

T H E

T I M E

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As global leaders descend on Davos for the 2019 World Economic Forum, they are facing the most uncertain and fragile outlook in living memory. From Europe's historic car industry to Dubai's data-driven economy, advanced technologies are reshaping the world we live in at a breathtaking pace. In these challenging times, only investment in innovation, technology and education can deliver new opportunities for all humankind. More than ever before, the time is now.

N O W

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FUTURE PROOF

MAKING INROADS FOR THE FUTURE

As the epicenter of the digital revolution moves away from personal computing and smartphones and toward transport, energy and urban living, a new breed of industry leader is shaping the agenda for the future.

At the World Economic Forum in Davos this month, where participants are discussing the global architecture needed for the Fourth Industrial Revolution, the spotlight has shifted from the so-called FAANGs of Facebook, Apple, Amazon, Netflix and Google to a series of long-established companies that are embracing change, reinventing their business models and responding to technological disruption with their own far-reaching innovations.

“For all industries now, business as usual is not an option,” says Luca de Meo, president of SEAT, the rejuvenated carmaker that is Spain's largest industrial investor in research and development. “Whatever sector they are in, companies have to learn how to move from hardware to software and from manufacturing goods to delivering services.”

Perhaps nowhere is this more critical than in SEAT's own industry, which is facing the greatest challenges in its 130-year

history. With increased social demands for low-carbon transport on the one hand, and advances in artificial intelligence leading the way to autonomous driving on the other, carmakers around the world are coming up against a perfect storm of political and technological pressure. Since becoming president of the Barcelona-based company in November 2015, de Meo says that a key priority for him has been to prepare SEAT for a new era in which consumers will use digital platforms to purchase rides in cars that will almost certainly be both electric and autonomous.

“SEAT will continue to produce cars, but by 2030 to 2040 I expect we will be fully commercializing mobility services,” de Meo predicts. “It will be a massive change for SEAT to sell mobility rather than individual assets, but it is one that we are preparing for in everything we do.”

For companies like SEAT with a long and proud heritage in manufacturing, the transition into a digital services business is challenging. De Meo says that when navigating treacherous waters with an uncertain destination, it is critical for businesses to maintain flexibility at all times, keep all



“Co-innovation is the key to the future.”

Luca de Meo, President, SEAT

the auto sector, need to learn from other industry leaders. We cannot develop future mobility scenarios by ourselves, so we have to connect with other companies.”

When it comes to autonomous driving, SEAT is working closely with telecom giants Telefónica and Ericsson to test the potential of the new 5G mobile broadband standard on the streets of historic Spanish cities. De Meo says that the technology could turn out to be a game changer for car manufacturers, helping to accelerate the transition to autonomous driving.

“The development of 5G will require significant investment, but for the car industry it seems clear that there is a real business case for the new standard,” de Meo says. “We want to work with the telecom industry to help make 5G a reality.”

“It's a good example of what I think is the real challenge of Industry 4.0,” he adds. “Technological difficulties can be overcome. But if we are to succeed in building a new future, we have to find innovative ways of developing the relationships and the business architecture we need to create value for ourselves, for our partners and for our customers.” ■

At the same time, SEAT has built close relationships with technology leaders such as Amazon and with innovative disruptors from the U.S., Israel and Barcelona's own rapidly growing technology scene. “SEAT is fast becoming a technology company itself,” de Meo says. “All businesses now, and especially in



At Davos, global leaders face complex challenges



GLOBAL LEADERSHIP

We are living in interesting times. On the one hand the world is far richer than ever, and the 7.6 billion people on the planet lead longer, healthier and perhaps more meaningful lives.

The world, however, does face enormous challenges. These include environmental degradation and climate change, urbanization, growing inequality and geopolitical stress.

These trends are impacted by the increasing pace of technological development, which includes dizzying advances in digital technologies and telecommunications and also in other fields such as life sciences, advanced materials, alternative energy and the commercialization of space, to name a few.

These technologies can either make the situation worse, as when digitalization leads to more inequality, or offer the world opportunities to improve things.

To avoid pitfalls such as going past the 1.5° C warming target discussed by the Intergovernmental Panel on Climate Change in their latest report, leadership is needed.

The problem is that at this moment in time this leadership will not come from the United States, the European Union or even China, for a number of political reasons.

Only international business has the technology, resources and reach to develop solutions on a global scale. Businesses that step forward and help build a sustainable and equitable future will be doing the right thing and also providing the highest long-term rewards. ■

Mike Rosenberg
Associate Professor of Strategic Management, IESE Business School

CAR SUBSCRIPTION GOES MAINSTREAM

For many people, buying a new car can be one of the most nerve-racking and costly purchases that they will make in their lives. Only buying a house involves more uncertainty, paperwork and stress.

