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April 2017

**The
CEO's**
guide to the
threat landscape

**HOW
P&G**
protects
the planet

American employers

**TOP
10**

TALKING
BIZ
WITH:

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PROCUREMENT ON A GLOBAL SCALE





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HELLO and **WELCOME**

to April's edition of
Business Review USA & Canada.

THIS ISSUE FEATURES an exclusive interview with Procter & Gamble's Vice President of Global Sustainability, Virginie Helias, about the incredible work P&G is doing to make the world a greener place. Also included is an essay from John Vladimir Slamecka, Region President EMEA at AT&T, who discusses the ubiquitous subject of cybercrime and offers tips on how to protect your business.

This month's top 10 is a list of the best employers in America, exploring why each of them has earned such a positive reputation.

On top of all this, we have new and in-depth interviews and profiles with Analytic Systems, Cincinnati Incorporated, HTS Engineering, JLL, Prysmian Group, PwC, and Turner Construction.

Enjoy the magazine, and feel free to join in the conversation on Twitter:

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Editor

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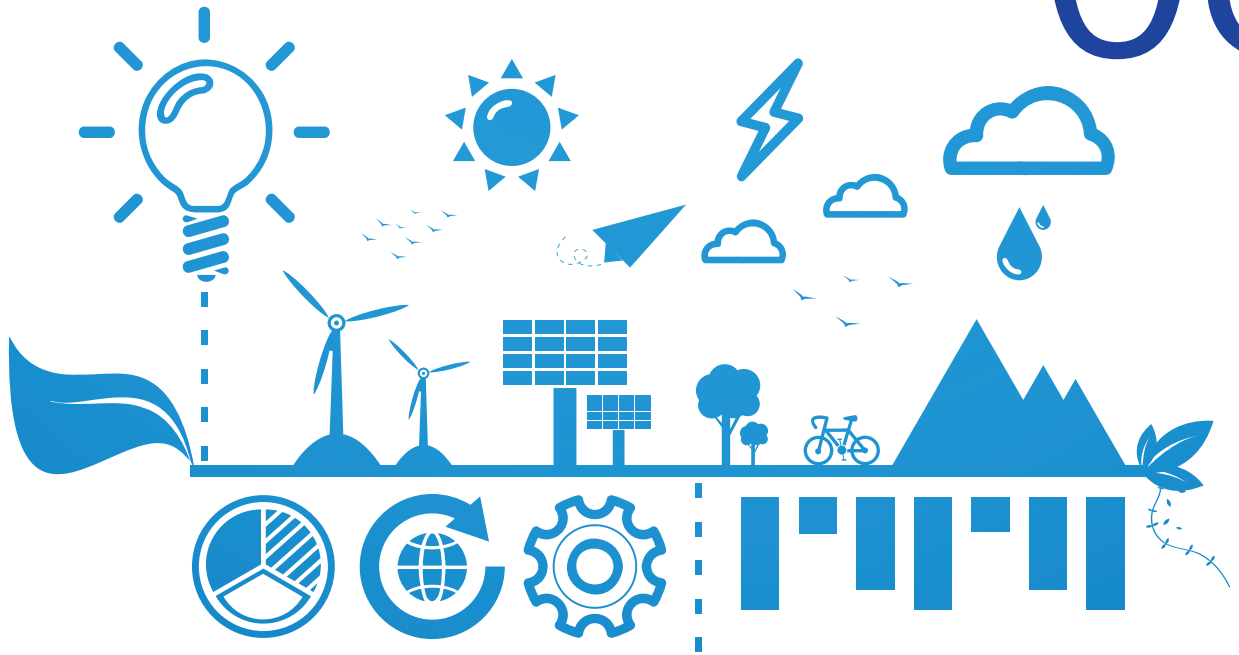
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PROTECTS THE PLANET

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AMERICAN EMPLOYERS

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COMPANY PROFILES

SUPPLY CHAIN

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- 52** Analytic Systems
- 64** Cincinnati International

TECHNOLOGY

- 76** JB Hunt
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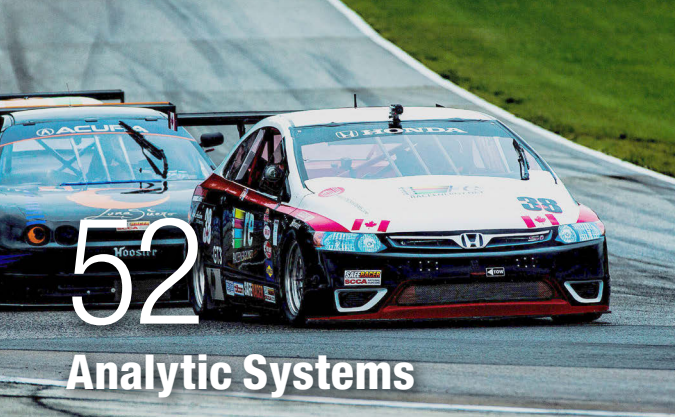
CONSTRUCTION

- 114** Turner Construction

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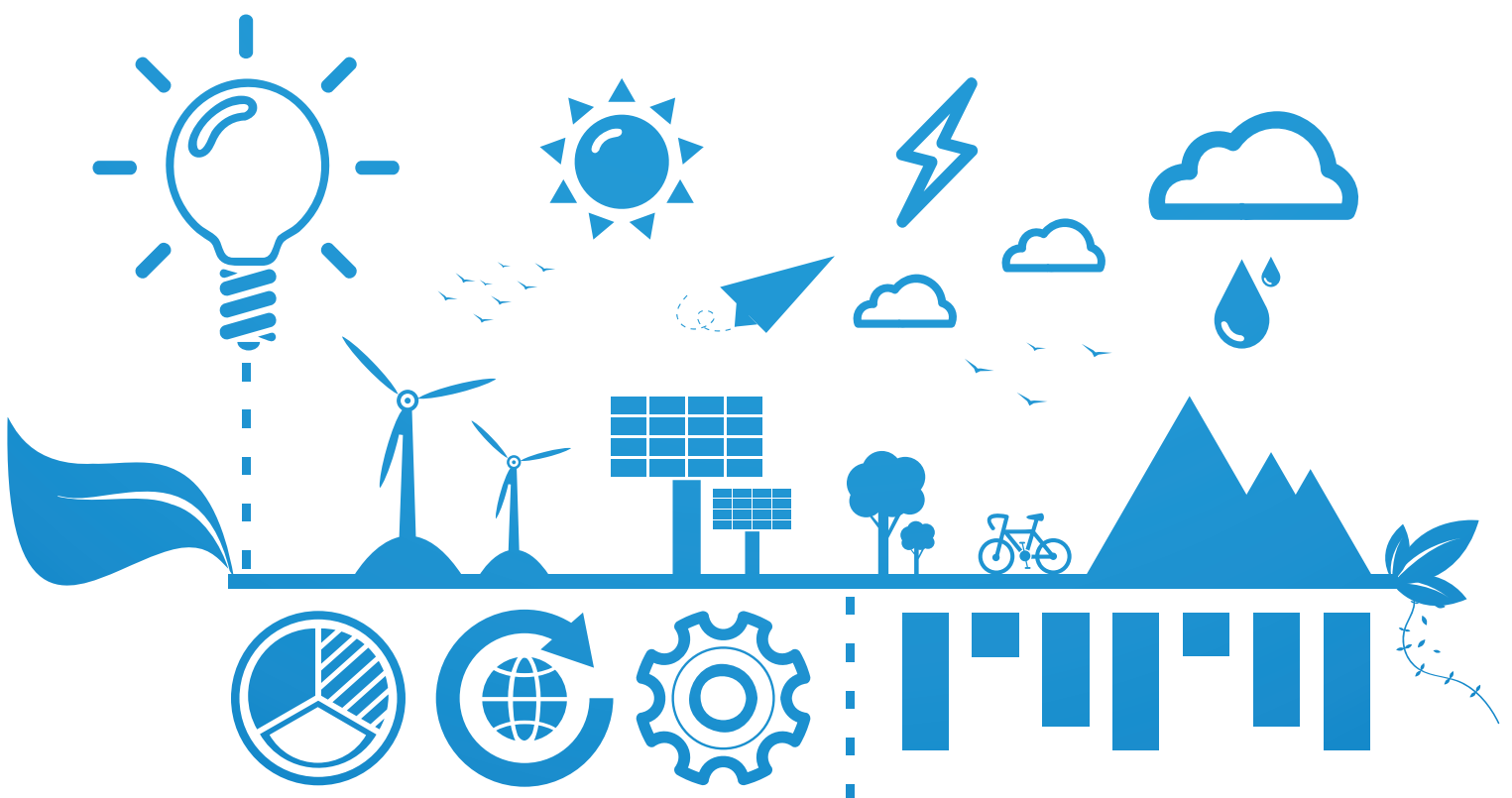
How



PROTECTS THE PLANET

Virginie Helias, Vice President of Global Sustainability at Procter & Gamble, tells us all about the company's tireless work to protect the environment and how it's achieving its ambitious goals

Written by: **NELL WALKER**



EVERY BUSINESS SHOULD

be humbled by the limitless effort that Procter & Gamble pours into improving the quality of this world.

P&G has published details of the green work it does in a yearly Sustainability Report since 1999, with the name changing in 2016 to the Citizenship Report (now covering the topics of Ethics & Corporate Responsibility, Community Impact, Diversity & Inclusion, Gender Equality, and of course Environmental Sustainability). This most recent report outlines the company's greatest valuable accomplishments. With regard to the environment specifically, the innovations have been astonishing.

For example, 65 percent of the USDA-certified ingredients contained in Tide purclean come from plants and other renewables, and the product is guaranteed to clean as well as the original – even in cold water. It's also manufactured at a site which only uses renewable wind electricity, and boasts zero manufacturing waste-to-landfill.

Another of P&G's biggest brands, Charmin, sources all of its tissue from responsible forests, with Forest Stewardship Council and Rainforest Alliance Certified labels proudly

emblazoned across the brand's products. Waste from the production of Oral B, Head & Shoulders, and Always is repurposed globally, and Fairy dishwashing tablets will soon become phosphate-free, removing enough phosphate to cover 270,000 soccer fields.

It is these kinds of achievements which enabled P&G to reach one of its long-term goals early – to reduce energy usage by 20 percent per unit of production by 2020. Last year, it managed this four years ahead of schedule.

Earlier this year, the company made a new announcement which affected one of its most famous brands, and shone the spotlight on a sustainability issue not often discussed: beach plastic. Litter on beaches has been a problem for as long as packaging has existed, and in January this year, Procter & Gamble announced that Head & Shoulders had created the world's first recyclable shampoo bottle made with PCR (post-consumer recycled) beach plastic.

This innovation has been made in partnership with TerraCycle and SUEZ, and the limited edition bottles containing up to 25 percent PCR

PROFILE

plastic will be sold in Carrefour – one of the biggest retailers in the world – in France. The aim is that by the end of 2018, in Europe, more than half a million bottles a year (which amounts to 90 percent of all P&G hair care brand bottles sold in Europe) will include up to 25 percent PCR plastic.

While the company has in fact been using PCR plastic in packaging for 25 years, this announcement comes at a time when its use is to be vastly expanded across various brands. The Head & Shoulders project alone will require 2,600 tons of recycled plastic a year, and one of P&G's corporate 2020 goals is to double the tonnage of PCR plastic used. Aside from anything else, this will mean far less waste being swept into the sea, which has been a huge concern; the Ellen MacArthur Foundation stated that there could be more plastic than fish in the ocean (by weight) by 2050

if huge changes are not made.

I spoke with Virginie Helias, Vice President of Global Sustainability at P&G, on the day that the Head & Shoulders project was announced. My first question is an obvious one – how was this news received?

“Overwhelmingly positively,” Helias replies with a laugh. “I was so thrilled. Our President [Europe Selling & Market Operations] Gary Coombe already posted about it on LinkedIn, and it received over 2,000 likes within a couple of hours. People are saying ‘why are you doing this now? Why not before? You should have done this earlier, this is amazing’. It’s been very positive, but the biggest impact has been within the company because everyone wants to do it, and it’s almost as if we’ve given permission to our staff to branch out and do things like this. It’s quite an unusual project and it hasn’t been easy, but this is the beginning of a new era.”

Why now?

The reason it hasn’t been done before, Helias says, is because something like this takes a great deal of planning and development before it can be rolled out to the public: “Imagine you’re



“ It’s imperative that **WE RAISE AWARENESS OF THE RESPONSIBILITY** that we have in terms of recycling ”

representing a brand like Head & Shoulders – it’s not something you do lightly. It’s a big deal for us and there was so much preparation involved.”

Helias admits that one large reason P&G’s efforts in the use of recycled plastics have escalated recently is



the findings by the Ellen MacArthur Foundation, which triggered a reaction across the industry: “The idea of

there being more plastic than fish in the ocean really captures the imagination of people, and the leader of our healthcare business simply said ‘let’s do something – something we can bring to our brand and engage with the consumer about’. It’s imperative that we raise awareness of the responsibility that we have in terms of recycling. The use of beach plastic is a very strong consumer statement, and we have the power

to make a meaningful impact.”

Partnerships

The impact P&G makes is bolstered by its strategic partnerships, one of the most integral of which is the WWF (World Wildlife Fund). In 2010, both P&G and the WWF announced their goals and visions together, and the two organizations have worked together a very long time.

“We work with anyone who is willing to help us with what we do,” Helias explains. “We choose people based on whether they have a similar agenda. Recycling is always an interesting topic because it’s something we have to act on. We have many projects with many partners who recycle a lot themselves and have the technology to support sustainability.”

Alternative power

P&G relies heavily on wind-generated electricity, and it has recently completed work on a wind farm in Texas, which will be an integral part in P&G’s long-term goal of powering all plants with 100 percent renewable energy.

