dozen of the big cats. This represents a fraction of Africa's estimated 30,000 lions.

Cecil wore a collar monitored by the Wildlife Conservation Research Unit of Oxford University. The group uses satellites to track more than 100 lions, and has monitored the lives of more than 500 individuals over time. WildCRU had tracked Cecil, who was 13 when he died, since 2008. His collar transmitted GPS data on his whereabouts that was uplinked to a satellite every hour. When scientists download this information, they use it to map a pride's territory and learn a lot about lion society.

Lion location information also helps balance conflicts between lions and humans, who sometimes poison the big cats to protect livestock, or who hunt them—legally or illegally. When a tracked lion moves outside a national park's boundary, conservationists can find out and warn hunters that it's illegal to shoot that specific animal. In Cecil's case he was reportedly lured out of Hwange National Park.

Tracking big cats is also an expensive business. Satellite tags range from US $1,900 to US $2,300 apiece. Cecil's collar cost roughly US $2,340, according to WildCRU. Then researchers have to pay an annual fee to download the tag's data from the Iridium satellite. This runs about US $780, WildCRU says. Tack on the cost of four-wheel-drive vehicles, tires and gas for them, food and supplies for the workers, and so on, and the effort gets very expensive. The same goes for efforts to monitor and protect other African big game, like rhinoceroses and cheetahs.

• Cecil's collar transmitted GPS data on his whereabouts that was uplinked to a satellite

Lion conservation programs also use radio tags, which are a fraction of the cost of GPS collars—around $300—and can last up to 30 years. But they require a person to be out in the field looking for radio signals with a receiver and then logging locations using GPS.

Underpinning conservation

At the WildCRU, in the Recanati-Kaplan Centre at Oxford, studying lions in various parts of Africa uncovers the science that will inform and underpin their conservation. This is urgent, because lion numbers are precariously low, estimated at fewer than 30,000 across the continent. The center's goal is to understand the threats that lions face, and to use cutting-edge science to develop solutions to those threats. The work is scientific, satellite-tracking the movements of over a hundred lions and monitoring every detail of the lives of more than 500 individuals.

WildCRU's work is also highly practical. According to their website, they run a courageous anti-poaching team, a local conservation theatre group, and education campaign that gets information into every school in the district, and work with local farmers to help them live alongside lions and improve their livelihoods.

Presented by SUSTAINABLE DEVELOPMENT

ID WORLD
THE PLAYERS OF THE AUTO ID INDUSTRY

The most authoritative directories in the industry

Top 25 Suppliers

animal identification

2016

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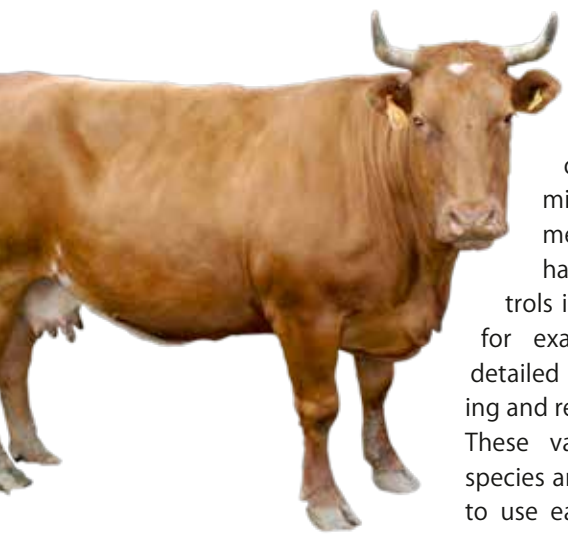
ID WORLD's annual directory featuring the world's leading suppliers of animal identification technologies

Following the herd

Traceability and identification of animals is a global market, which sees technology stand side by side with regulations. Electronic tagging technologies today identify several hundred million animals, such as pigs, sheep, goats, cows, deer, horses, fish and pigeons. Progress is governed in the main by legislation.

In the EU, the basic objectives for rules on the identification of animals are the localisation and tracing of animals for veterinary purposes, which is of crucial importance for the control of infectious diseases; and where applicable, the traceability of meat for animal and public health reasons and the management and supervision of livestock premiums. Individual member states also have their own controls in place. In the UK for example, there are detailed rules for identifying and registering animals. These vary according to species and cover the need to use ear tags, herd registers, flock registers and movements documents.