That could all be about to change, judging by early demand for a pioneering initiative from Sweden-based car manufacturer Volvo.

Under the Care by Volvo program, consumers no longer have to buy



The Volvo XC40

their vehicles outright. Instead, they can sign up for a monthly subscription service with a standard fixed price that includes the cost of the car as well as service, maintenance and premium insurance. Volvo says that using their mobile app, consumers can complete a subscription within just 10 minutes.

“We think that the subscription service will give consumers all the benefits of buying a car, without the difficulties,” says Atif Rafiq, senior vice president of group

IT and chief digital officer at Volvo. Rafiq says that consumers have been so taken by the idea that many of them are signing up for the service without a test drive.

Volvo has ambitious targets for the subscription program, which it has so far rolled out in seven markets. By the middle of the 2020s, the manufacturer wants to make half of its cars available via subscription. In Germany, consumers can already subscribe to all of Volvo’s current models rather than buy them outright. “We want to simplify the way in which people get cars, and take the pain out of the process,” Rafiq says. ■

SETTING THE PACE IN HYDROGEN

While battery-powered electric vehicles (BEVs) have taken an early lead in the global race to produce cleaner car engines, many of the world’s largest car manufacturers are also investing significantly in the development of hydrogen fuel cell technology.

Hydrogen cars have some compelling technical, operational and environmental advantages when compared with more conventional electric vehicles. They produce zero exhaust emissions, emitting only water at the tailpipe.

“Hydrogen actually filters the air, so the air that comes out of a car is much cleaner than the air that is sucked in,” says Thomas A. Schmid, senior vice president and COO of Hyundai Motor Europe, the world’s leading manufacturer of hydrogen fuel cell vehicles. “We believe in the



The Hyundai Nexo

technology not only for cars but also for trucks.”

Demand for hydrogen vehicles is rising steadily, especially for trucks, which can shift much larger loads than vehicles relying on massive electric batteries. In 2018, Hyundai signed a landmark contract to provide 1,000 hydrogen trucks in Switzerland. When it comes to passenger cars, Hyundai is also rolling out a series of attractive leading models, including most recently the Nexo, which can drive 378 miles on a full tank. “The Nexo is the best car on the market with this technology,” Schmid says. “When the infrastructure improves, we expect high levels of demand for hydrogen cars.” ■

A SCOOTER FOR THE NEW GENERATION

The electric-powered kick scooter is taking the world by storm, representing fun and affordable micro mobility without the hassle of public transport or parking.

While most car manufacturers have been slow to respond to the rise of the kick scooter, Barcelona-based SEAT has seized the opportunity to develop an innovative new mobility solution.

“As a car manufacturer, SEAT is positioned as young, urban and trendy, but young people are now buying their first new cars relatively

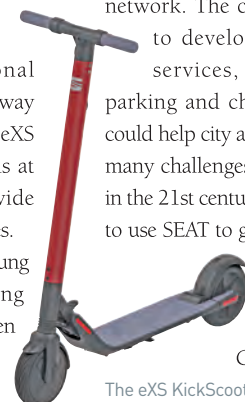
late in life,” says Lucas Casasnovas, product marketing director at the carmaker. “With the kick scooter, we can engage young consumers and offer them a real innovation for urban micro mobility.”

SEAT teamed up with legendary personal transportation brand Segway to develop the all-electric eXS KickScooter, which retails at SEAT dealerships in a wide range of European countries.

“The eXS is perfect for young people, for parents taking their kids to school and even for people with mobility impairments,” Casasnovas

explains. “We expect to sell many thousands of them all across Europe.”

SEAT’s vision for the future of the eXS KickScooter does not stop at selling the vehicle in its dealer network. The company also aims to develop scooter-sharing services, with designated parking and charging areas, that could help city authorities rise to the many challenges of urban mobility in the 21st century. “We want people to use SEAT to get around their city in an economical, sustainable, agile and fun way,” Casasnovas says. ■



The eXS KickScooter

WHEN YOUR WORKFORCE IS FOCUSED ON INNOVATION, THE POSSIBILITIES ARE ENDLESS.

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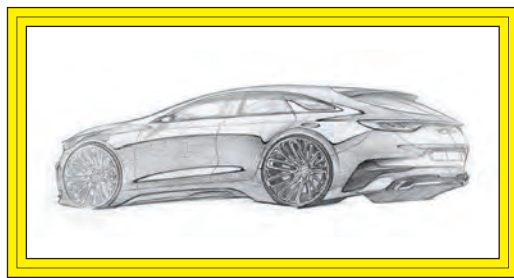


This is how the future works

how



DESIGNED FOR EMOTION



At a time of unprecedented turmoil in the global car sector, one of the industry's most trusted brands is launching a distinctive, head-turning new model that aims to breathe new life into the enduring love affair between European drivers and their vehicles.