“The wind farm is now in operation, and it covers the electricity for all our

PROFILE

public and homecare products in North America,” she says. “We are actually commercializing it on some



of our products, where we mention on the pack that it’s powered with wind electricity. It’s been quite a milestone because it’s the first time we’re

explaining that wind power is part of our vision and we’re on track to meet that vision. We also have a new biomass factory in Albany that will be in operation later this year, and that will provide all the heat for our Bounty and Charmin paper needs, something that is very energy-intensive.”

What next?

So where can P&G possibly go from here? According to Helias, the company is more committed than ever to its sustainable manufacturing and zero waste-to-landfill vision, and for the latter, it is more than halfway there.

“It’s the holy grail,” she says, “and a big challenge for business. We have a pilot project in northern Italy and it’s the first time that it has been technically, logistically, and financially

viable. That’s huge, and we’re very proud to have developed this business model. Water, too, is an issue we’re focused on, because people use it in the shower, when shaving, doing laundry, cleaning – hot water is always in use. The most important thing we can do as a company is reduce that, which is why we started working on cold water technology years ago. We’re always working on products that reduce the need for hot water and reduce our footprint.”

This vision is endless and incredibly admirable, and the last time Helias spoke to us for one of our sister magazines, Business Review Europe, she told the editor that her personal vision was for her role to be eliminated. Is that still the case?

“Absolutely,” she replies with delight in her voice. “When a business shows they can do something super exciting, and also work hard to reduce their footprint, then more and more businesses want to join in and eventually they won’t need me anymore. At that point I can happily retire.” ■

“ WE HAVE MANY PROJECTS with many partners who recycle a lot themselves and have THE TECHNOLOGY TO SUPPORT SUSTAINABILITY ”

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TECHNOLOGY



THE CEO'S
GUIDE
TO THE **THREAT**
LANDSCAPE



AT&T's Cybersecurity Insights Report is among the best-respected publications on the subject within the industry; the company's Region President EMEA, John Vladimír Slamecka, gives us a unique perspective on how to protect our businesses

Written by: **NELL WALKER**



LAST YEAR, AT&T opened its Cybersecurity Insights Report with a startling fact: ‘The FBI estimates that ransomware is on track to become a \$1 billion crime in 2016.’

This is just one element of the huge rise in cybercrime, and the reasons are obvious. Increasingly, businesses are placing sensitive information in potentially accessible areas via use of the cloud:

‘Widespread adoption of emerging technologies such as IoT, cloud technology and mobile devices provide new points of entry for cyber criminals to exploit using tool kits easily acquired on the Dark Web,’ the Executive Summary of the report explains. AT&T’s publication aims to outline the risks in brutal detail, and then show companies how to combat the threat before it can strike.

‘The Global State of Cybersecurity survey found 90 percent of organizations experienced at least one malware-related incident in the previous 12 months, with 58 percent acknowledging occasional or frequent malware threats... cybercrime has become a global

business’, the report states. There was a 300 percent increase in malicious e-mail attachments between 2015 and 2016, and worryingly, between 25 percent and 30 percent of employees click on suspicious links in the workplace. The statistics are endless, and companies must lock down their data by securing the cloud and locking down portable devices.

John Vladimir Slamecka, Region President, Global Business, EMEA of AT&T has offered Business Review USA & Canada the following essay entitled ‘The CEO’s guide to the threat landscape’, in which he further describes the role of the Cybersecurity Insights Report, expresses hope for future security evolution, and predicts what we can expect in 2017:

Over the past year, the cybersecurity threat landscape has continued to grow. Each new device connected to the internet presents a new target for attackers. And each new social media post creates new risks for phishing attacks or social engineering.

The [AT&T Cybersecurity Insights Report](#) further emphasizes the impact of successful attacks: downtime (46 percent), loss of revenue (28 percent), reputational damage (26 percent), and even loss of customers (22 percent). In Europe, cyberattacks are also common and increasing in frequency. Some attacks make the headlines – like OVH, Krebs and DynDNS. However, most remain unheard of.

While this trend is concerning,

security has come a long way this year. And it will continue to evolve in 2017. But, detecting and responding to threats isn't getting easier. A rising tide of known threats and the mainstreaming of cyber-criminal activities has created an undercurrent of concern.

Despite the growing concern, many businesses are not taking the necessary steps to protect themselves. In today's landscape, a company's security should be one of its most important investments.



John Vladimir Slamecka,
Region President EMEA



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conference was
fantastic ... one
of the best I have
attended!”**

William Hardy
SVP, Supply Chain, Carhartt
2016 attendee





Businesses need to ask themselves: Are we doing enough to defend against known threats? Where will the next threat come from?

What's in store for 2017 and beyond?

Looking at the year ahead we can expect some changes in cybersecurity that will affect businesses in the region:

- IoT security will remain a key concern for security in the upcoming year. Attackers will keep looking for weaknesses in devices across different verticals and industries spanning automotive, agriculture, manufacturing and healthcare to name a few. Hackers will become more interested in day-to-day items in these sectors such as network-connected wearables or smart coffee pots.

- Authentication technologies such as biometric scanning and facial recognition scanning will begin replacing passwords.
 - There will be a call for more government support in Europe on cybersecurity. In 2017, we expect policymakers will focus on: how to better protect national IT systems; support for the deployment of more cyber resilient technologies; and the role of a national deterrence policy and active defense.
 - There also will be a call for the continued development of industry standards and guidelines and possibly certification programs for IoT devices, as it is fast becoming the latest battleground.

The key thing to remember is prevention.

Criminals are always looking for the next way into your company. Your cybersecurity practices need to help keep them out. ■

TOP 10



AMERICAN EMPLOYERS



Employee rights are forever evolving and growing in importance; a company which doesn't treat its staff well or prioritize the wellness of its workers will be at a distinct disadvantage, and lose good people unnecessarily.

We explore which American businesses have performed the best as employers, based on Forbes' 2016 list.

Written by: NELL WALKER



Seattle Children's



Seattle Children's Hospital

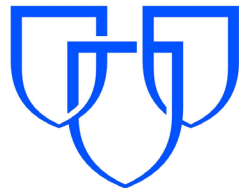
Giraffe Entrance

10

THIS WASHINGTON CHILDREN'S hospital is renowned for an exceptional reputation, named the sixth best children's hospital in America by US News and World Report in 2015. It was founded by Anna Herr Clise in 1907 and has expanded hugely year-on-year,

becoming increasingly concerned with widening its treatment abilities as well as its carbon footprint. Despite the inherently high-stress environment, staff at Seattle Children's are pleased enough with it for the organization to secure the number 10 spot. ■

MAYO CLINIC



9



STARTED IN 1889 in Minnesota, the Mayo Clinic is a national non-profit research group that spends over \$660 million a year on vital medical research. The healthcare giant employs over 4,500 doctors and scientists, plus 57,100 health

staff – staff who are clearly very happy in their jobs. US News & World Report named the Mayo Clinic the number one hospital in America, and it has ranked highly on Fortune Magazine’s 100 Best Companies to Work For list for 13 years straight. ■



jetBlue
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THE SIXTH LARGEST airline in the US, JetBlue – best known as jetBlue – was incorporated in 1998 and transports Americans to 100 different locations with a fleet of 228. It is a low-cost airline which has always sought to nurture a reputation as making the experience of air travel as comfortable as possible on a reasonable budget. In the words of David Neeleman, founder of JetBlue, the company looks “to bring humanity back to air travel” – a promise which clearly extends to employees. ■

8



EPILEPSY MONITORING UNIT



UIHC IS A large teaching hospital located in Iowa City, employing more than 7,100 people. It is the state's only comprehensive, tertiary-level center as well as its foremost medical facility. Patients region-wide are

sent to the hospital for the treatment of more complicated illnesses and injuries, due to the fact that the US News and World Report ranked University of Iowa Hospitals and Clinics number one in the state. ■



6

THIS NORTH CAROLINA

company, formed in 1976, creates analytics software for Fortune 500 businesses. It has a strong reputation for being a great place to work, with benefits programmes, healthcare opportunities, day care,

and counselling services available. Google used SAS as a model for its own employee benefits system, and the work it has put into buoying employees has paid off, creating an extremely loyal team of staff. ■



5

THE USAA, A Fortune 500 financial services group, offers its diverse range of products to people who have served or are serving in the US military, plus their families. This good cause was founded by army officers in 1922, and at the end of 2015, there were 11.4 million members. In the same year, the

number of staff was counted at over 28,200 people all over the world. ■





4



THE NEW YORK-BASED, privately-based supermarket has gained huge popularity since its inception 101 years ago, now owning 92 stores. With an impressive fanbase that adores the selection of produce and organic options, the

company is also well known for the high levels of employee happiness; since Fortune Magazine's 100 Best Companies to Work For list began in 1998, Wegmans has appeared on it, even ranking amid the top 10 for eight years in a row. ■



COSTCO WAS FOUNDED in 1976 and carved out a niche as a membership-only wholesale retailer.

Its branches can now be found in 10 other nations as well as America, and it is the second largest retailer in the world (after Walmart). While most Costco locations are not

unionized, there are employee agreements in all branches, which are revised every three years.

As of 2005, in America, eighty-five percent of workers had health insurance – a vast improvement on less than fifty percent at Walmart and Target. ■

The Google logo is displayed in its signature multi-colored font (blue, red, yellow, blue, green, red) against a clear blue sky. Below the logo, a photograph of a modern glass-walled building, likely a Google office, is visible. The building's facade reflects the sky and surrounding greenery. A large white question mark is superimposed on the left side of the image, with a white arrow pointing from it towards the text below. The background of the entire page is a photograph of the Google building and trees under a blue sky.

ONE OF THE largest technology companies in the world needs to be good to its workers in order to retain the best talent. Founded just 18 years ago, the company is everywhere, powering our online searches and devices. Google has ranked number

one three times in Fortune Magazine's 100 Best Companies to Work For list, and continuously updates its corporate code to ensure employee and customer lives are improved as much as possible; one of the current mottos being 'do the right thing'. ■



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1

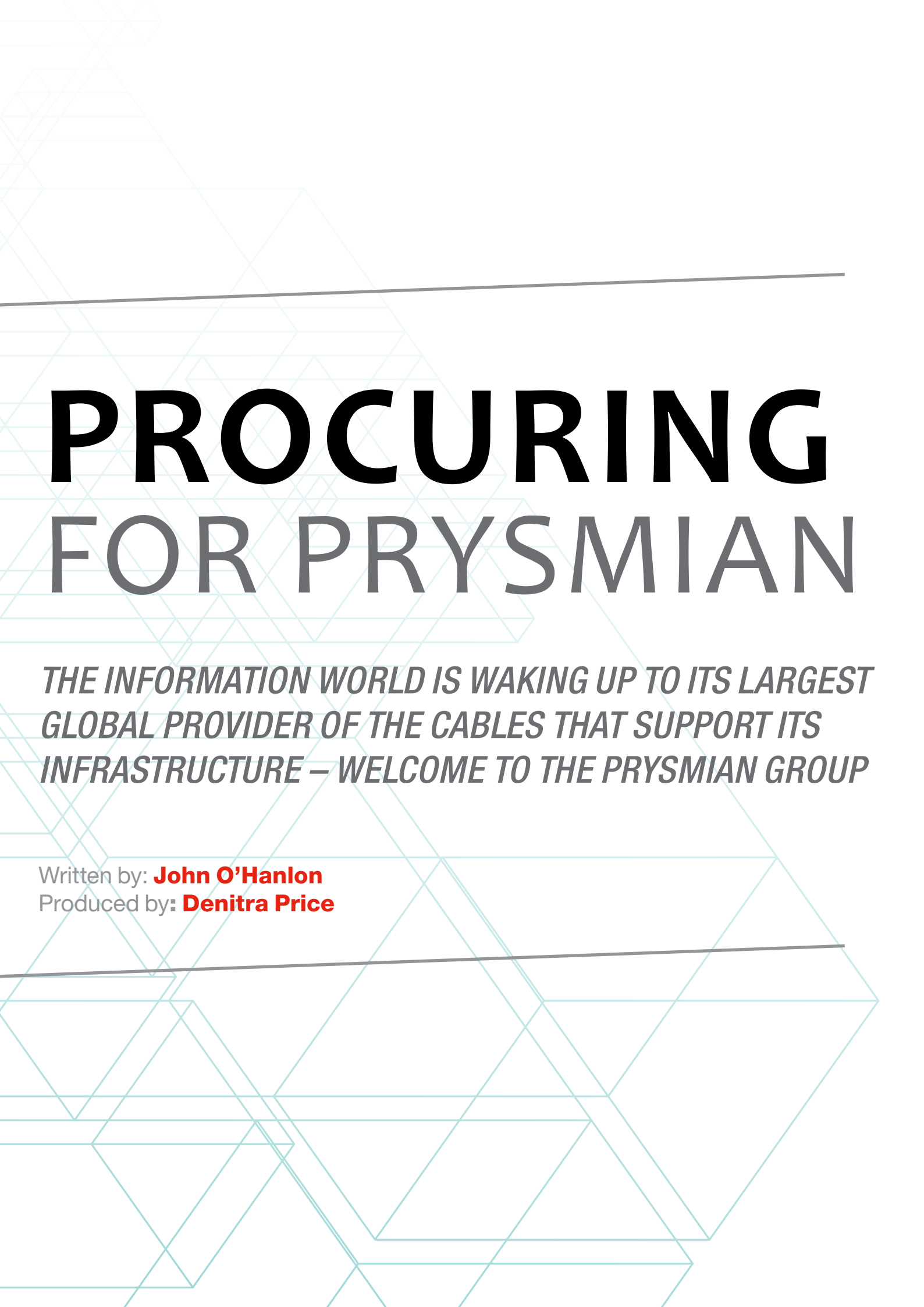


A SURPRISING CHOICE perhaps, but a deserved one, according to Forbes. The company has earned the top spot most notably by buying a refinery from BP in 2013 and turning it from a disaster area into a success, with its already-established

expert organization and a positive working environment. Perhaps unusually in this sector, Marathon prides itself on a caring team and collaborative hierarchy, allowing it the honor of being voted the number one best American employer. ■