A key element is the Animal and Public Health Information System (APHIS) which is a database held by DARD. It holds information relating to cattle, sheep, goats, pigs and birds. It is critical that the data held on APHIS is accurate because it is used to operate disease control programmes, for example, TB, brucellosis and Aujeszky's disease; rapidly trace movements in the event of an exotic disease outbreak, such as foot and mouth disease and bluetongue; provide public health and trade assurances for the safety of our meat and pork.

Technology

In terms of technology, in the EU the system for the identification and registration of individual bovine animals includes the following elements: double eartags for each animal with an individual number; maintaining a register on each holding (farm, market, etc.); bovine, equine, pet etc passports; a computerised database at national level with a future voluntary interoperability of bovine databases. As from July 2019, for bovine animals, member state and operators may choose the electronic identifier amongst e.g. an electronic ear tag, a ruminal bolus or an injectable transponder.

Livestock tracking

Meanwhile in the US, revised rulings since 2013 state livestock moved interstate (unless specifically exempted) would have to be officially identified and accompanied by an interstate certificate of veterinary inspection or other documentation. Approved technologies include official eartags, approved animal identification number (AIN) devices and an approved national uniform eartagging system (NUES).

This TOP 25 Suppliers of Animal ID Technology directory presents leading players who provide a range of tags, equipment, readers, software or other forms of automatic animal ID product or service available on the market.

Top 25 Suppliers
animal identification

		Products								Software		Species				
		Integrated circuits	RFID eartags	Injectable RFID tags	RFID boluses	Handheld RFID readers	Stationary RFID readers	Biometric ID	Real-time location systems	Herd/farm mgmt software	Data collection software	Pets	Livestock	Lab animals	Endangered	Fish
AEG ID	www.aegid.de		✔	✔	✔	✔	✔				✔	✔	✔	✔	✔	✔
Agrident	www.agrident.com		✔			✔				✔			✔			
Allflex	www.allflexusa.com		✔			✔	✔						✔			
Atmel	www.atmel.com	✔										✔	✔	✔	✔	✔
Avid Canada	www.avidcanada.com			✔								✔				
BOSolutions	www.boscorporate.com		✔							✔	✔		✔			
Dalton ID	www.daltonid.com		✔	✔	✔	✔	✔					✔	✔	✔		
Datamars	www.datamars.com			✔		✔	✔					✔				
Destron Fearing	www.destronfearing.com	✔	✔	✔	✔	✔	✔	✔	✔			✔	✔	✔	✔	✔
EDAPS Overseas	www.innovationindustrialgroup.com									✔	✔					
EM Microelectronic	www.emmicroelectronic.com	✔														
EZ-id	www.ezidavid.com		✔	✔	✔	✔	✔						✔		✔	✔
GAO RFID	www.livestock.gaorfid.com		✔			✔				✔			✔			
HID Global	www.hidglobal.com	✔	✔	✔	✔							✔	✔	✔	✔	✔
Hauptner-Herberholz	www.hauptner-herberholz.de		✔	✔	✔	✔	✔			✔		✔	✔			
I.D.ology	www.id-ology.com		✔	✔	✔	✔	✔			✔	✔	✔	✔			
Leader Products	www.leaderproducts.com.au		✔		✔	✔	✔						✔			
microsensys	www.microsensys.de	✔		✔		✔	✔				✔		✔	✔	✔	
Nedap Agri	www.nedap-liveid.com		✔		✔	✔	✔			✔	✔		✔			
Nordic Star	www.nordicstar.co.uk		✔										✔			
NXP Semiconductors	www.nxp.com	✔														
Optibrand	www.optibrand.com							✔			✔		✔			
Planet ID	www.planet-id.com		✔	✔	✔	✔	✔				✔	✔	✔	✔		
Skoubee	www.skoubee.com	✔									✔	✔				
Syscan ID	www.syscan-id.com	✔	✔			✔	✔				✔	✔	✔	✔	✔	✔
Trovan	www.trovan.com		✔	✔		✔						✔	✔	✔		
WPI	www.wpi-europe.com		✔			✔	✔					✔	✔			
Y-Tex	www.y-tex.com		✔										✔			
Zee Tags	www.zeetags.com		✔	✔								✔	✔			

EDAPS OVERSEAS LTD.