For Korean manufacturer Kia, which initially conquered the European market on the back of a groundbreaking seven-year warranty for all its models, the ProCeed represents a stunning step forward into the future of driving. With its eye-catching shooting brake design, combining the space of an estate car with the

“It is time to take Kia to the next level.”

Emilio Herrera, COO, Kia Motors Europe

looks and performance of a tourer, the ProCeed represents not only an unexpected addition to Kia's Ceed family but also a unique proposition for the entire European mid-market.

“We want to surprise our customers with the ProCeed and inject a sense of fun into the Kia brand,” explains Emilio Herrera,

COO of Kia Motors Europe. “We already had strong foundations of quality and design. Now we are adding new body types and attracting a new type of customer—a younger, trendier and more fashionable car buyer.”

In many respects, the ProCeed represents the culmination of more than a decade's worth of focused investments in high-end car design at Kia. Following the appointment of legendary German car designer Peter Schreyer in 2006, Kia's models have become noted as much for their style and individuality as for their practicality and reliability. With its combination of inventive good looks and versatility, the ProCeed adds another dimension to the Kia brand, Herrera says, and it will help prolong the company's steady climb up the European market share rankings.

As befits a car that makes such a bold statement, Kia initially unveiled the ProCeed to the world's media as a concept vehicle at the prestigious Frankfurt Motor Show back in 2017.

Gregory Guillaume, who as vice president for design at Kia Motors Europe oversaw the birth

of the ProCeed, says that the car's striking design is a daring response by Kia to fast-changing fashions in the European mid-sized market. “Because of the fall in demand for three-door hatches, we had to completely rethink our plans for the Ceed family,” Guillaume says. “We used the crisis to reinvent our design proposals and to create a car that has a louder, stronger and more emotional character than anything else in its segment. It embodies all of our values of youthful dynamism, emotional engagement and design-led desirability.

“At Kia, we always like to do the unexpected. We were the first in our mainstream market to launch a shooting brake design, and I think it is going to delight drivers all across Europe.”

Perhaps the most striking feature of the new ProCeed is its dramatic, swept-back silhouette and steeply raked rear windscreen, which are set to become instantly recognizable on the roads of Europe this year. Lower and longer than its five-door hatchback and sports wagon cousins, the car enjoys all of their practical advantages, including a trunk with

a capacity of 594 liters and rear seats that can be laid flat at the touch of a lever.

The ProCeed will be available exclusively in GT and GT-Line versions, a reflection of Kia's focus on creating a design that emphasizes confidence and sportiness. “The

“The ProCeed is the most emotional car in its market.”

Gregory Guillaume, VP Design, Kia Motors Europe

ProCeed is a model that not only sits at the top of the Ceed family, but is immediately identifiable as the most emotionally engaging car in the range,” Guillaume says.

“For Kia, it is the true halo model of the Ceed family. It is the most rewarding and the most engaging car to drive in its class. The ProCeed is the boldest and loudest expression of all the values that Kia stands for,” he adds. ■

IMAGES • CLOCKWISE FROM LEFT: Emilio Herrera, COO, Kia Motors Europe; the ProCeed emphasizes sportiness; Kia's designs are dynamic; Gregory Guillaume, VP Design, Kia; sketch of the ProCeed.



IMPROVING THE PRESENT BUILDING THE FUTURE



■ As the **eight-time Industry Leader** in the **Annual Dow Jones Sustainability Index**, CNH Industrial recognizes that being a global frontrunner in capital goods carries great responsibilities.

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Technology is transforming the workplace

A NEW PARADIGM FOR THE WORLD OF WORK

In the first two decades of the 21st century, information technology has transformed the way in which we communicate with friends and family, and forever changed how we spend our leisure time.

But when it comes to the corporate workplace, the revolution has been slow to arrive. While employees can access their favorite songs and shows from anywhere in the world, logging into a system or changing a password—routines that are straightforward in the consumer world—can involve multiple calls to the company help desk. In their reluctance to embrace the freedoms of cloud-based computing, many organizations are inflicting on their employees a demoralizing series of inefficiencies and frustrations.

Belatedly, as a new generation joins the labor market, businesses are waking up to the fact that if they are to get the best out of their workforce, they will need to adopt the same technologies that have empowered their employees outside the workplace.