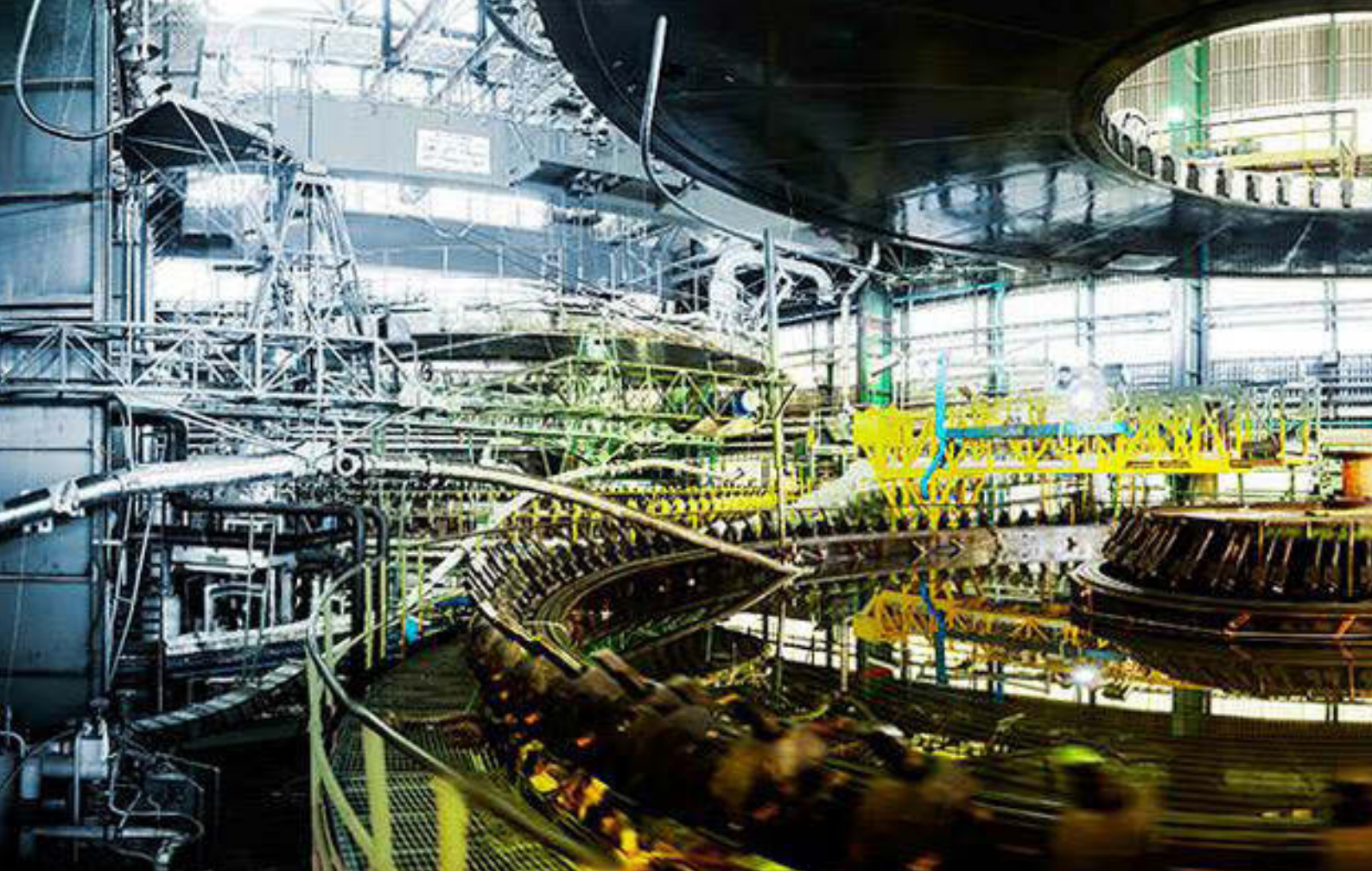
PROCURING FOR PRYSMIAN

*THE INFORMATION WORLD IS WAKING UP TO ITS LARGEST
GLOBAL PROVIDER OF THE CABLES THAT SUPPORT ITS
INFRASTRUCTURE – WELCOME TO THE PRYSMIAN GROUP*

Written by: **John O'Hanlon**
Produced by: **Denitra Price**



Prysmian
Group



Even today, 12 years after the name was adopted –when Goldman Sachs bought the cables business of Pirelli – and six years after the group was created in a €2.7 billion merger with the 100 year old Dutch company Draka, to make Prysmian Group the world’s largest cable company, the name of Prysmian is taking some time to become generally recognized. Broadly speaking, Pirelli Cables, which in 2005 became Prysmian, was best known for its capacity to supply transmission lines, whereas Draka tended to serve the more specialized industry markets including elevators, automotive and aerospace, with a strong capability in fiber optic. The group now has a presence in 50 countries, with 82 plants and more than 21,000 employees; its global



headquarters is located at Milan, Italy.

Prysmian operates in the business of underground and submarine power transmission and distribution cables and systems, special cables for applications in many different industrial sectors, and medium and low voltage cables for the construction and infrastructure industries. For the all-important telecommunications market, the group manufactures cables and accessories for the voice, video and data transmission market, with a comprehensive range of optical fibers, optical and copper cables

and connectivity systems. At group level the company identifies three main operating segments. Energy Projects includes high-tech and high value-added businesses where the focus is on the project and its execution, as well as on product customization, namely: terrestrial high voltage, submarine and subsea umbilicals, risers & flowlines (SURF), which includes umbilical cables, flexible pipes and down-hole technology cables for the petrochemical industry.

The Energy Products operating segment includes businesses

PRYSMIAN GROUP

characterized by the ability to offer a comprehensive and innovative product portfolio, that can meet a wide variety of market demands such as energy & infrastructure (including power distribution and trade & installers) and industrial & network components (including specialties and OEM, Oil and Gas, Elevators, Automotive and Network Components). Finally, the Telecom operating segment makes cable systems and connectivity products used in telecommunication networks. The product portfolio includes optical fiber, optical cables, connectivity components and accessories, OPGW (Optical Ground Wire) and copper cables.

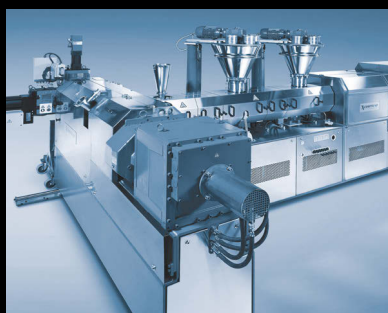
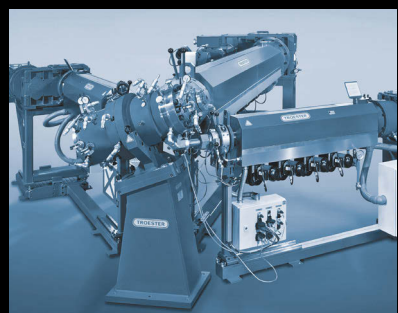
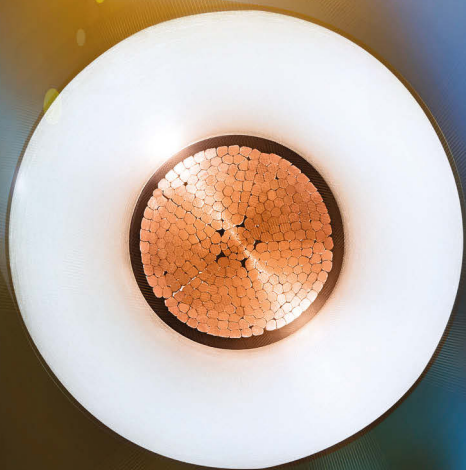
The years since the creation of Prysmian Group have been a time of consolidation and gradual migration to the new brand, while carefully nurturing its historic loyalties. Brian Schulties, VP for Procurement, whose office is located at the North America headquarters at Lexington, South Carolina, is responsible for the supply chain to the 13 plants serving the telecommunications

and energy markets across Canada, the USA and Mexico as well as fiber optic manufacturing facilities covering 1.5 million square feet (including the only co-located fiber and cable facility in North America). Three directors that report to him, one responsible for raw materials, one for base metals and one for non-raw or 'indirect' material. This pattern being reproduced at HQ level and in each region, EMEA, Asia/Pacific (APAC) and South America, his is as much a global as a regional role, he says: "We are structured as a matrix organization. Many of the things we do are group-aligned. Much of the activity we do is managing global commodities." For this reason, he works as closely with the group's CPO in Milan as with the CEO of the American business.

Schulties came into his present role one year prior to the merger, so he has been involved with every step along the procurement evolution of the last six years – and it's not been without pain, he admits. However despite having had 17 years working in procurement in the



INNOVATIONS FOR THE CABLE AND PLASTICS INDUSTRY



For 125 years, the name TROESTER has been a synonym for innovation and outstanding quality in the development and production of machinery and lines for the plastic and rubber processing industry. Along with X-Compound GmbH – a Swiss company specializing in the processing of wire & cable materials and a member of the TROESTER Group since 2011 – TROESTER is part of one of the world's leading manufacturers of cable machinery and complete lines for the production of high voltage power cables, submarine cables, mining cables, automotive wire, building wire and sophisticated power cables for other applications. For the Prysmian Group, TROESTER is a reliable partner, a source of innovative ideas and a long-standing supplier of high-performance CV lines for the production of medium and high voltage cables. www.troester.de

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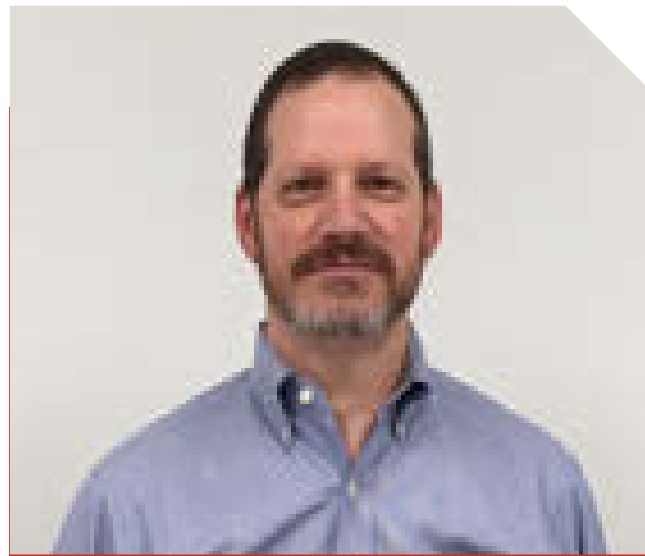
X-COMPOUND

Plastic compounding plants

demanding automotive industry he did not come unprepared into the business of cables, having worked as a Director of Purchasing with Prysmian Power Cables & Systems for three years starting from 2003, and until 2010 as VP for one of the larger competitors in North America.

“I spent the first 17 years of my career in the foundry industry which supported the automotive business, as a Tier I supplier, and I exited ahead of the offshoring of what was predictably a dying industry as far as North America was concerned. I came to Prysmian while it was still Pirelli Cables in March 2003, then I left to join General Cable in 2006 and came back to Prysmian in early 2010. When I came back, within a year we became the largest wire and cable producer in the world. It was a very exciting opportunity.”

It was a massive merger, but it went remarkably smoothly, he recalls. “We integrated very quickly. I’ve known suppliers that have taken five years to integrate their companies after a merger – we did it in less than twelve months.”



BRIAN D. SCHULTIES C.P.M.

VICE PRESIDENT OF PROCUREMENT

Brian D. Schulties has been Vice President of Procurement for the Prysmian Group since February 2010. Mr. Schulties began his career as a Purchasing Manager with U-Brand Corporation in 1986. He has over 30 years of experience in the procurement field; holding several senior level management positions in the automotive, foundry and wire & cable markets. He also has significant experience working with suppliers around the globe. Prior to joining Prysmian, he was the VP of Sourcing for General Cable Corporation in Highland Heights, KY.

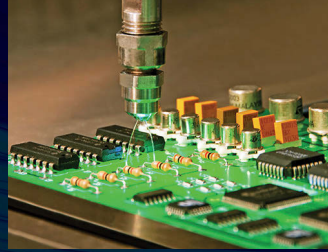
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Schulties was quickly identified as the right person to run procurement in North America. Following his appointment, Giancarlo Angelini joined the company from the Fiat Group as Chief Procurement Officer, based in Milan, bringing a vision of how to leverage the complex global commodities and legacy companies that went to make up the merged group.

Among the large tasks which have faced the organization over this period, consolidation and rationalization of IT platforms has been one of the biggest challenges. The group has been a long term SAP client, but this is not as straightforward a picture as it may seem at first, as different versions of SAP are still being operated in different segments of the business. At group level, the strategy is to migrate all the businesses to SAP One Client, and the Prysmian high volume cables part of the business has already migrated to this platform, accounting for some 80 percent of the group. However the plants of Draka Elevator, Draka

Automotive and others including the Cableteq division, remain under earlier versions of SAP. “This is still a work in progress,” says Schulties. “We will be rolling SAP One Client out at our Cableteq division in January 2018 – these are very specialized businesses, handling very large numbers of different parts and raw materials.”