Animal Identification and traceability

Software

- Herd/farm management software
- Data collection software

What is animal identification?

Animal identification using a means of marking is a process to identify and track specific animals.

Today, animal identification and traceability are important management tools in animal health and food safety. In many countries traceability of live domestic animals and of products of animal origin is a legal requirement.

What is the benefit?

Effective implementation of animal identification and traceability system may significantly improve the effectiveness of the following activities: management of disease outbreaks and food safety incidents, food production chain control, vaccination certificates, animal husbandry/breeding chart, herdbook (pedigree and performance), establishment of Disease Free Zones, animal movement controls, animal health certificates, trade and export certificate, application of certain medicaments, feeding stuffs and pesticides at farm level.

In summary, the animal identification and traceability system will bring the following benefits:

- food safety/quality - to consumers
- automation, accountability and management tool - to farms
- centralized statistics and planning tool, food security - to governments.

Key elements of an animal traceability system

Traceability systems are based upon key elements: animal identification, premises identification, and animal movement.

A traceability system shall be established based on following parts:

- A register of premises - holdings/farms/owners.
- Means of identification (RFID transponders and readers).
- A register of identification codes and the initial operators/farmers to whom they were issued.
- A method of recording animal movements so that transfer of animals (with their identification codes) to further owners can be followed.

All holdings, identification codes and movements data shall then be recorded electronically in a database for a further retrieving when movements need to be tracked.

Basic components of an animal identification RFID system

- Transponder (RFID ear tag) — contains a microchip, where the unique identification number is stored, and a coil antenna. The tag transmits signals to the reader, with read distance determined by the size of a coil antenna. Electronic ear tags use RFID technology and conform to ISO 11784, ISO 11785, ISO 14223.
- Transceiver (RFID reader) – a device to retrieve the information stored in the transponder, containing a radio transmitter and an antenna. It could be a hand-held reader that is taken to the location of the animals (25-50 cm range) or a stationary unit that the animals pass by (about 120 cm range).
- Data accumulator – a mobile device to accumulate the information received by a reader: a portable computer, PDA, tablet.
- Processing software – to accumulate data such as animal ID (for instance a 15-digit number that is unique to that animal) and to communicate data to a variety of data management programs.

KP VTI solution for animal identification and traceability

KP VTI is the expert in design, development and deployment of systems to identify and track-and-trace various objects, based on electronic identifiers, RFID and NFC technology, 2-dimensional codes to read with a smart phone, nation-wide databases and processing software development/integration.

With our ID&Trace system, the animal identification and movement data can be track-and-traced.

It is important that the cost of such system implementation at the national level does not require significant budget expenditures, though the economic effect of its implementation will be significant.

KP VTI
30/32, F. Pushynoi St.
Kyiv, 03115
Ukraine

Tel. +38(044) 450-70-44
Fax +38(044) 450-18-42

www.kpvti.kiev.ua
hq@kpvti.kiev.ua

AEG ID

www.aegid.de
info@aegid.de

EAR, INJ, BOL, HH-R FIX-R, DC PET, FARM, LAB, FISH, END

Hörvelsinger Weg 47, D-89081 Ulm – Germany Tel. +49 731 140088 0 Fax +49 731 140088 9000

AEG ID, a leading global supplier of RFID technology, designs and manufactures a comprehensive portfolio of tags and readers for a broad range of markets and applications. The animal identification division develops transponders,injection implanters and RFID readers for livestock, pet, bird and fish identification and tracking applications. Tag form factors include glass encapsulated tags, pigeon rings, ear tag inlays and boluses. Animal tracking applications based on AEG ID RFID technology enable end users to automatically record the origin and history of each individual animal.

Agrident

www.agrident.com
mail@agrident.com

EAR, HH-R, MGMT, FARM

Steinklippenstrasse 10, D-30890 Barsinghausen - Germany Tel. +49 51 05 58257310 Fax +49 51 05 58257317

For more than 20 years Agrident has been committed to RFID and the livestock business. The company provides RFID systems for agricultural process control systems, animal management and traceabilty systems world-wide. With this long time experience it isAgrident's essential aim to adapt RFID technology perfectly to the needs of the livestock industry.