“Most people now are born digital,” says David J. Henshall, president and CEO of workspace technology specialist Citrix. “They expect their enterprise computing systems to work smoothly, simply and intuitively.

“Our job at Citrix is to make computing in the enterprise as simple as it is for the consumer.”

The tech firm’s strategy for simplifying IT at work is centered on the Citrix Workspace platform, which lets employees select which cloud-based apps and services they want to use at work. The IT department does the rest, managing an application’s performance and making sure that access is secure, but without getting in the way. Thanks to the power of the cloud, employees can close a session when leaving

“Work is not a place. It is something you do.”

David J. Henshall,
President & CEO, Citrix

the office, start working again at home, while commuting, or on assignment, and find the cursor in exactly the same position as they left it.

The ability to create, access and share work anywhere and anytime, simply and securely, could help unlock the potential of a new generation of workers and deliver newfound freedoms and rewards to them.

“Engaging the workforce is one of the most critical challenges that any enterprise faces,” Henshall says. “The more we can simplify workspace technology, the more we can improve not only the productivity but also the engagement and happiness of everyone who is part of today’s digital workforce.” ■

David J. Henshall
President & CEO
CITRIX

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How do you think the nature of work is going to change?

On the one hand, computing is advancing at an incredibly rapid pace. On the other, young digital natives are joining the workforce and bringing their own set of expectations. Combine this with constrained labor markets and a worldwide shortage of tech skills, and it becomes clear that a new approach is needed.

I think that the most effective organizations will be those that become much less hierarchical and much more fluid. They will become so-called liquid enterprises, with structures and contracts that depend on the types of projects they are undertaking. The old rigid model will have to give way. To adapt to this new paradigm, enterprises will have to rethink the way they enable people to interact with information. The focus of enterprise computing needs to shift away from controlling people and move toward unlocking their productivity.

What are some of the benefits of this new approach?

It is going to be an incredibly impactful shift for every major enterprise around the world. By increasing productivity, increasing engagement and increasing motivation, companies that embrace the new way of thinking could

drive their profits and revenue as much as 20% higher. Their customers will be more satisfied and their employees will be more engaged. The business benefits of simplifying enterprise technology are completely demonstrable.

How can Citrix Workspace help companies prepare for this new world?

At Citrix we want to abstract away a lot of the complexity of enterprise computing, so that companies can focus on the critical problems that really matter to a business.

Citrix Workspace is a general-purpose solution that can be used by everyone inside the enterprise to access applications and consume information. It provides workers with a single experience, whatever the device, wherever the location. There are more than 1 billion knowledge workers in the world today and every one of them could benefit from a platform that helps them become more organized and more productive than ever before.

I strongly believe that people can accomplish amazing things if you give them the tools to be productive on their own terms. ■



HEAVY TRANSPORT IN THE FAST LANE

There is much more to today’s revolution in engine technology than fashionable electric sports cars from California. Far from the spotlight, long-established manufacturers of heavy vehicles are developing zero-emission buses and trucks that could transform the sustainability of road haulage, logistics and passenger transport.

“We are doing everything we can to help our customers move toward an emission-free environment,” says Hubertus M. Mühlhäuser, who in September last year took over the role of CEO at CNH Industrial, one of the world’s leading manufacturers



The IVECO Crealis, the world’s most sustainable bus

of buses, trucks, tractors and equipment for the agricultural and construction industries.

The technical challenges in developing completely electric long-distance trucks are significant, Mühlhäuser says. With current technologies, batteries are still too

heavy and expensive to make electric heavy-goods vehicles (HGVs) a viable alternative. Consequently, until such time as HGVs powered by batteries or fuel cells become more feasible, CNH Industrial is focusing its attention on liquefied natural gas (LNG), a fuel that is abundant,

inexpensive and clean. Compared with equivalent diesel trucks, an LNG-powered vehicle will produce 90% less NO₂, 99% less particulate matter and up to 15% less CO₂.

When it comes to city-center buses, which travel for much shorter distances than heavy trucks, and carry lighter loads, electrification is already a reality. The Crealis bus, manufactured by CNH Industrial’s bus brand IVECO BUS, has won the “Sustainable Bus of the Year Award” for two consecutive years. “Whether in trucks, buses or tractors,” Mühlhäuser says, “sustainability drives innovation in everything we do.” ■

A CULTURE OF INNOVATION

How important is sustainability to innovation at CNH Industrial?

We see sustainability as a major competitive advantage. The Dow Jones Sustainability Indices have named us as an industry leader for the eighth consecutive year. Our aim is to lead the disruption of our sector, which is why we are investing ever more in innovation.

What are the trends disrupting your industry?