The side of the business that supplies highly specialized clients in industries such as nuclear, defense, airport lighting and the like has many requirements that set it apart from the high volume work. “Some of the cables these customers specify may only be 1,000 feet in length, compared to the transmission lines the Prysmian factories are turning out on huge drums or reels.” Nevertheless, whether customized or bulk, volumes have been exploding in most of the territories. Fiber optic is a case in point, he points out. “Fiber is an exponentially growing business, both in terms of volume and complexity. We are constantly innovating as higher fiber counts, different fiber and different

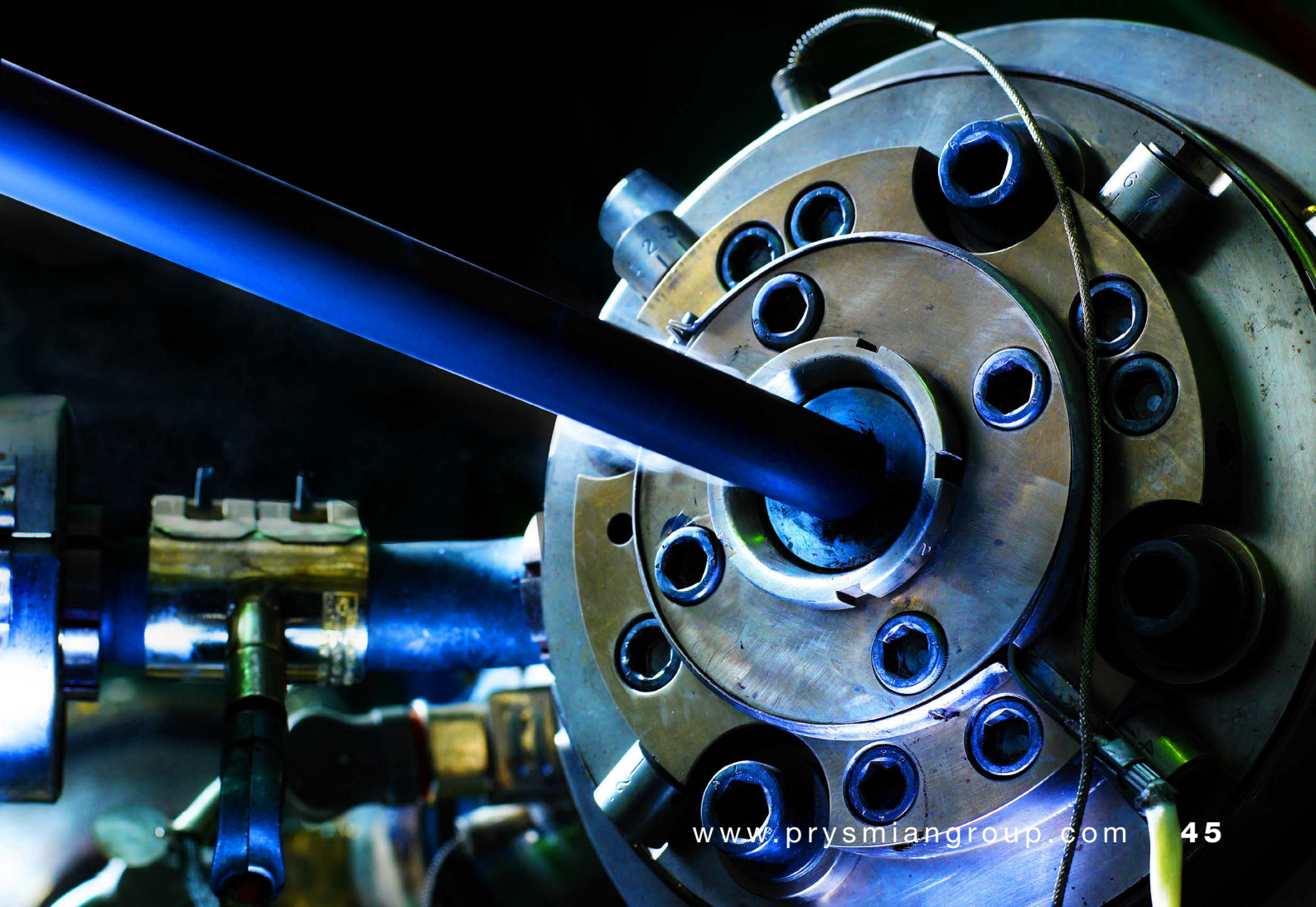


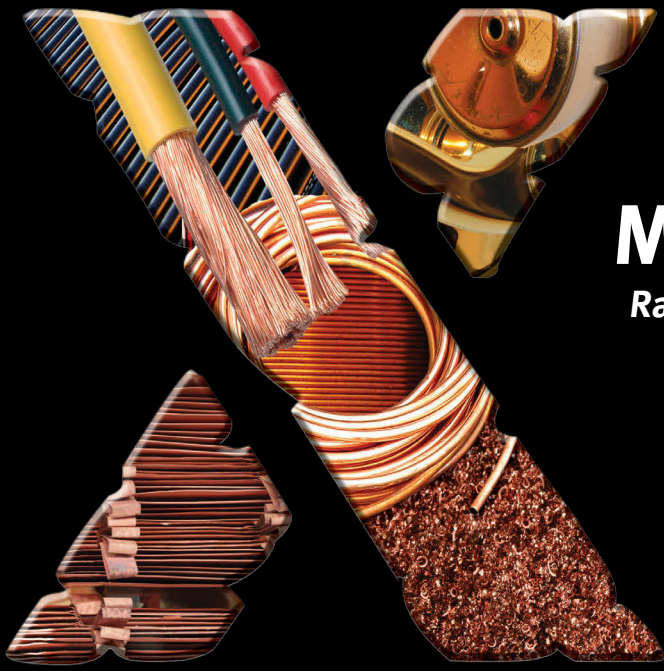
bend radiuses are demanded, to name a few.” The fiber business has always been cyclical, he adds, but these days it appears to have become a super cycle, with significant growth anticipated over the next three to five or even ten years. “We are very confident about the global and domestic prospects for fiber and fiber optic cable. Four years after 4G was launched it is already becoming obsolete: IoT and automation are propelling us into a 5G world and beyond.”

On that side of the business, the Prysmian mantra is ‘do more with less’. Innovation is not cheap. Spending on R&D in 2015 at group level amounted to approximately €73 million. The mission of the Prysmian Group’s R&D function is to identify innovative products and technology, to add new products and services to the existing range and to reduce production costs for both existing and new products, says Schulties. “The quality of our products is assured by strict monitoring at

every stage of production, from the procurement of raw materials through to delivery of the finished product.” Controls during raw materials procurement involve supplier selection and quality testing of individual supplies, which must be accompanied by certificates stating their conformity to the standards agreed by contract, he adds. A rigorous approach to quality has helped the company to maintain its world-leading position and made a significant contribution to the company’s continued success.

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Customer satisfaction is the number-one priority for the Prysmian Group and the company's quality initiatives include "zero defects" and "right first time" approaches for all customer-related activities.

21,000 employees may seem like a big global headcount, but it is really very small considering the sheer volumes of cables produced by the group. The key is lean thinking, says Schulties. "We leverage the experience we have in the factories. While we invest heavily in improvement and expansion we remain very focused internally on selecting the "right" capital equipment for the future and also utilizing the equipment we have so we are not wasting the effort of our overall capital investment. Inventories are kept low, not just on the factory floor – we are trying to reduce inventories across the supply chain. Long term we keep a close eye on the slow moving or obsolescent inventories too."

There are many challenges in keeping control over inventories in a global supply chain, he explains.

Many of his raw materials are sourced globally, but he is also now working in a 'Buy American' and/or Buy America environment. Government contracts are very rigorous in specifying locally sourced content, and the defense sector typically demands 100

**€7.5
Billion**

**Prysmian
Group**
Annual Revenue

percent. The current administration is known to favor strengthening these constraints, and additional tariffs on imported materials may be around the corner. At least he is not alarmed by the fact that he has just been to Durango, Mexico, to open the newest North American plant. This is a state of the art fiber optic cable plant purpose-built close to its existing Draka plants. In

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“FIBER IS AN EXPONENTIALLY GROWING BUSINESS, BOTH IN TERMS OF VOLUME AND COMPLEXITY”

Durango, Prismsian also operates a cable factory for the automotive industry – which Draka acquired in 2006 from International Wire Group and which has been active in the state since 2001 – and the factory, in addition to producing automotive wire harness cables, since 2009 has produced much of the cabling that is used in the most modern Airbus aircraft as well as the production of latest generation cables for the aerospace industry, with the technological characteristics demanded by OEMs to create lighter and more efficient units. The new fiber optic cable plant will serve the burgeoning Mexico market, rather

than the USA which is adequately served by domestic plants, including the one in Lexington, SC, one of the largest employers in the city and the NA headquarters.

The way Prismsian is now structured gives them an unparalleled visibility across its logistics and supply chain, but there’s a lot more work to be done, and Brian Schulties was recently over in Milan to present the tools he is introducing in North America to improve spend visibility, business intelligence and the reduction of supply chain management risk. “These are initiatives we could roll out to the rest of the world,” he says. “We have approximately 15,000 vendors in North America. Consolidation is a must – managing so many suppliers is costly and it is a resource draw” He believes the supply base could be reduced by about 75 percent overall, though he cautions that this can never be a blanket policy, considering that some government specifications can





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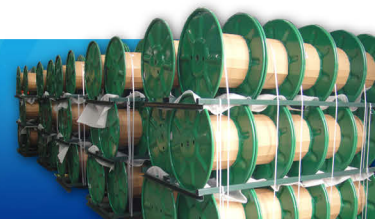
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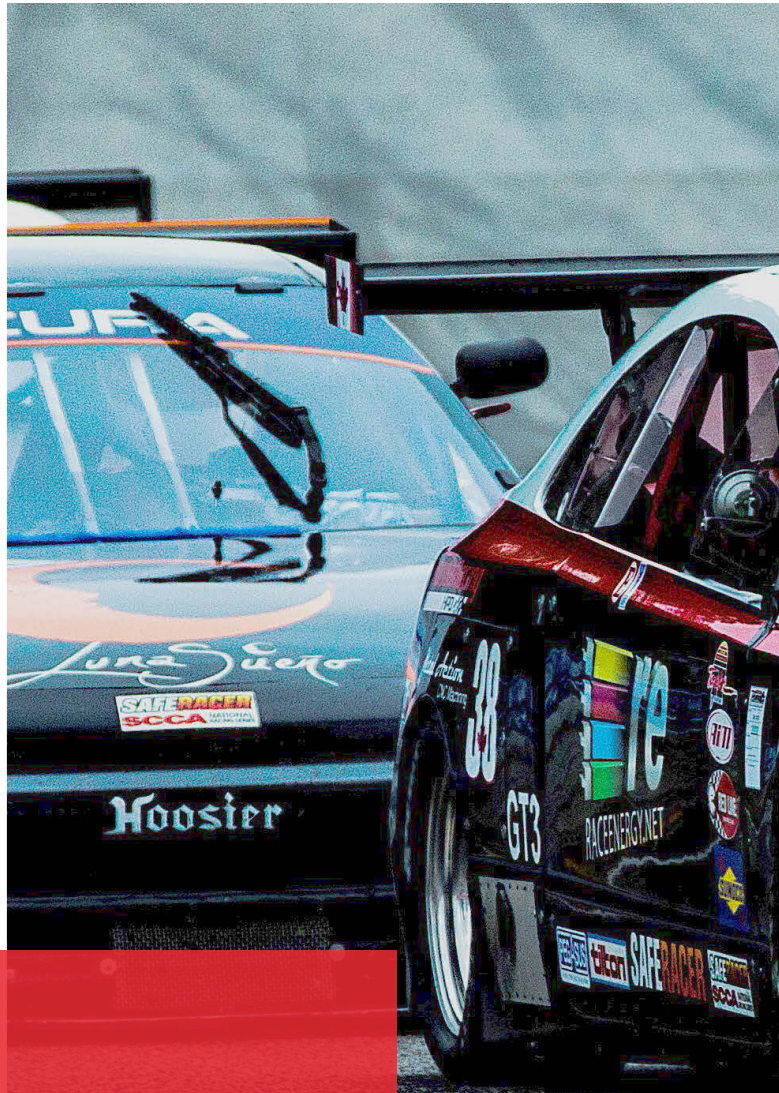
Schulties and his colleagues in the global procurement team are therefore driving change in the strategy, however, as he says frequently: “If you can’t see it (spend visibility) you don’t know what you are dealing with.” Visibility was the lacking component, where it was possible, for example, that the same product was categorized or named differently by different plants. With a large number of suppliers in the IT space, he and his team went through

a process of assessment before forming a partnership with a third party vendor to adopt a tool that is already making great improvements in spend management. After just three months he can foresee that this investment will pay for itself in a very short time, with massive benefits when applied globally. “Frankly our procurement IT platform for spend visibility was not really adequate, but now we can say with some certainty that it is better than anything we could have done with internal tools available to us currently.” ■



ANALYTIC SYSTEMS

Power Conversion Solutions



RACING FORWARD with the digital revolution

Written by **Jackie Cosh**
Produced by **Andy Turner**



A reduction in military spending has encouraged Analytic Systems to expand its product range

University can help shape our futures in many ways other than academically. For Jim Hargrove his involvement as a member, and ultimately as president of the sports car club at the University of British Columbia, sparked a lifelong passion for the motor sports industry which has helped fuel his career for more than thirty years.

Today Hargrove is president of Vancouver based Analytic Systems, the company founded by his father Lloyd Hargrove in 1976, and his first employer after graduating with a BAsC in electrical engineering in 1981. After a 10 year stint designing and building marine automatic pilots beginning in 1983, Hargrove returned to take over control of the company from his father in 1994. Refocusing the company as a manufacturer of power conversion products, it serves five key markets – military, industrial, transportation,

marine and telecommunication. The company is very much an international one with military and industrial clients around the world.