Allflex EAR, HH-R, FIX-R, FARM

Animal identification and management tools for the livestock industry based on real-world performance

Allflex is a global provider of the design, technology, manufacturing and delivery of animal identification for traceability systems across all production. The company brings cutting-edge, practical applications of visual, electronic and radio frequency animal identification technology to livestock industries across the world, contributing to a safer global food supply. As a pioneer in electronic (radio frequency) identification systems, it launched the first custom, laser-marked visual identification tag and introduced the its Global Tag with guaranteed permanent laser-ink marking.

Today, Allflex has a global network of experts and more than 50 years of experience in animal identification, with manufacturing and technology subsidiaries in the U.S., Canada, Europe, Australia, New Zealand, Brazil and China - with products distributed in 80 countries. The company consistently introduces new and improved products based on sound manufacturing and an understanding of how those products need to perform in real-world conditions. This means embracing innovation so customers have an advantage in their marketplace.

P.O. Box 612266
DFW Airport
TX 75261 - USA

Tel. +1 972 456 3686
Fax +1 972 456 3882

www.allflexusa.com

ANIMAL IDENTIFICATION TOP 25

Atmel
www.atmel.com
rfid@atmel.com

IC, PET, FARM, LAB, FISH, END
Theresienstr. 2, 74072 Heilbronn – Germany Tel. +49 7131 67 0 Fax +49 7131 2340

Atmel is a worldwide leader in the design and manufacture of microcontrollers, capacitive touch, advanced logic, mixed-signal, nonvolatile memory and RF components. For active and passive RFID applications, Atmel offers a broad line of contactless RFID semiconductors (ICs, wafers, micromodules and complete transponders). Atmel, a pioneer in the RFID area, provided the industry's first read-only IDIC®s at the end of the 80's. Today, Atmel is a key player for 100-150-kHz LF RFID ICs.

AVID Canada
www.avidcanada.com
info@avidcanada.com

INJ, PET
Bay 6 Suite 200, 4500 5th St NE Calgary AB T2E 7C3 – Canada Tel. +1 403 264 6300 Fax +1 403 263 2055

Since 1994, Advanced ID's wholly owned subsidiary, AVID Canada, has marketed low frequency (LF) RFID microchips and readers purchased from American Veterinary Identification Devices (AVID) for the purpose of permanent identification in the pet industry. The company's mandate is to educate and encourage the public to become responsible pet owners; create public awareness regarding loss, theft, and euthanasia of animals; and provide a high level of products and customer service to veterinarians, shelters, SPCA's and associations for the safety of all animals.

Better Online Solutions
www.boscorporate.com
info@odem.co.il

EAR, DC, MGMT, FARM
20 Freiman St., Drive-In-Center, Industrial Zone,Rison Lezion - Israel Tel +972-3-9540000 Fax +972-3-9660345

B.O.S. Better Online Solutions is a leading provider of RFID and supply chain solutions to global enterprises, helping over 2,000 customers worldwide improve the efficiency of enterprise logistics and organizational monitoring and control. BOS offers a number of RFID and mobile solutions to farms, dairies, and ranches. BOS Livestock enables livestock operations to manage, track, support and plan all day-to-day tasks. To date, it supports all farming processes, including real-time tracking of animals and farm equipment, and lifecycle monitoring of all animals, enabling preventative treatment for disease management.

Dalton ID
www.daltonid.com
sales@daltonid.com

EAR, INJ, BOL, HH-R, FIX-R, PET, FARM, LAB
Dalton House, Henley-on-Thames, Oxfordshire RG9 1HG – UK Tel. +44 1491 419 000 Fax +44 1491 419 001

TAs one of the first companies in the world to produce and patent two piece plastic eartags, Dalton was established in 1948 and offer the widest range of RFID tag options for livestock and other living animals in the world under their registered brand name I-Tags. All global sales are co-ordinated through an international network and controlled from their UK HQ. Complementing the i-Tag range Dalton offers a range of Gallagher handheld and fixed panel readers. The combination of these leading products provides one of the best holistic approaches to Animal Management Systems in the world today.

Datamars
www.datamars.com
animal-id@datamars.com

INJ, HH-R, FIX-R, PET
Via ai Prati CH-6930 Bedano-Lugano – Switzerland Tel. +41 91 935 73 94 Fax +41 91 945 03 30

Datamars is a global supplier of high performance RFID-based solutions. Founded in 1988, the company has developed a broad range of identification solutions based on RFID transponders, readers and antennas and is currently market leader in the companion animal and textile identification markets. Fully integrated product portfolios, technological innovation and a profound understanding of customer requirements have earned Datamars a reputation for quality and performance . As an RFID manufacturing company, Datamars has developed a worldwide distribution network in each of its target markets.