There are three major trends that are fundamentally transforming our industrial sectors. First, there is the shift to alternative propulsion systems from diesel to electrification, with gas-driven vehicles as an intermediate step. Second, there is digitalization, which is resulting in increased productivity and a more sustainable use of resources while lowering input costs. The third trend is automation, which will also increase productivity and change the way we work in all of our segments.

How are you helping transport companies reduce their emissions?

I think we will see a reduction of emissions without waiting for electrification. The problem with electrification is that it currently only works for specific applications—it may be fine for cars, urban buses and light-duty trucks, but there are some limitations to electrification for heavy trucks. As leaders in LNG-powered vehicles, we are convinced that this technology is a perfect stepping stone to a future with fuel-cell-powered vehicles. That is why we are also investing in this area for heavy trucks.

How are digital technologies changing farming?

Digitalization and GPS are driving the development of precision farming. Tractors can position themselves by the centimeter and even millimeter, reducing energy costs and cutting back on waste. Farmers can produce more output with less input. At CNH Industrial we are also investing in real-time field satellite imagery, so farmers know what to plant in which field at which time. This increases yields and decreases input costs.



“We are at the start of a revolution in farming.”

Hubertus M. Mühlhäuser,
CEO, CNH Industrial

What do you think the impact of automation will be?

With labor shortages in the agricultural sector, there is an increasing need to automate agricultural processes. In the trucking industry, there is also a huge shortage of drivers, so automation will increase as well. All global industries will reduce the content of labor in their processes, and new, more sophisticated jobs will be created. These jobs will require better education. I do not think that governments have understood or are prepared for these dramatic challenges that will happen sooner than expected, since the speed of change will increase as well.

As the new CEO of CNH Industrial, what will you do to support innovation?

As CEO, you have to create the right culture and you have to put the structure and funds in place. Innovation isn’t free. You have to invest, and you have to bring new talent in. Innovation starts with an entrepreneurial mindset.

How important is risk-taking to innovation?

I try to be as entrepreneurial as possible, fight bureaucracy and challenge the status quo. I like to delegate down to the front line and encourage people to take risks. I believe in decentralizing: You need to trust the front line and their ability to get things done. I also encourage teamwork and dialogue—I like to surround myself with people who challenge me. I want people to be ambitious and passionate. You have to have the courage to make bold decisions, and maybe from time to time make mistakes. But then you discuss those mistakes, learn from them, correct course and continue. “Shoot for the moon, and if you miss you will be among the stars,” is my personal credo. ■

SMART DATA / SMART DUBAI

DUBAI LEADS THE WAY IN DATA

If data is the fuel powering the Globalization 4.0 trend in focus at Davos this year, then no city is better positioned for this new era than the bustling trade and services hub of modern-day Dubai.

As well as building the digital infrastructure required to create new opportunities from multiple sources of data, Dubai authorities are developing the laws, regulations and institutional architecture to ensure the data-driven economy is governed by the principles of openness, transparency and responsibility, and that the needs of residents remain at its heart.

“Data holds the key to making Dubai the smartest, happiest city in the world,” says Younus Al Nasser, CEO of the Dubai Data



Establishment (DDE), part of the Smart Dubai Office, which is spearheading the city’s digital transformation. “But our focus is not on collecting and analyzing the data for its own sake—it is on driving knowledge and innovation and empowering the people.”

One of the major priorities for the DDE is to implement the emirate’s state-of-the-art open data legislation, which includes a series of policies covering all aspects of how data is classified, published, protected, shared and reused. Behind the scenes, Al Nasser and his colleagues are hard at work classifying and categorizing hundreds of different sets of data, from open data such as traffic information that can be shared freely with the public to more sensitive sets to which access has been restricted exclusively to government departments.

“Dubai’s data law and data policies are the foundations for our smart city vision,” says Al Nasser, who is also the assistant director general of Smart Dubai. “Only by inspiring trust and facilitating a seamless exchange of information can we maximize the economic and social potential of our data.”

Dubai’s data strategy embraces both the public and the private

“Data is the bedrock upon which a smart city is built.”

Younus Al Nasser, Assistant DG, Smart Dubai & CEO, DDE

sectors. In the public sector, the DDE has enlisted more than 380 people as “data champions” from across 56 different government entities. Responsible for implementing the emirate’s data laws in their respective departments and for creating a marketplace for shared data, these champions serve as standard-bearers for the city’s emerging data ecosystem.

Bridging the public and private sectors, the DDE has also created a course in data compliance with the Mohammed Bin Rashid School of Government as well as the region’s

first master’s in data science with the Rochester Institute of Technology.

“We are working hard to create a culture in which people from different



organizations can sit down and develop joint initiatives to transform city services,” Al Nasser says.