“We are approved by the Controlled Goods Program in Canada which is the equivalent of the International Treaty for Arms Reduction (ITAR) and is a critical component of being able to do business with any military organization or military contractor in the western world” says Hargrove. But reduced military spending, particularly in the USA, has had an effect on business, as Hargrove explains.

“The last few years have been very difficult. Virtually every military budget around the world got slashed. So in response to that we took the decision to really refocus the company on our commercial industrial product line and leveraged the transition into digital power electronics. We are now seeing an upsurge in sales because of

“100 percent

manufactured in
North America
- that is one of
our hallmarks”

– James Hargrove, CEO

the investment that we have made in technology over the last few years.”

Evidence of this can be seen in the number of orders taken. In the week of October 31st, 2015 Analytic Systems had orders on the books equal to about two weeks' worth of work. By October 31st, 2016 this figure had rebounded to over three months' of work. “Part of that is because of renewed military spending, but more importantly it is because people really like the new products we have developed” says Hargrove.



James Hargrove, P.Eng CEO

P.Eng founded ComNav Marine in 1983 and grew it into the largest North American manufacturer of Marine Autopilots. In 1993 he took over the controlling interest of Analytic Systems Ware and has grown the company into sales of over \$10 million dollars per year.





This is not the first time Analytic Systems has hit troubled waters and came out of it stronger. Back in the early 80s interest rates went through the roof and it nearly destroyed the company. “No sooner had I started working for the company than my dad said – I can’t pay you anything” reminisces Hargrove. But he was proactive. One of the products he had been working on at Analytic Systems was the world’s first digital automatic pilot for steering boats. Along with an investor he set up a spin off company ComNav Marine to sell the product and left Analytic Systems to become vice president of engineering at ComNav at the age of 26. Ten years later he sold his share of ComNav Marine and returned to become a majority owner of Analytic Systems, and worked alongside his father for the next ten years until the senior Hargrove slowly began to retire. Jim also brought his own ideas and experience to the company. “When I rejoined Analytic Systems in 1994 my father was still doing custom engineering. It is a very hand to mouth type business. So when I took the company over I



Janet Herbert

Herbert is a CGA and comes to Analytic Systems with over 21 years of experience in the steel distribution industry in various finance roles.

said - let’s leverage the intellectual property in power conversion products you have developed over the past 16 years and design and build a line of products. So we turned Analytic Systems from a custom engineering

ANALYTIC SYSTEMS



company into a power electronics products company. It has grown from two partners in a 1200 square foot warehouse in 1994 to over 50 employees and 45,000 square feet of electronics design and manufacturing and CNC machining space today.”

Hargrove’s interest in the motorsports industry resulted in the company designing products for motorsports starting in 2000. “Our first product was a Total Discharge Controller that allowed a race car to be run off a battery only without the need for an alternator” explained Hargrove.

To complement the Total Discharge Controller the company developed high performance battery chargers to swiftly and accurately recharge the race car battery while it was in the pits. These products were marketed under the ‘RaceEnergy’ brand. More products followed but Hargrove is proudest of being selected by Indycar to provide battery chargers to all the of the official Indycar support series in 2013. “We used this opportunity to develop our very first all-digital battery charger that allowed any kind of race car battery to be properly and

fully recharged in the least amount of time”. Each of these motorsports products also created industrial and military spinoff products that have created millions of dollars of additional revenue for the company and sparked the wholesale conversion of its product line to digital control.

Two years ago the company decided to spin off the motorsports business and created a sister company called RaceEnergy Performance which specifically caters to the needs of the motor sports industry. In addition to continuing to develop and support the power conversion electronics, RaceEnergy is now designing an electric race car. Hargrove reports: “It is a small part. There are only three people in the division, but they are so busy right now that we can’t keep up. We have been contracted by a company that is developing an electric vehicle here in Vancouver to create and build a racing version of that car, so we have been designing our own battery systems, our own motor controllers, our own charging systems, not to mention all the mechanical parts such as suspension systems



Gheorghe Branzea

Branzea has been with Analytic Systems for more than 20 years and has applied his technical and organizational skills to a highly lean manufacturing environment.

and all-wheel drive. It is more aligned with the formula racing world than with mainstream electric vehicle world because all your charging systems in the race cars are off the car. You charge the batteries outside of the car



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and you just plug them in and go.”

Having recently changed registrars and re-certified to ISO9001 the company is looking ahead to where the market is going. “We are very proud of the conversion to digital technology and we see digital technology growing because of the fact you can put so much of the functionality into the computer chips and it increases the range of applications you can manage with a smaller number of products” says Hargrove. Today they pride themselves in being able to offer both standard and custom power conversion products. “What we find is that a lot of customers say – ‘I like what you have done here but...’ and where we think we differentiate ourselves from other companies is that when the customer says ‘but’ we say “yes, we can make that happen”” says Hargrove. “So we will very often take a standard product modify it and add extra functionality, whether that is digital displays, communications, special connectors or specific footprint the customer wants to have or environmental protection, all the



Bill Walker

Walker brings 30 years of international sales and marketing experience in military, industrial and high technology markets.

way up to IP67 which means that the unit can operate up to a meter under water. Alternatively if none of the company’s standard products are suitable to modify for the customer’s application, a completely new product



Bruce Jones

Jones is responsible for increasing our share of the Commercial & Industrial markets in North America. He brings over 18 years of technical sales and worldwide channel management experience to his role building partnerships with our sales channels and OEM customers. He holds a BA degree in Business Administration.



Analytic Systems - Co

can be designed from the ground up.

The company is very much a one stop shop; they do everything but manufacture the actual printed circuit boards, assembly, design, manufacturing and testing all conducted in-house including aerospace quality CNC machining of components in their Metal Action Machining sister company. This, says Hargrove, is what they are most proud of, the fact that all work takes place at one of the finest design and manufacturing facilities in North America. “100 percent manufactured in North America - that is one of our hallmarks.



ANALYTIC SYSTEMS
Power Conversion Solutions



Corporate Headquarters

“We plan to continue the digital revolution, in terms of more products that are digitally controlled, to continue to increase the power density - more power, less space.” Currently the company is moving the battery charging technology up into the 5 kilowatt power level, and are looking to the future.

“We are never ones to be at the forefront of dollars per watt race. We are never going to be the cheapest, but we like to think that as we continue to work to produce higher and higher quality products, we are one of the best,” summarizes Hargrove. ■



Rob Hargrove

Hargrove has returned to the family business in his new role as Canadian Sales Manager after a 4 year absence. He previously worked in production and engineering roles at Analytic Systems, through high school as well as during and after university. Outside of work, he continues to compete at a national level in Cross Country Mountain Bike and has previously raced at an elite level of road cycling. He looks forward to working with you and building on the success of Analytic Systems.

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Manufacturing

success



Written by **Nell Walker**
Produced by **Denitra Price**



How Cincinnati Incorporated has achieved such incredible machine tool innovation fame

Behind the scenes of every industry are the companies which create the necessary tools for success. Cincinnati Incorporated (or CI) has for many years been ubiquitous in the manufacturing arena for its press brakes, shears, lasers, powder metal presses, and, more recently, it has a reputation as one of the most innovative global leaders in big area additive manufacturing (BAAM). Founded in 1898 and privately held since day one, the ever-thriving machine tool manufacturer remains the last of its kind from a century-ago era in the Queen City; we speak to Carey Chen, President, CEO, and Vice Chairman of the Board to find out why.

“In 2015, CI’s BAAM system was recognized by R&D 100 as one of the top 100 most technologically significant new products for that year, and was the Editor’s Choice in the category of process/prototyping as the best of the best,” Chen explains.

“In 2016, BAAM was selected by JEC Composites for best overall innovation across over two dozen different industries, and at the end of that year, was also recognized by the Guinness Book of World Records for its contribution in building the single largest 3D printed tool in the world – a tool for a component of a Boeing 777 wing. Even if we wanted to spend marketing dollars to prop up the technology, we could not have paid for the kind of attention that followed.”

Ground-breaking products

These achievements all come down to the fact that what CI does is unique. BAAM is its specialty, which allows it to create items on a larger and more efficient scale than any other.

“Our BAAM system is something unique to the market,” says Chen. “Historically, most 3D printers are about a meter cubed, can sit on a desktop, and print parts at a relatively slow rate of grams per hour. CI’s

“**THE KEY**
to being around
for the next
100 years will
be an unwavering
focus on our
customer”

– Carey Chen, CEO, President, Vice
Chairman of the Board

BAAM is as large as eight feet wide, 20 feet long, nine feet tall, and we can print anywhere from 80 to 100 pounds per hour. We also have an advantage in that while other 3D printing companies are focusing on printing materials that are very expensive, we are able to print economical commodity materials. That's our strength.

“Also, we can custom manufacture. For example, for most printing



Carey Chen
CEO, President, Vice
Chairman of the Board

Carey Chen is currently President, CEO, & Vice Chairman of the Board at Cincinnati Incorporated (CI) since joining the Company in January 2015.

Immediately prior to joining CI, Chen spent eight years as Vice President at Hypertherm, Inc. in Hanover, NH holding various management positions including: General Manager – Light Industrial Businesses, CFO, and CIO.

While at Hypertherm, Chen was named as a Top 40 Under Forty by New Hampshire Union Leader.





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companies, if you had to print a car thousands of times, but the body of every car was slightly different, that would be totally cost-ineffective due to the relatively high cost of required tooling. We, however, are able to quickly customize production with our technology by simply modifying software codes.”

CI’s highly inventive level of skill extends beyond incredible 3D printers. In another renowned sector of the business – press brakes, which are machines for bending sheet metal – an electric version of the press brake has been recently introduced; these tools are traditionally hydraulic or mechanical. CI has introduced a 40 ton electric press brake called the GoForm which is approximately the size of a large refrigerator according to Chen, but highly mobile and inherently clean thanks to being electric.

“That means we can now introduce this technology into industries that we have not been able to penetrate before,” Chen says. “Applications that require clean rooms or the medical industry as examples.

It’s our intent to introduce a 60 ton version of the GoForm as a follow up act in the near future.”

In terms of lasers, another of the company’s most popular products, it is offering both CO2 and fiber lasers and, with fiber becoming increasingly more prevalent, Cincinnati Incorporated is working towards making them cut thicker, faster, and with a higher cut edge quality. Currently two, four, and six kilowatt versions are available, with a view to offer lasers with eight kilowatts and beyond in the coming years.

The power of partnership

Chen attributes the success of Cincinnati Incorporated’s industry-changing products to the company’s approach to technology, an element of which is having the confidence to ask for help. “We would not have been able to achieve all these wonderful things on our own steam,” he admits. “We have great partners, one example of which is Oak Ridge National Laboratory. We are able to leverage their expertise through a long-term CRADA – a cooperative

research and development agreement – that we have in place. They have certain pieces of the technology and expertise that we were interested in, and we were able to contribute some of the hardware, software, and motion control elements, so we were able to commercialize the technology jointly.

“If you want to advance technology very quickly, you have to take stock of what you have in-house, and if you do not have the necessary critical pieces, you need to be humble enough to ask for help. That’s how we have been able to keep up with the technology curve.”

Logistics

Due to the size and value of CI’s products, they historically had to be transported using rail cars to travel across the United States, and by ship to reach other countries. Now, tractor trailers are generally used, but the company has been known to require specialized equipment, such as a 78-wheeler in one instance to move a Powder Metal Press, in order to adequately displace the weight of very large items. While logistics can be complex, with legal permits and relevant escort vehicles



“

To advance technology very quickly, you have to take stock of what you have in-house, and if you don't have the necessary pieces you need to be humble enough to ask for help”

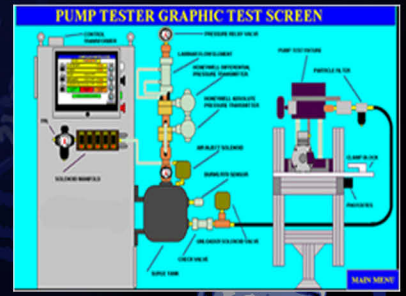
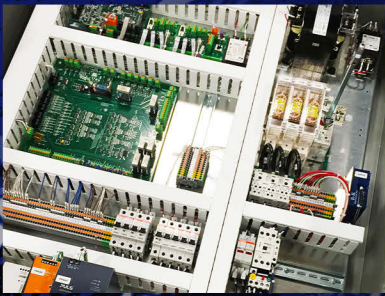
– Carey Chen, CEO, President, Vice Chairman of the Board



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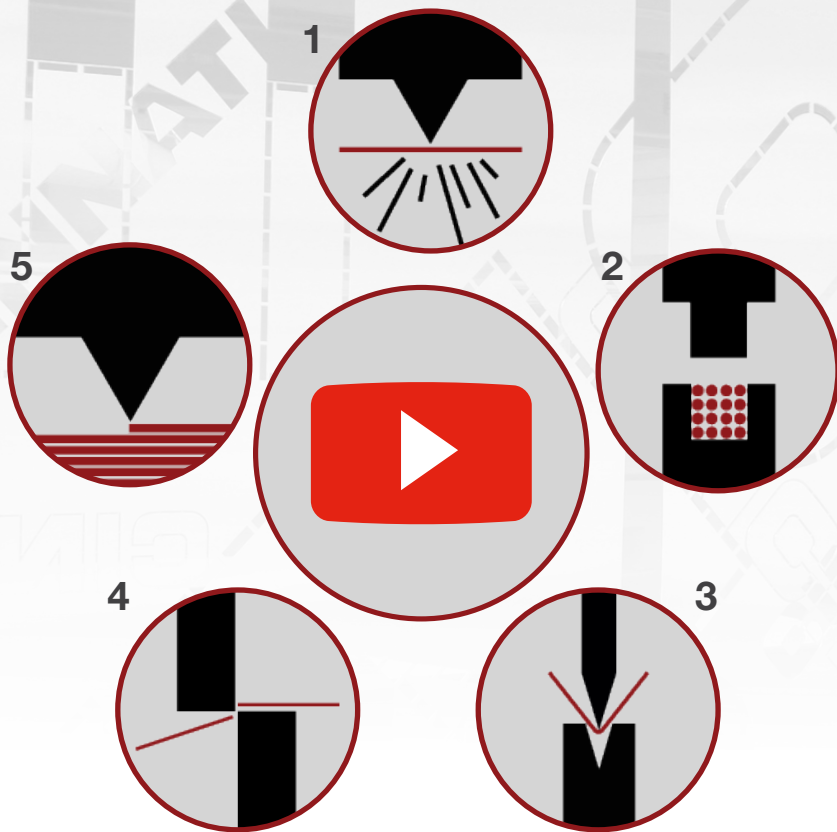
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having to be organized, these arrangements are made in-house. As CEO, Chen oversees day-to-day operations within the business alongside the higher level corporate governance aspect, and ensures his team appropriately handles scheduling and communication with transportation partners.