Destron Fearing

www.destronfearing.com
CustomerService@destronfearing.com

IC, EAR, INJ, BOL, HH-R, FIX-R, BIO, RTLS, PET, FARM, LAB, FISH, END

490 Villame Avenue, South St. Paul MN 55075 – USA Tel. +1 800 328-0118 Fax +1 800 328 4565

Destron Fearing is a leading global manufacturer of electronic and visual identification solutions. Since 1945, the company's goal has been to partner with producers, marketing organizations and governments worldwide to manage the escalating demands of the global marketplace by offering smart, cutting-edge animal identification hardware. Over 100 million animals around the world have been electronically chipped with Destron Fearing produced microchips. Annually over 3,000,000 fish and 10,000,000 other animals receive electronic identification microchips. Another 50,000,000 animals every year receive visual tags.

HID Global IC, EAR, INJ, BOL, PET, FARM, LAB, FISH, END

Implement trusted solutions to track, identify and secure pets, livestock and laboratory animals worldwide

HID Global is a world leader in the development of radio frequency secure contactless technology used for animal identification and to manage and safeguard critical assets. Recognized for robust quality, innovative designs and industry leadership, HID develops and manufactures a wide range of RFID transponders designed for livestock, pet, fish and lab animal identification

Our innovative tags are standards & regulatory compliant and fully interoperable with other standardized Animal ID components and systems. Durable small form factors with best-in-class read range performance led veterinary professionals to trust Genuine HID™ quality animal identification transponders. RFID tracks animals' veterinary history, ensures proper care, and prevents the spread of disease. Additionally, assures health, safety and identifies lost or stolen pets, aiding in their return.

From farm to fork, tracking and managing animals for food products has become increasingly critical and challenging. HID Global transponders help manage and safeguard livestock and products in the food supply chain.

At HID Global, we work as a trusted advisor with system integrators to deliver innovative solutions that continue to ensure the health and well-being of animals and consumers alike. Contact us at today at tagsales@hidglobal.com to learn more

Rte Pra-Charbon 27
1614 Granges - Switzerland

T. +41 21 908 0100
F. +41 21 908 0101

www.hidglobal.com
tagsales@hidglobal.com

LEGENDA

Products
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Species
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- FARM = Livestock
- LAB = Lab animals
- END = Endangered
- FISH = Fish

ANIMAL IDENTIFICATION TOP 25

EM Microelectronic
www.emmicroelectronic.com
info@emmicroelectronic.com

IC
Rue des Sors 3, 2074 Marin – Switzerland Tel. +41 32 755 5111 Fax +41 32 755 5403

EM4205/4305 and the new EM4200 are the ideal low-frequency RFID chips to fulfil the specific needs of animal identification. These very small, low cost ISO 11784/11785 compliant transponder chips perfectly meet existing and future livestock requirements, offering an unparalleled reading range. EM Microelectronic is a leading RFID manufacturer with more than 30 years experience in IC design and production and is present around the globe. EM is part of the Swatch Group.

EZ-id
www.ezidavid.com
ezid@avidid.com

EAR, INJ, BOL, HH-R, FIX-R, FARM, FISH, END
4412 4th Street Road, Greeley, CO 80634 – USA Tel. +1 970 351 7701 Fax +1 970 351 7711

EZ-id Animal Identification Systems is the livestock, fish and wildlife division of Avid ID Systems. The company specializes in RFID (radio frequency identification devices), also known as electronic identification (EID), for livestock, fisheries, traditional and non-traditional production animals including beef, dairy, swine, elk, deer, bison, sheep, goats, alpacas, llamas, fish, and exotic animals. As the livestock and fisheries/wildlife division of Avid, the company focuses on the special issues relating to these species, including volume discounting.