By aggregating and analyzing data from multiple sources, including tourism authorities, weather forecasters, telecom companies and transport organizations, Dubai has already transformed the way it runs the crucial service of crowd management. “Through data and AI we are helping authorities predict the size of crowds and forecast how they will behave,” Al Nasser explains.

Increasing numbers of private sector organizations are joining Dubai Pulse, the emirate’s citywide data platform created and managed by Smart Dubai. On the secure foundations of Dubai’s data legislation, Dubai Pulse is now evolving into a decentralized market where the public and private sectors alike are able to exchange and monetize their data. “We see ourselves as the enabler of a data marketplace that will transform city living, catalyzing new levels of innovation and entrepreneurship,” Al Nasser says. In

total, the DDE estimates that Dubai’s investment in its data ecosystem could expand the city’s economy by up to 1.2% a year.

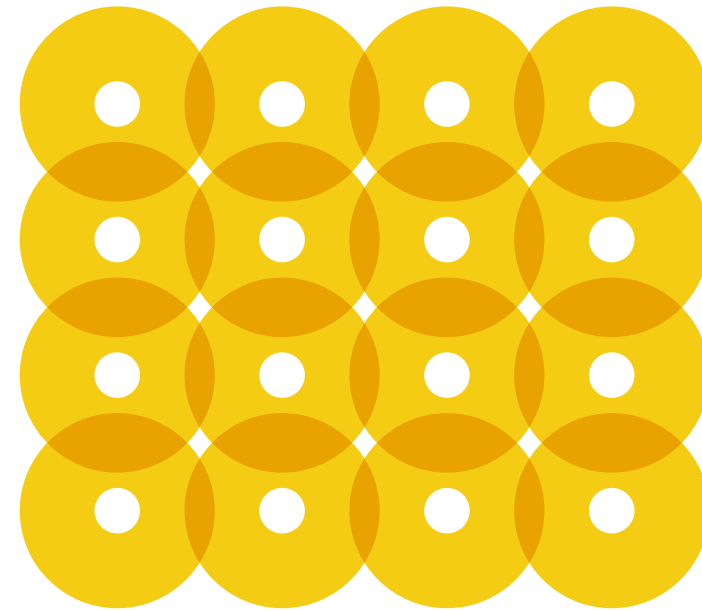
Data analytics is joining the dots in Dubai

Interest in the pioneering work of Smart Dubai and the DDE reaches far beyond the UAE. With the city emerging as a global leader in the data economy, the UN hosted its World Data Forum here last October, while IBM has chosen to establish a Data Science Lab in Dubai and to organize a Chief Data Officer Summit in the city later in 2019. In the financial services sector, Smart Dubai is working with Mastercard to analyze transactional data to generate new insights into Dubai’s current and future economic performance.

“Data will drive a new wave of economic prosperity.”

Dr. Aisha Bin Bishr, DG, Smart Dubai

“Dubai is going to become a global benchmark for data,” Al Nasser says. “From data confidentiality to security to monetization, we are creating a vibrant but responsible data economy that will increase the quality of life for all of our people.” ■



DATA IS THE FUEL OF TOMORROW

Without data, none of our smart city initiatives would be possible, it is the driving force behind Artificial Intelligence, Blockchain, IoT and all other emerging technologies.



DATA SHAKES UP WORLD OF RETAIL

As the data revolution gathers force, none of the defining industries of the 20th century are immune to its impact: From historic car makers to national electricity companies to the giants of financial services, there are few organizations that are not using digital technologies to reinvent the way they do business.

“With data we can win the experience economy.”

Alain Bejjani,
CEO, Majid Al Futtaim

In that architectural icon of the consumer age, the shopping mall, some of the world's largest developers are using the power of data to find new ways to attract customers and increase spending. At a time when traditional retail is under pressure from online



Data is breathing new life into Dubai's malls

commerce, data is giving the malls the ability to provide shoppers with bespoke, personalized experiences in a vibrant real-world environment.

“I am a believer in digital enablement, not digital disruption,” says Alain Bejjani, the CEO of Majid Al Futtaim, a Dubai-based holding company which is one of the Middle East's largest developers of shopping malls. “Thanks to data technology, we can develop customer experiences that are unique and tailored to every person.”

As a reflection of its leadership in data, the company has signed a pioneering memorandum

of understanding (MoU) with Smart Dubai, under which both organizations will work together to enhance and improve raw data. Majid Al Futtaim is the first private-sector company to sign an MoU with the authority to advance the emirate's data and analytics capabilities.

The company's giant loyalty schemes and its ever-expanding network of points-of-sale generate massive amounts of data about the shopping habits and leisure interests of more than 7.7 million people.