Corporate responsibility

As a company that produces significant waste, CI rightly considers itself to have a responsibility towards

sustainability. “We’re trying to do a better job of taking care of the environment,” Chen explains. “We have an ‘adopt-a-road’ type program where we are cleaning up the road that CI is located on a quarterly basis. We also inherit a significant amount of cardboard packaging from our vendors, so we invested in a baler that regularly collects the cardboard and compresses it, which we send to a recycling facility. Similarly, we create a lot of scrap from our use of metal, so we implemented a

recycling program that captures the scrap, separates different metals into appropriate bins, and in that instance we actually get some cost recovery through recycling.”

But Chen and his company actually look at corporate social responsibility more broadly than that: “We have a code of ethics including an anonymous silent whistle, wellness initiatives for the employees, and a 501(c) non-profit that’s about giving

back to the community. We have a full circle mentality that if we take care of the community, hopefully the citizens in that community will be better off overall, and then if we hire someone from the community, he or she will be a better candidate. By hiring that person we are also sending money back into the community and continuing the cycle.”

It is this selection of qualities and skills which has ensured CI’s longevity

and the kind of reputation that cannot be bought. A hundred years ago, there would have been dozens of machinery manufacturers around Cincinnati – Chen’s company, which employs over 400 people across 325 acres of land, is the last to remain from that era.

“I think the key to being around for the next 100 years will be an unwavering focus on our customer,” he states. “Making sure we deliver great machine tools, that we service

them properly, listen to customer needs going forward and provide the solutions they want versus the solutions we want to give them – there’s often a difference. If we can do all those things, we have a very good shot at being around for the next century and continuing to grow profitably during that time.” ■

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Investing for the future



Written by **Lisa Higgins**
Produced by **David Kulowitch**

Senior Vice President of Information Technology at J.B. Hunt, Tracy Black, discusses how the transportation company is continually developing innovative solutions for their customers and internal teams

The transportation and logistics industry is undergoing a big digital evolution, and industry-leader J.B. Hunt is addressing the challenge head-on with new platforms, top-notch employees and big investments. Founded in 1961 in Lowell, Arkansas, by an astute American entrepreneur, the Fortune 500 company – one of the largest supply chain solutions providers in North America – is now investing more than \$100 million annually for technology and innovation development. Business Review USA & Canada spoke with Sr. Vice President of Information Technology Tracy Black at length to shed some light on their new practices.

Technological transformation

Black has worked at J.B. Hunt for 28 years. She says bringing

technology to the heart of the company's core practices has been revolutionary to the business, but she isn't surprised by the dedication to evolving business practices.

"J.B. Hunt has always pushed boundaries and exceeded our own expectations. In the 1980s we were the first transportation company to put in-cab computers on our trucks. In the 1990s we were the first truckload company to make a deal with a rail company, and we designed our own 53-foot containers that could be double stacked on the rail. Today we're really focused on the digital transformation," she says.

J.B. Hunt's latest disruption in the marketplace has been J.B. Hunt 360™, its transportation management system that serves as a one-stop solutions platform offering 360-degree visibility into a

A professional headshot of Tracy Black, a woman with shoulder-length, wavy blonde hair and blue eyes, smiling warmly. She is wearing a black blazer over a black and white striped top with a decorative neckline. The background is white with a yellow and black diagonal graphic element in the upper right corner.

Tracy Black
SVP of IT

Tracy Black is Sr. Vice President of Information Technology for J.B. Hunt Transport Services, Inc. Utilizing an integrated, multimodal approach, the company provides capacity-oriented solutions centered on delivering customer value and industry-leading service to a diverse group of customers throughout the contiguous United States, Canada, and Mexico.



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“J.B. Hunt has always pushed boundaries and exceeded our own expectations”

– Tracy Black, SVP of IT

company’s supply chain. J.B. Hunt 360 provides transparency into capacity and pricing, allowing real-time freight matching and tracking throughout the shipping process.

“We’re using technology to connect shippers and carriers instantaneously, giving carriers the ability to bid on freight to book at the true market price,” Black adds. “The platform has the opportunity to be as much of a revenue-generating segment for the company as some of our asset-based ones.”

As part of that platform, J.B. Hunt

has developed a mobile app available to all third-party

J.B. Hunt contracted carriers. The app allows drivers and carriers to track and bid on loads. For shippers, pricing transparency is on the rise, and J.B. Hunt is at the forefront.

“We’re seeing shorter lead times and tighter appointment windows, and that’s really driving the need for more real-time and overall visibility,” Black says. “Precision and timing are essential for planning, and we’re leveraging API-based technology to get real-time status updates from our assets and carriers that are holding freight.” The company will soon include supply chain control tower



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“End-to-end visibility of the entire supply chain is the new expectation, and as a technology leader in the industry, we are excited to provide this service to our customers.”

Terry Matthews, Executive Vice President and President of J.B. Hunt's intermodal division

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capabilities allowing shippers visibility to all loads regardless of carrier.

Implementing new technology has allowed J.B. Hunt to provide supply solutions to a new audience – small-to-medium-sized businesses. Platforms like J.B. Hunt 360 can provide less-than-truckload (LTL) solutions for shipments that are too heavy for a parcel carrier and too small for a full truckload.

“The platform is cost effective, and that opens the door for business with a variety of shippers that would have considered someone like J.B. Hunt too

big to address their needs,” Black says. “We’re bringing Wall Street service to Main Street businesses.”

In addition to technology for shippers and third-party carriers, J.B. Hunt also developed a mobile app for its company drivers in 2015. The company also provides its drivers with Samsung tablets, helping reduce the use of paper. J.B. Hunt

continues to develop its internal technology and is leveraging the tablet for voice calls with a dispatcher or customer, as well as allowing submission of electronic signatures.

In the future, Black’s team is looking to add a virtual personal assistant with alert notifications such as providing the drivers specific instructions

for their next customer location.

People Powered

In order to adapt to changes in technology, J.B. Hunt is investing to build proactive, predictive intelligence and to hire quality, forward-

thinking employees. Currently, the company’s engineering and technology department includes almost 700 software engineers, 80 logistics engineers and 100 data scientists and black belts.

“We’re shifting our focus from operational efficiencies to being technology leaders and experts,” Black says. “We’re implementing

“We’re using technology to connect shippers and carriers instantaneously”

– Tracy Black, SVP of IT



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a new employee program that recruits recent college graduates into an 18-month intensive program where they rotate in different positions within the business to get a complete view of our processes.”

J.B. Hunt has also created several programs to foster a diverse workplace. Working with UST-Global and its Step It Up America program, J.B. Hunt offers a 12-week training program for JAVA development for women who have degrees in non-STEM fields. J.B. Hunt has also established employee resource groups such as Growing and Retaining Outstanding Women (GROW), Latinos Engaging, Advancing and Developing (LEAD), and Veterans Employee Resource Group (VERG). The organizations

focus on developing and recruiting leaders from diverse backgrounds.

“There aren’t enough women going into IT, and we’re going to change that,” Black says. “We’re working to encourage diversity by sponsoring women at IT conferences, hosting Young Women’s Conferences and holding career days with local high schools,” Black says.

Innovation together

For Black, collaboration with the next generation is crucial to taking J.B. Hunt into the future.

In March, the University of Arkansas announced a collaboration between J.B. Hunt, the Sam M. Walton College of Business and College of Engineering. The J.B. Hunt Innovation





22,000+

The number of employees at **J.B. Hunt Transport Services Inc**



Industry

Transportation logistics



Yearly revenue

\$6.6bn



“We’re seeing shorter lead times and tighter appointment windows, and that’s really driving the need for more real-time and overall visibility”

– Tracy Black, SVP of IT

Center of Excellence will pursue revolutionary ideas in supply chain technology development. Much of the focus will be on algorithms and pattern matching. The collaboration is an investment in the future of the company and its ability to deliver customer value.

“We aim to continue to drive operational efficiency so that we can grow our business and support that growth with the same quality that J.B. Hunt is known for in the industry,” Black states. “But


as history has taught us, we can never be complacent. Mr. Hunt always pressed us to ‘Think Big,’ and that’s the mindset moving forward, whether it’s developing the latest software or exploring opportunities with future industry leaders.” ■





Digitizing *an industry*

Written by **John O'Hanlon**
Produced by **David Kulowitch**



The largest representative business for HVAC manufacturers in North America, HTS Engineering has developed unique IT platforms that are custom built for the industry: soon it will make these available as a service to other players

Climate control is a growing consideration for the global construction industry. With inexorable pressure on new buildings to deliver great environmental performance, LEED compliance and ease of maintenance no construction project can be started without the involvement of specialists in environmental control. The North American air conditioning systems market alone is worth some \$30 billion. Key market players in North America include global manufacturers like Carrier Corporation, Daikin Industries, Ingersoll Rand, Trane, JCI and others. These multi-billion dollar corporations go to market via representative companies, of which HTS Engineering is the largest and most respected across the USA and Canada and represents Daikin Industries in Ontario, New England and Texas. With annual revenues in the region of \$350 million, HTS has grown since its foundation in 1992 through a strategy of entrepreneurial ownership: there's a global ownership group of individuals who have a stake in each of the company's 16

locations across Canada and the USA, and regional principals who have a share in their own territory.

HTS Engineering is a unique company built around an entrepreneurial spirit. One of the reasons for HTS' continued success has been its regional ownership structure. Having a shareholder at each location in the USA and Canada committed to the same brand promise allows HTS unmatched regional penetration and strong relationships with local contractors, engineers, owners, and architects. Nevertheless, when its newly appointed CIO Alejandro Navarro joined the company in 2012, 'segregated' is the word he uses to describe its IT infrastructure back then. "They were working on a reactive model, and using a third party ERP system which was more than 20 years old - but the main problem was how segregated the businesses were from a technology standpoint. Moving the entire business to an integrated technology base with common connectivity and other tools right across North America was a major task," he recalls.

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I don't mind
complicating the lives
of my team more if it
simplifies
life for the end users

– Alejandro Navarro, CIO at HTS

Navarro brought with him from the world of banking a conviction that all businesses have a four rung ladder to climb, from reactive thinking through proactive and transformational thinking to the final goal, strategic thinking. But it's not a one-time process, he believes. Agile implementation of IT may mean repeatedly going back a stage as market conditions change – and they change faster than any forward planning can foresee – before regaining the strategic mode. He set about building on those segregated IT environments, and linked them to two new data centers, which improved communications radically. However, the biggest change he introduced, in partnership with





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HTS chooses GemTalk’s development platform for their 24/7 ERP application

HTS's success in the construction industry relies on exceptional Enterprise Resource Planning (ERP) automation. HTS's unique workflow mean that no off-the-shelf software can meet their needs, so they built their own custom ERP software using GemStone/S—an application-and-database platform from GemTalk Systems.

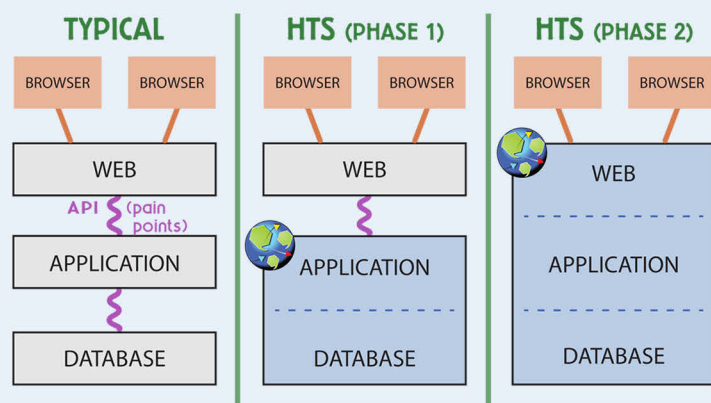
Adaptable software.

The code in HTS’s GemStone-based application directly reflects their sophisticated business logic. “Being able to code these complexities—and more importantly being able to change them quickly — has proven to be the big win with GemStone,” says HTS Software Architect Bob Nemeć. The application has stayed flexible for years, avoiding the growing brittleness common to enterprise software.

Simplified architecture.

With GemStone, software architecture can have fewer layers. HTS has leveraged this capability to incrementally reduce their architectural complexity.

Nemeć says, “I would challenge any other technology to pull that off.”



With fewer technologies, and a single API to program to, HTS has found it simpler to develop, deploy, and manage their system, resulting in lower costs and reduced risk.

Increased developer productivity.