GAO RFID
www.livestock.gaorfid.com
sales@gaorfid.com

EAR, HH-R, MGMT, FARM
601 Milner Avenue, Third Floor, Toronto, Ontario M1B 2K4 – Canada Tel. + 1-416 292-0038 Fax +1 416-292-2364

GAO RFID delivers RFID readers, RFID tags, as well as, turnkey RFID solutions that consist of highly integrated hardware and software and professional services. These professional services include 'proof-of-concept', systems integration and 'prototyping' services. Our team of experienced CompTIA RFID+ certified professionals has a mandate to recognize and understand your business's RFID needs. For livestock and other large animals we recommend our external FDX-B Ear Tag which provides read rates that are twice as fast as the HDXS tags.

Hauptner-Herberholz
verkauf@hauptner-herberholz.de

EAR, INJ, BOL, HH-R, FIX-R, MGMT, PET, FARM
Kuller Str. 38-44, 42651 Solingen – Germany Tel. +49 212 / 2501 0 Fax +0049 212 / 2501 136

H. Hauptner und Richard Herberholz is a manufacturer of veterinary instruments, animal identification and stock-breeding equipment. The company offers electronic ear tags for farm animals, injectable transponders for pets, as well as portable readers. The priority is customer satisfaction and animal health, which can be fulfilled with the company's extensive experience, innovative products and flexible solutions.

I.D.ology
www.id-ology.com
idology@id-ology.com

EAR, INJ, BOL, HH-R, FIX-R, DC, MGMT, PET, FARM
1324 West Clairemont Avenue, Eau Claire, WI 54701 – USA Tel. +1 715 834 9922 Fax +1 715 834 9886

Established in1993, I.D.ology is an RFID and data collection company that specializes in automated solutions that improve operating efficiency. In the field of animal identification, the company provides identification and tracking solutions consisting of electronic ID tags, readers and software applications to dairy farmers and ranchers. It also provides injectable RFID transponders and accessories for pet identification.

Leader Products
www.leaderproducts.com.au
enquiries@leaderproducts.com.au

EAR, BOL, HH-R, FIX-R, FARM
465 Hume Highway Craigieburn, Victoria 3064 – Australia Tel. +61 3 8339 9000 Fax +61 3 8339 9051

Incorporated in 1948, Leader Products is a specialist manufacturer and distributor of livestock identification systems and wholesale distributor of an extensive range of veterinary and animal husbandry products. We are solely Australian owned and operated. As well as having a branch in New Zealand, we have extensive overseas representation in Europe, North America, South America, Asia and Africa. We are also an approved supplier for the National Livestock Identification System (NLIS Cattle Tags, NLIS Sheep Tags).

microsensys
www.microsensys.de
info@microsensys.de

IC, INJ,HH-R, FIX-R, DC, FARM, LAB, END
Office Park im GVZ, In der Hochstedter Ecke 2, D-99098 Erfurt – Germany Tel. +49 361 598740 Fax +49 361 5987417

For more than 20 years in the RFID market microsensys has successfully developed and produced technically demanding RFID components. microsensys is mostly specialized in the frequency range 13,56 MHz and offers intelligent transponders, sensors, readers and software components based on the standards ISO 15693 und ISO 14443. The company operates international and primarily in niche markets. Based on a wide product portfpolio microsensys develops customized RFID systems. The core competencies are miniaturization, special packaging, sensor integration and product qualification for special requirements.

Nedap Agri
www.nedap-liveid.com
info@nedap-liveid.com

EAR, BOL, HH-R, FIX-R, MGMT, DC, FARM
Nedap LiveID, PO Box 104, 7140 AC, Groenlo – The Netherlands Tel. +31 544 471 100 Fax +31 544 466 839

Live!D is the new Rfid product line that world recognized leader in Rfid Nedap has introduced for the livestock market. The Live!D portfolio consists of premium Rfid labels like eartags and bolusses as well as Rfid readers. Key elements for this product line are easy to use and rugged design. In the agri sector Nedap is already active for over 30 years in individual electronic identification and process automation. With Live!D Nedap is your trusted worldwide partner in Rfid projects.

Nordic Star
www.nordicstar.co.uk
sales@nordicstar.co.uk

EAR, FARM
Skipton Road, Harrogate, North Yorkshire HG1 4LG – UK Tel +44 800 731 9465 Fax +44 141 891 5595

Nordic Star, founded in 1996, started as a small business selling agricultural products and began specialising in animal ID products in 2000, in particular cattle ear tags. As the cattle ear tag business steadily grew, Nordic Star quickly established itself as a company who deals direct with the farmer. The company believes that, as well as offering a high quality product, it is important to give customers sound advice and expertise in an area which is often regarded as complex and cumbersome for the farmer. Dealing direct with the farmer also means that Nordic Star can offer competitive prices and speedy delivery.