“Our new data and advanced analytics space enable us to

understand our customers better than ever before, giving them what they want and not what we think they want,” Bejjani says.

Payment services companies are also playing a major part in the personalization of retail. As the official payment technology partner of Expo 2020 in Dubai, Mastercard will be deploying technologies including augmented and virtual reality and face and fingerprint recognition at the event, as well as wearable and contactless payment solutions and voice shopping, all to help provide visitors with a personal, seamless and memorable experience.

As Bejjani says, with the rise of data, the dividing lines between industries are blurring and new possibilities are emerging for those companies who can seize the opportunity: “Retail is becoming entertainment and entertainment is becoming technology.” ■

REINVENTING THE BUSINESS OF PROPERTY

In the world of real estate, it can sometimes seem that precious little has changed since property transactions and disputes were first recorded on clay tablets thousands of years ago in the city states of Mesopotamia. Property details may now be registered digitally on computers rather than chiselled in cuneiform, but the records may still take a long time to produce, be hard to access and difficult to decipher.

Now, not far away from those historic early sites, property authorities in the futuristic city of Dubai are pioneering a revolution that could transform the mechanics of global real

estate. By harnessing cutting-edge technologies such as blockchain and artificial intelligence, Dubai aims to modernize all the processes involved in buying and leasing properties, from viewing homes to finding a mortgage, registering deeds and paying utility bills.

“Soon about 80% to 90% of our business will be completely paperless,” says Khalifa Alzeraim Alsuwaidi, CEO of Emirates Real Estate Solutions (ERES), the technical arm of the Dubai Land Department (DLD), which is responsible for regulating the local property sector and registering all deeds, leases and contracts.

“Already, title deeds in Dubai are completely digital and can be generated securely using our blockchain solutions,” Alsuwaidi says.

“Property developers used to have to file hundreds of documents at the DLD for official approvals

and permits,” he adds. “Now they can enter their details and pay any



fees from the comfort of their own office. Paper records have become completely unnecessary.”

The digital drive is of particular benefit to Dubai's growing community of foreign buyers, as they no longer need to be physically present to complete a property transaction in the emirate. For all players in the market, whether buyers, sellers, landlords or renters, the initiative is removing inefficiencies, speeding up procedures and increasing transparency. ERES's ambitions for transforming

real estate procedure extend well beyond its home city. The firm has already entered discussions on

“Investors will never have to set foot in a registration office.”

Khalifa Alzeraim Alsuwaidi,
CEO & Board Member,
ERES

digitalizing real estate procedures in countries across Africa, where secure and transparent property rights are seen as one of the keys to faster economic development.

“At global land and property conferences, people often complain about how long it takes to register and verify properties with government authorities,” Alsuwaidi says. “The solutions that we have developed make it easier to protect the property rights of every individual and give them access to new opportunities such as bank financing and utility services.” ■

DIGITAL CAPITAL OF THE WORLD

By putting data, artificial intelligence and other digital technologies at the center of its strategy for growth, the UAE has positioned itself as one of the world's leading standard bearers for the Fourth Industrial Revolution.

According to figures from the Dubai Investment Development Agency (Dubai FDI), in the last three years, close to 60% of all

“Our aspiration is to be a data-driven organization.”

Abdulaziz Harib Alfalahi,
CEO, Corporate Technology
Support Service, RTA

foreign direct investment in Dubai has been carried out in medium to high-tech sectors, with the city now widely recognized as a global leader in cutting-edge sectors such as AI and robotics.

“Dubai is in the front cabin of the bullet train that is the Fourth Industrial Revolution,” says Fahad Al Gergawi, CEO of Dubai FDI. “Thanks to our first-mover advantage, we are developing our talent pool, creating a unique ecosystem and transforming Dubai into one of the world's most attractive cities for technology entrepreneurs and innovators.”

A new investment law allowing 100% foreign ownership and the introduction of 10-year visas for international investors and innovators will further boost FDI flows in high-tech industries, consolidating Dubai's status as one of the world's fastest-growing technology hubs. “Investors here can access opportunities not only in Dubai, the UAE and the Middle East,” Al Gergawi says. “On our doorstep we have the continents of India and Africa, with massive young populations and trillions of dollars of economic opportunities for generations to come.”



Dubai's fast track to the future

As well as liberalizing legislation governing foreign investment and visas, Dubai's government support for digitization is also turning the city into a magnet for tech entrepreneurs.