“Our productivity metric is impressive: the entire system was built by a team of four to five people over three years,” says Nemeć. The choice of GemStone makes the HTS development team efficient.

“Just *implementing* something like SAP would require a larger team,” says Nemeć. GemStone programming is done in Smalltalk—with a unified model for code and data, including custom business logic. Code is easier to keep clean, maintainable, and flexible.

Scaled for the enterprise.

A single GemStone/S system can be distributed across many servers, making it easier to scale up to handle more users and data, while maintaining response times. Application upgrades can often be made without down time, and customers find that unscheduled down time is rare.

Solve hard problems.

HTS has efficiently satisfied their users with fast and reliable custom software by using the GemStone/S platform from GemTalk Systems.

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HTS ENGINEERING

Dan Ware, CEO of GemTalk whose GemStone/S software environment was to prove a powerful addition to HTS's IT infrastructure, was the development of a completely new ERP system, custom designed for the rep industry and named TRAX. "Between infrastructure and TRAX, we spent millions of dollars building the world class technology environment we

have today," enthuses Navarro.

TRAX has been running live across the business for a year and a half, and it has been welcomed by its users, he says. Little wonder then that when we spoke with Mike Donovan, HTS Texas President, last September he told us "TRAX places us head and shoulders ahead of the rest of the industry. It allows us to be more predictive



Bell County Project

of our construction projects with processes that puts us ahead of the project milestones. The technology also allows each individual to handle more transactions with better customer service at an even higher velocity”. The software is supported by five full time in-house developers, however the team is augmented by the GemTalk team, explains Navarro.

“We spent a lot of time evaluating and learning the technology with Dan and his team, and we came up with what I call ‘staff augmentation’, which means we have additional ‘proxy’ resources and skillsets available to us as we need them.”

This doesn’t just mean evening out peaks and troughs in current demand, he continues, though it is certainly



HTS ENGINEERING



Mike Donovan
Principal, President HTS Texas

a help when it comes to capacity planning. Transformational as TRAX is proving to HTS, the plan is to give it much wider currency in the future. “Our plan is to take the TRAX product to market: there is a powerful desire out there from other businesses who would like to have access to this product.” Now, most people’s first reaction might be to keep a hot new product like this, which is doing so much for its owner’s competitiveness, very close indeed. But that’s old style protectionist thinking that stagnates business rather than stimulates growth.

To Navarro TRAX represents a golden opportunity to offer HVAC rep distribution firms access to a whole new world of business as a service, or BaaS, supported by HTS’s resources. “These are firms who represent the same suppliers as we do but in different regions and who see the great success of HTS. They want to share that success, and why

would we not want to help them to be successful?” Navarro asks.

This will soon be spun off as a sister business of HTS, he explains. “We can offer the TRAX solution as a service, and we can offer our IT team as a service – so if anyone needs support in architecture or design, we can do that for them.” With 16 offices across

North America, HTS IT people, software and product developers are never that far away.

His approach to product development is a very inclusive and agile one, where a goal is achieved in a series of ‘sprints’ or ‘iterations’ driven by

the end users rather than as grand long-term edifice to be handed over fully formed. He calls it collaborative delivery. “I have seen enough examples of IT running an accounting project, for example, where the project management and the technology all rests firmly in the hands of IT and they hand over the project when it is done. I do it differently. It’s the end

**“Don’t tell
people they
can’t do stuff
– everything
can be done!”**

– Alejandro Navarro, CIO at HTS

**“Moving
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and other tools
right across North
America was a
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– Alejandro Navarro, CIO at HTS

user who owns the project, and IT is just a service to help you deliver it how they want it. They are in the front seat driving the car!” This makes the end users much more aware of the product they are using, he adds, than it would if IT were to dump it on them, letting them figure out how to make it work.

The launch of the BaaS offering is scheduled for 2018, when an entire industry sector including leading reps and potentially OEM’s will have the opportunity to benefit from five years of intensive development work at HTS. Time perhaps for Navarro to reflect on the strategic role that CIOs



are stepping up to from the back offices they used to inhabit. He is surprisingly modest though. “I don’t think my role is much different from any other CIO’s but my approach is perhaps different. We have done a lot of internal disruption to this business, to which it has sometimes adapted well, sometimes less successfully. We do have to learn from our mistakes. Every time we do a change and it goes well we add this to our armory. If it doesn’t we spend a lot of time figuring out why not.”

He sees his job as to create an environment that allows every

individual to do their job better without feeling held back by security considerations or capacity restrictions. “I don’t mind complicating the lives of my team more if it simplifies life for the end users. That is what we are supposed to do: create a safety blanket for them to do whatever they want to do digitally by removing their concerns into our world and adding flexibility to their world. That is what every CIO out there should be doing. Don’t tell people they can’t do stuff – everything can be done! You want people to want more. That is my approach.” ■





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The leading professional services network PricewaterhouseCoopers (PwC) works with governments, universities and large global organizations; its diverse client base is united in placing one issue at the forefront of policy – that of network security



Written by **John O'Hanlon**
Produced by **Vince Keilty**

There's rarely a time when cyber security isn't in the news these days. At the time of writing Twitter, Facebook, PayPal and other platforms had just fallen victim to a cyber attack, and it's even thought attempts have been made to manipulate the US election result from overseas. As society in general and business in particular becomes more dependent on the software that runs its infrastructure and information management systems, the level of security we can achieve becomes not just a business critical issue but an existential one. As security adviser Roger A Grimes said in a recent InfoWorld article: "I've seen American companies work on a secret new product, only to have a Chinese company release a very similar, if not identical product first. Sometimes even the wording in the documentation is identical. I've seen entire American company divisions shut down as a result."

How hackers work

Every CEO is aware of the need to protect their business: few realise

that though most hacks are based on simple password phishing the hackers are some of the smartest people on the globe and it takes equally smart people who understand their mindset, to counter them. Don O'Neil is a Director in PwC's Technology Solutions - CIO Advisory Solution group based in Las Vegas. He is more of a strategist than a hacker himself, but his division employs some of the best white hat hackers on the planet, whose job is to carry out penetration tests on businesses from start ups to major players and government departments too. It works with the consulting arm of the global PwC organization's verticals, Consumer and Industrial Products; Technology, Communications and Entertainment; Healthcare and Financial Services and a final unit devoted to delivering major government projects, to provide its customers with infrastructure security.

However the division goes beyond just assessing security systems and giving advice: it will do precisely as much work or as little as the customer requires, right though to full implementation. The system

he will recommend will be tailor made for the client. “We go into an organization, analyze their business, the way they function, their technology requirements and all of the things that go into how that business operates. Then we map out the right technology solution, architecture and design to meet that requirement. Then we can do the implementation work for the client – if that’s what they want.”

The solutions provided by PwC take an identity driven zero trust approach, overlaying on the existing



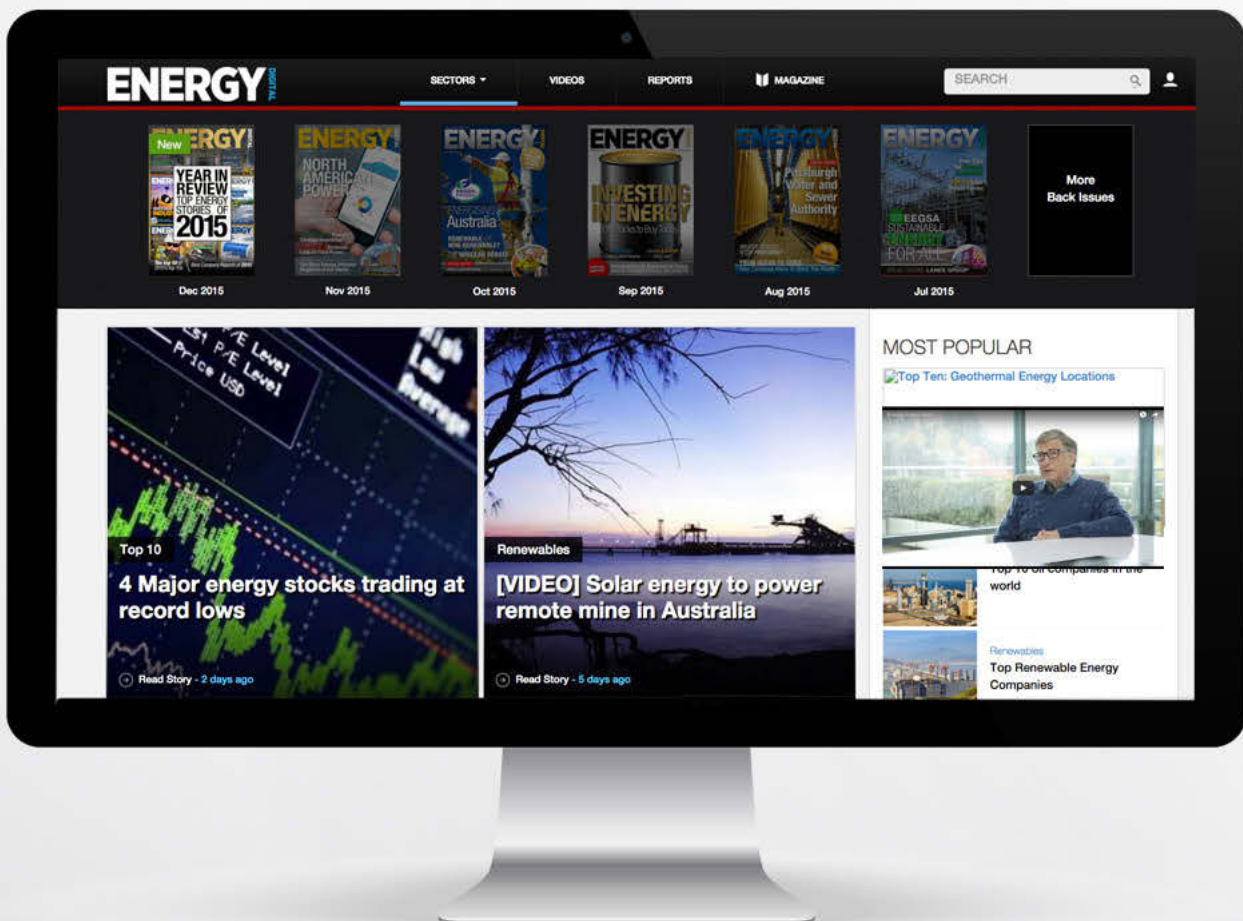
Don O'Neil

Director – CIO Advisory

Don is a Director in PwC’s Technology Solutions - CIO Advisory Solution group based in Las Vegas, NV. CIO Advisory Solution capabilities span IT Strategy, Shared Services & Outsourcing Advisory, Business Systems Integration/Enterprise Architecture, Technology Infrastructure Solutions, and Business Continuity. Don is a member of the Technology Infrastructure Solutions Practice. Don is a former CTO and 26+ year veteran of the IT industry. Don focuses on HA infrastructure builds, data centers, and networks for several start-ups and major customers such as HP, Cisco, and Pacific Bell. Don brings operational, management and in depth infrastructure knowledge. Just prior to joining PwC in 2011, he was a Sr. Network Engineer with Science Applications International Corp (SAIC). Don’s responsibilities included architecture and design of customer networks, data centers, cloud infrastructure, business systems integration, information management and technology Advisory/Strategy, as well as technology & infrastructure solutions. Industries targeted include education, government, gaming, finance, banking and enterprise solutions.

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systems and the network, so there's no disruption at the time of implementation, though specific inherent vulnerabilities may have to be addressed. "Many organizations don't think about securing their networks from insider threats, or securing them from lateral movement once an outsider gets access through an edge connection. That's a key point – stopping that lateral movement so if you are breached from the outside they can't continue to exploit that breach, and leave hidden payloads behind. It's equally important to stop the internal threats from employees, contractors and

their workers from accessing systems they are not supposed to access."

Technology that never sleeps

At the heart of PwC's solutions are two technologies: 802.1X authentication to determine who and what can access the network, and next generation firewalls and micro-segmentation capable virtual switches to segment the network, preventing lateral movement and unauthorized application traffic. 802.1X is a highly effective network access control protocol if it is properly aligned with the business's operations: as a consulting firm that has grown on consulting work based on its understanding of every aspect of its clients' business, from finance to HR and data management for

**“It's
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internal threats from employees, contractors
and their workers from accessing
systems they are not supposed to access”**

– Don O'Neil, Director – CIO Advisory

example, it can add value a way no single technology provider could. “We understand how businesses function as well as understand the technology,” he says. “The technology we use to counter global threats is complicated. People don’t want to deploy it on their own. Networking organizations don’t know how the business units work. The problem has to be approached from both angles. Our deep business knowledge is what differentiates us, along with our partnership with industry leading technology providers like Palo Alto Networks, with whom we developed the Security Framework

for Business Leaders last year to help our clients establish breach prevention security postures.”

In principle, keeping networks safe is quite simple. First, prevention of unauthorized access to the network thwarts any hacking attempt right on the border. If they can’t get in they can’t find anything out. Second, in the event of entry they can be contained from making any progress – this is done through segmentation and monitoring of all application and user activity. “Once hackers breach outer layers of protection and get inside the organization they



try to move laterally,” explains Don O’Neil. “But because we leverage a zero trust architecture with strong authentication, network segmentation, and application visibility, we can stop the attack at multiple levels. Even if a user’s laptop becomes compromised and controlled by an attacker, the hacker’s malware will not be able to move laterally on the network because the next generation firewalls will enforce segmentation and block any malicious traffic.” Four or five levels of security stop an intruder at the door. An additional safeguard is provided by segmentation: whether the network is

accessed through a VPN, a corporate wired network (LAN) or a WLAN, or even a compromised IoT device, PwC’s solution controls how and what each user can access, the time of day they can access it, the device they use and their location at the time.