LEGENDA

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ANIMAL IDENTIFICATION TOP 25

NXP Semiconductors
www.nxp.com

IC
Gutheil-Schoder-Gasse 8-12 A-1102 – Austria Tel. +43 1 608700 Fax +43 1 60870 4467

NXP is a top 10 semiconductor company founded by Philips more than 50 years ago. Headquartered in Europe, the company has 37,000 employees working in more than 20 countries and posted sales of USD 6.3 billion in 2007. In the field of animal ID, NXP addresses the livestock, pet and pigeon identification segments. NXP Semiconductors HITAG 2 and HITAG S transponder ICs are in full compliance with the animal ID standard ISO 11784/85 and ISO 14223-1. Additional features include encrypted authentication and multi tag operation.

Optibrand
www.optibrand.com
info@optibrand.com

BIO, DC, FARM
123 N. College Avenue, Suite 240, Ft. Collins, CO 80524 – USA Tel. +1 970 490 6022 Fax +1 970 490 6025

Optibrand was founded in 1998 by three Colorado State University professors who wanted to developed a secure, biometric and humane method to identify and trace livestock. In early 2004, Optibrand entered the international marketplace with its Secure Source Verification solutions. With these innovative products, Optibrand can offer food producers around the world a fraud-resistant, inexpensive system to add value to their products. By positively identifying individual animals from birth and throughout the food processing chain, the system helps assure food safety, control the spread of animal disease and add value to branded premium products.

Planet ID
www.planet-id.com
contact@planet-id.com

INJ, EAR, BOL, HH-R, FIX-R, DC, PET, LAB, FARM
Hauptstr. 5-9, D-45219 Essen – Germany Tel. +49 2054 939 65 0 Fax +49 2054 939 65 19

Planet ID offers a wide range of products and on top of this we have put our focus on the development of user-friendly and competent solutions. Managed by a veterinarian, our products are developed by professionals for professionals. Our core business is electronic animal identification and we are also experienced in the industrial RFID field: consulting on government level as well as realization of logistics and traceability for industrial productions. We are flexible, quick and reliable – just ask our customers. www.dvc.services - Deep Validation Control, a check of injectable transponder conformity of ISO 11784 or of official National identification schemes.

Skoubee
www.skoubee.com
info@skoubee.com

IC (NFC), DC(WEB), PET
Chemin de Champ-Bochet 2, 1618 Châtel-Saint-Deni - Switzerland Tel. ++41 78 713 03 73

Skoubee is a Swiss company whose three co-founders have over 15 years of experience in the fields of electronic identification for pets, RFID, mobile and web applications, as well as relationships with veterinarians. It was created for the purpose of helping pet owners find their lost pets. The interactive medal developed by Skoubee provides access to pet profiles which are published on the internet.

Syscan ID
www.syscan-id.com
info@syscan-id.com

EAR, INJ, HH-R, FIX-R,DC, PET, FARM, LAB, END, FISH
1975 Hymus Suite 225 Montreal, Quebec H9P 1J8 Tel. +1 514 685 7778 224 Fax +1 514 685 1938

Syscan ID is an international leader and innovator of low frequency RFID readers for animal identification and traceability. Easy to use and robust, Syscan ID's readers offer perfect tools for all tracking needs in animal identification. The advanced capabilities and cutting edge firmware allows the Livetrack V4 reader to be an ideal solution for producers, transporters, feedlots, auction houses, sales yards and veterinarians.

Trovan
www.trovan.com
inform@trovan.com

EAR, INJ, HH-R, PET, FARM, LAB

Tel. +49 2254 94090 Fax +49 221 395893

Since 1998, Trovan has been in the business of developing and marketing RFID technology. Trovan holds patents that are key to fully automated transponder manufacture and is committed to maintaining its market-leading position. The company has established a global network of distributors and is a leader in electronic animal identification, including livestock, lab animals and pets.