Vision restored

So every device that connects to the network, workstations, cameras, servers, even an Internet of Things (IoT) device, has to be recognized through a valid certificate, fingerprint or profile. This does not interfere with the companies that want to leverage





“Once hackers breach outer layers of protection and get inside the organization they try to move laterally”

– Don O’Neil, Director – CIO Advisory

BYOD, however the corporation might only want to allow those devices access to low risk areas like e-mail, a time clock system or an intranet. The organization’s critical infrastructure is blocked at the point of entry to the network from the individual or device being even able to detect its presence. Take the education sector. Institutions hold huge volumes of research data and may have privileged access to some government networks. Yet millions of students and researchers rely on easy access to publications and material relevant to their area of study. This is where NAC and segmentation really cuts down the risk. An individual may be granted full access to a research lab when on their home campus, but that access can be restricted or denied depending on the device they have, when they are traveling or if they are visiting a high-risk country.

Too many organizations don’t know how their individual business units work, O’Neil concludes, nor how their technology is deployed, what their networks look like from end to end or which devices have access



to it. But after a PwC consultation process, custom designed system and architecture and can be implemented, the risk of internal or external breach is reduced to virtually zero. “Knowledge transfer is a big piece of this,” he insists. “At the end of the process we don’t want to leave them with an inherent dependency on us - unless they want that dependency.” Some organizations may be able to maintain and manage the system on their own keeping

track of changes in the environment: others may choose to continue with a service provider who can do that, or continue to work with PwC. ■



The word "Turner" is written in a bold, dark blue, sans-serif font in the top left corner of the image. The background of the entire image is a photograph of a modern university building at dusk, with a large arched entrance and a tower on the right. The building is illuminated from within, and a group of people is gathered in front of the entrance. The sky is a deep blue, and there are decorative, curved, light blue lines in the upper left quadrant. The foreground is a green lawn.

Turner

The words "UNIVERSITY EVENTS CENTER" are inscribed in a light-colored, sans-serif font above the large arched entrance of the building. The building is a multi-story structure with a mix of brick and stone textures. The archway is filled with large glass windows, and the interior lights are visible. A group of people is standing in front of the entrance. The sky is a deep blue, and there are decorative, curved, light blue lines in the upper left quadrant. The foreground is a green lawn.

UNIVERSITY EVENTS CENTER

The words "BUILDING SUCCESS" are written in a large, white, bold, sans-serif font across the bottom half of the image. The text is set against a background of a green lawn. The building and sky are visible in the background. The sky is a deep blue, and there are decorative, curved, light blue lines in the upper left quadrant. The foreground is a green lawn.

**BUILDING
SUCCESS**



*How Turner Construction is leveraging
a century of experience to ensure
success at Texas State University*

Written by **Nye Longman**
Produced by **Tom Venturo**

T

asked with carrying out a \$62 million expansion project for the Texas State University Events Center (UEC), Turner Construction is achieving something truly special. Leveraging

over a century of construction industry experience while deploying a team highly experienced in expansion work, the global construction company is ensuring that the UEC will be a focal point for the university for many years to come. We speak to Eric Wildt, who is overseeing the construction as its Project Manager. We discuss how Turner Construction's approach is delivering timely, cost-effective results while minimizing disruption at one of the busiest venues in the area.

With nearly 50 offices across the United States, and with a presence in over 20 countries, Turner Construction offers a truly global experience. Employing in excess of 5,200 people, the company completes around \$10 billion of construction on 1,500 projects every single year.

"It is a pretty significant project," explains Wildt. "It's not just upgrading an arena - it becomes the front door of the campus and that is very significant in terms of kind of the image that the university has for future students. It is definitely impactful."



The project

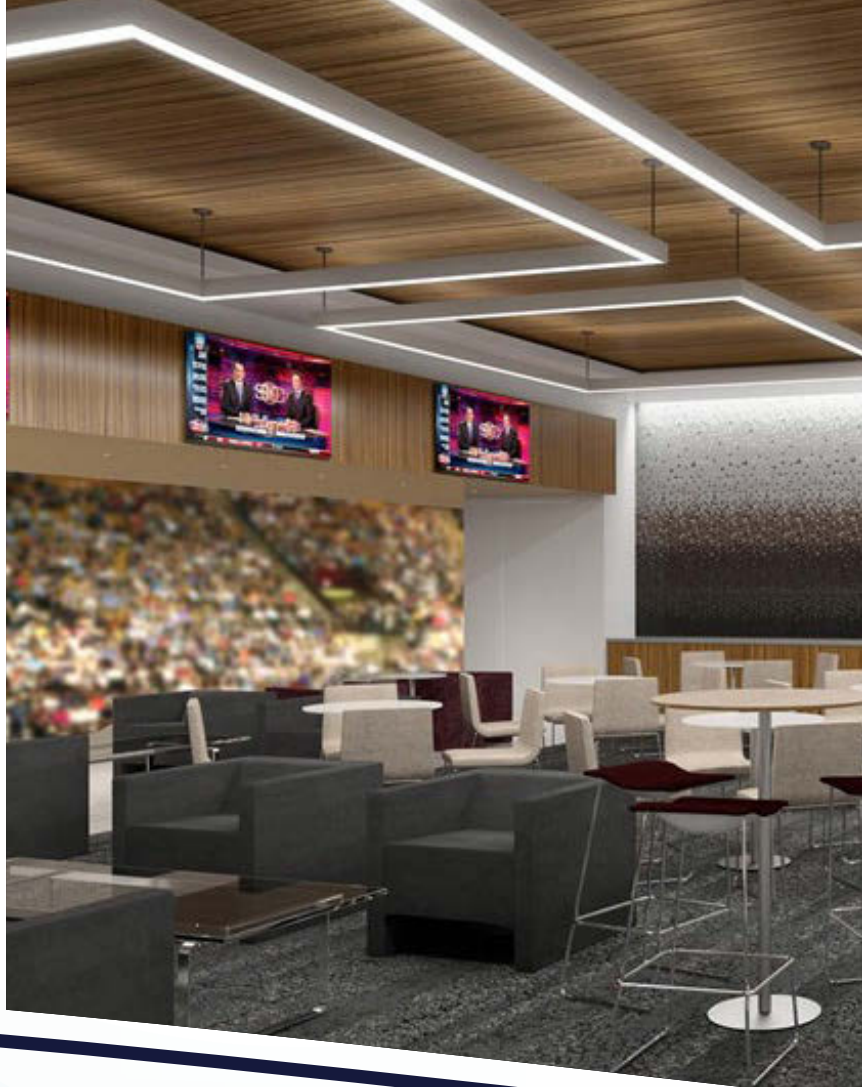
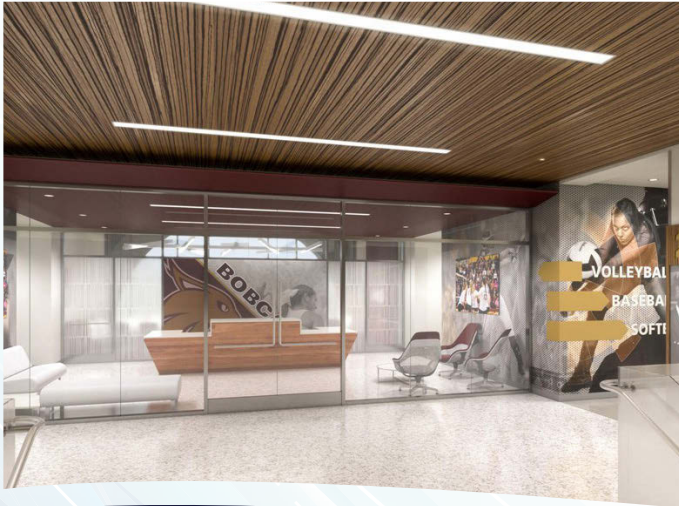
As Texas State University continued to grow in popularity and student numbers subsequently began to swell, the case for a greatly expanded and upgraded Events Center gathered speed. “We are adding around 1,800 seats to the arena,” Wildt says. “We are also adding new locker rooms, coach’s offices, and renovating a fair portion of the arena and putting in new fire protection and new lighting in the existing area.

“It is pretty significant because the president has committed that

future generations’ families will no longer have to watch the graduation on a big screen, instead they can watch it live in the UEC. It’s a pretty big deal for the university.”

Wildt recalls a time when the university was a much smaller operation – one that has now grown to house upwards of 37,000 students, whose Event’s Center hosts rolling ceremonies, as well as countless sporting events.

Designed by Sink, Combs, and Dethlefs Architects, the 81,300 gross square feet (gsf) expansion consists of space dedicated to



ceremonies, athletics (relocated from Jowers Center) as well as space for a variety of functions.

The adjacent Riverside Apartments have been demolished to make way for a chilled water plant, loading dock, parking, sports locker rooms, and offices. The project will also enable the Jowers Center to be turned over for 100 percent academic use, while all current Department of Athletics offices and functions will move into the UEC.

“We are giving them a new scoreboard and a new

infrastructure in terms of mechanical and electrical,” Wildt adds. “One of the things we have brought to the university is that we understand that we are going to work with the university to find periods of time to conduct structural tie-ins and electrical, mechanical, and plumbing systems integration.”

Tools for the job

“We were selected because of the planning we did ahead of interviewing for the project and



the thought we put into how the existing building would tie in with the new expansion,” Wildt continues, somewhat modestly. In fact, Wildt and the teams he heads have carried out major expansion projects in the past – and are using LEAN methodologies and technology to supercharge this knowledge.

Another factor that ensured Turner Construction’s selection was both Wildt and the company’s extensive experience working on

“WE DO MORE COLLABORATIVE **PULL PLANNING AND IDENTIFY A MILESTONE** AND WE MAKE SURE EVERYONE IS **MAKING A PROMISE TO BE DONE** WITH THE WORK ON A PARTICULAR DAY”

– Eric Wildt, Project Manager, Turner Construction

“IT’S NOT JUST UPGRADING AN ARENA - it becomes the front door of the campus and that is very significant in terms of **THE IMAGE THAT THE UNIVERSITY HAS FOR FUTURE STUDENTS”**

- Eric Wildt, Project Manager, Turner Construction

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Eric Wildt
Sr. Project Manager

expansion projects that did not involve full cessation of operations.

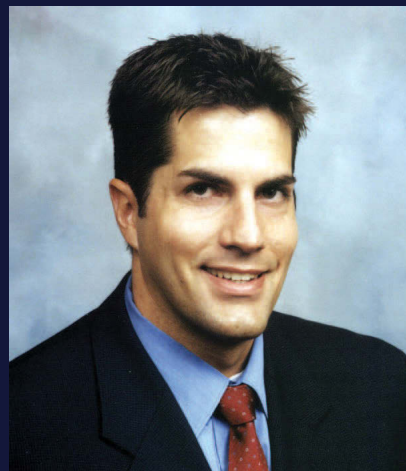
“I did a large expansion to the Washington state penitentiary a number of years ago,” Wildt recounts. “There was a situation where the end-user’s business was basically sacrosanct. You couldn’t disturb the operation of managing the inmates. We had to really collaborate and interface with the owner in terms of work planning and sequencing to make sure we were aligned.

“I’ve also done some airport work inside active terminals. It is

one of things that Turner does a lot of – it’s going into somebody’s house while they’re working and conducting work and trying to be as least impactful as possible.”

Turner Construction recognized that the building can’t be shut down for two years: “We were able to tweak our work plan and timing on events and sequences to work with their schedule,” he adds.

“One of the things that we are pushing heavily on this project is LEAN construction. For us, it is removing constraints and roadblocks and making sure



in

JEREMIAH ‘J.R.’ HUDSON

Project Executive/Director,
Special Projects Division



people have the right tools and a clear path to do their work. We make sure to engage all the stakeholders – universities facilities, administration, athletics all the way to the end user, all in a room with our people and the sub-contractors.”

Ensuring that all parties involved in the expansion project are informed of the latest best practices, Turner Construction takes a top down approach. Wildt explains: “On a project level, it starts with me and if I am not living and breathing it then nobody else will. On a company level it starts with our executive leadership and works down.”

This more holistic approach even extends to how the company conducts its meetings: “We try to run all of our meetings no longer in the old school way where the superintendent will come in and throw a schedule on the table telling the subs this is what you have to do.

**“WE WERE SELECTED
BECAUSE OF THE PLANNING WE DID AND
THE THOUGHT WE PUT INTO **HOW THE
EXISTING BUILDING WOULD TIE
IN WITH THE NEW EXPANSION”****

– Eric Wildt, Project Manager, Turner Construction



SECTION
2-6

SEATS 14-31

SEATS
FOR
STUDENT TO
YOUR
BASKET
SOFTBALL
BASEBALL

“We do more collaborative pull planning and identify a milestone and we make sure everyone is making a promise to be done with the work on a particular day. It becomes a real group effort instead of lecturing to people, everyone has some input which means that they take ownership too.”

In order to ensure that the teams are well versed in the most recent methods, Turner Construction deploys a mixture of different methods while training its workforce. Wildt explains: “There’s the formalized classroom training; we have a one week program called Advanced Lean. It really gets you indoctrinated and thinking about what you can do and how you can improve the world around you. There’s also more traditional ‘on the job’ training.”

Wildt and his teams have also benefited from introducing technological solutions into the project. “Everything is on iPads now, we’re using Blue Beam pretty heavily,” he explains. “Everyone has access to the latest structural drawing on their iPad - people can check the drawing and go out in the field and use their iPad to have the drawings right in front of them when they’re building.”

He concludes: “You have to put yourself in the mind-set of their operations – you don’t want that to be affected. You need to look at what you’re doing under the guise of putting yourself in the owner’s shoes. How are things going to react to what I’m proposing? How am I as an owner reacting? How am I doing my work?” ■

Turner



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