WPI
www.wpi-europe.com
wpiuk@wpi-europe.com

EAR, HH-R, FIX-R, PET, FARM, LAB

1 Hunting Gate, Hitchin, Hertfordshire, SG4 0TJ - UK Tel. +44 1462 424700 Fax +44 1462 424701

WPI began in 1962 as a small manufacturer of amplifiers and stimulators used in nerve, skin and muscle research. More than 30 years later, it has grown to become the world leader in TEER measurement, nitric oxide sensing and more.Complete animal laboratory management system at a low setup cost. This system is suitable for both large and small animal facilities. The system is highly reliable, offering data security and a user-friendly interface.

Y-Tex
www.y-tex.com
ytexinfo@ytex.com

EAR, FARM

PO Box 1450, Cody, Wyoming 82414 – USA Tel. +1 888 600 9839

Y-Tex is located in Cody, Wyoming, where agriculture is still the way of life. This has kept the company committed towards meeting the needs of those in the agriculture industry. The company has over 35 years of experience in animal identification tags and 20 years of experience in pest control. Ear tags are the company's main business. Ongoing research and development makes Y-Tex a leader in quality livestock and pest control systems.

Zee Tags
www.zeetags.com
info@zeetags.co.nz

EAR, INJ, PET, FARM

19 D. Alexander Parade, Albany, North Shore City 0751 – New Zealand Tel. +64 9 414 1790 Fax +64 9 414 1794

New Zealand-based Zee Tags is a company committed to providing innovative high quality animal identification products. Zee Tags' design adds a new dimension to animal ear tags with faster application, highly visible permanent printing and better retention. Zee Tags has developed a family of RFID ear tags for both small and large farm animals and also provides injectable transponders for companion animal identification.

LEGENDA

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Editorial Index

Forthcoming events

Date	Event	Location
April 26-28	SMT Tel. 49 711 61946-0, www.smt-exhibition.com	Nuremberg, Germany
May 10-12	RFID Journal Live Tel. +1 212 584-9400, www.rfidjournalevents.com	Orlando, USA
May 10-12	Security Document World Tel.+44 118 9844932, www.sdw2016.com	London, UK
June 21-23	IFSEC Tel.+44 20 7921 5000, www.ifsec.co.uk	London, UK
Oct. 16-20	Gitex Tel. +971.4.3086747, www.gitex.com	Dubai, UAE
Nov. 8-11	Electronica Tel.+49 89 949-20720, www.eletronica.de	Munich, Germany
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SUSTAINABLE DEVELOPMENT

Sustainable Development

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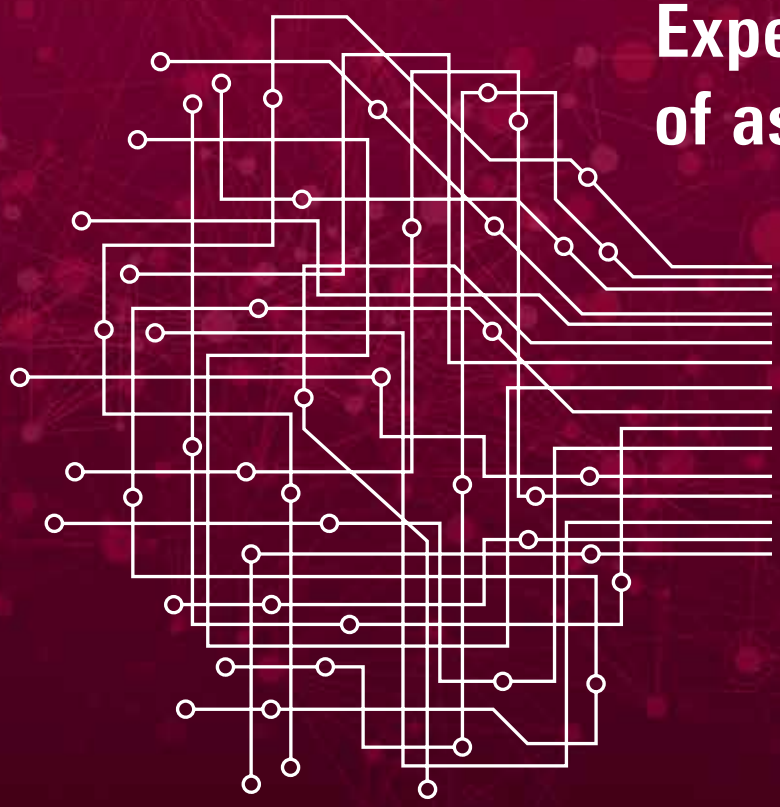

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