Thanks to investments by the city's Roads and Transport Authority (RTA) in cutting-edge technologies, Dubai now boasts one of the world's most sophisticated and effective transportation systems. The RTA has already deployed AI in Dubai Metro, the world's longest driverless subway system, to enhance security and improve punctuality: Because AI is used to calculate intervals between journeys, the trains are able

to travel at their maximum speed. Machine learning and data analytics are also essential components of the RTA's Enterprise Command and Control Centre (EC3), which analyzes real-time data from Dubai's roads and public transport network and takes preventative actions to improve traffic flows and ensure safety.

“At RTA we believe that AI will be a major contributor to the happiness of the people of Dubai,” adds Abdulaziz Harib Alfalahi, CEO of the RTA's corporate technology support service. “We aim to use data and AI to deliver smart sustainable mobility for everyone in Dubai.” ■

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A SOLAR FUTURE WITHIN A PARK OF INNOVATION



With concern over the impact of climate change mounting, power companies worldwide are turning to alternative technologies to meet global demand for energy in a cleaner and more sustainable way. In recent years, Dubai has emerged as a recognized pioneer and innovator in the international renewable energy industry, developing a number of techniques and practices that are enhancing the efficiency of the energy sector, rationalizing consumption, finding alternative solutions to conventional energy and supporting sustainable development.

According to the Dubai Clean Energy Strategy launched in 2012 by HH Sheikh Mohammed Bin Rashid Al Maktoum, Vice President and Prime Minister of the UAE and Ruler of Dubai, 7% of Dubai's total power output will come from clean energy by 2020. This target will increase to 25% by 2030 and 75% by 2050, making Dubai the only city in the region to have launched such a wide-ranging strategy, with set goals and timelines that map the future of energy until 2050.

The year 2012 saw the inauguration of the Mohammed Bin Rashid Al Maktoum Solar Park to help achieve these targets. It is the largest single-site solar park in the world with

total installed generation capacity of 1,000 MW by 2020 and rising to 5,000 MW by 2030, with total investments worth up to \$13.6 billion. Upon completion, the solar park will reduce carbon dioxide emissions by over 6.5 million tonnes annually.

“We want to help make Dubai a global hub for clean energy.”

HE Saeed Mohammed Al Tayer, MD and CEO, DEWA

The 13 MW first phase of the solar park became operational in 2013. The project uses over 152,000 photocells, generating over 25 million kilowatt hours of electricity annually and decreasing carbon emissions by 15,000 tonnes a year.

In March 2017, Sheikh Mohammed Bin Rashid Al Maktoum inaugurated the 200 MW second phase of the solar park. This phase generates clean energy for 50,000 residences in Dubai and has cut carbon emissions by 214,000 tonnes a year.

In June 2016, DEWA announced the consortium led by the Abu Dhabi Future Energy Company (Masdar) as the selected bidder for the 800 MW third phase of the solar park. The consortium bid 2.99 cents per kilowatt hour, the

lowest cost for electricity, confirming the implementation of the third phase in stages until 2020. DEWA is building the 800 MW third phase in three stages. The first stage with a capacity of 200 MW became operational in May 2018. The 300 MW second stage will become operational in 2019 and the 300 MW third stage in 2020.

Around the same time, and in adherence with the directives of Sheikh Mohammed Bin Rashid Al Maktoum, HE Saeed Mohammed Al Tayer, managing director & CEO of DEWA, announced the fourth phase of the park, primarily using Concentrated Solar Power (CSP). The solar park will be the largest single-site CSP project in the world, based on the Independent Power Producer (IPP) model.

DEWA awarded the project to a consortium comprising Saudi Arabia's ACWA Power and the Silk Road Fund in cooperation with Shanghai Electric as a major contractor. The solar park will be home to the world's tallest solar tower, measuring 260 meters.

In November 2018, DEWA signed an amendment to the Power Purchase Agreement with the consortium to add 250 MW of photovoltaic solar panels, at a cost of just 2.4 cents per

kilowatt hour, the world's lowest. With this addition, the total capacity of the fourth phase of the solar park will rise from 700 MW to 950 MW. Three technologies will be used to produce clean energy: 600 MW from a parabolic basin complex; 100 MW from a solar tower; and 250 MW from photovoltaic panels.

The solar park has garnered considerable interest from international developers since its launch. DEWA has received a number of Expressions of Interest from organizations, reflecting the confidence of foreign investors in solar energy in Dubai.

DEWA is also developing a 90-meter-high Innovation Center at the solar park, equipped with the latest renewable and clean energy technologies. Through this, DEWA aims to raise awareness of sustainability, while enhancing national capabilities and increasing competitiveness. The Innovation Center will be equipped with the latest clean and renewable energy technologies and will serve as a museum and exhibition showcasing the many possibilities and advantages of solar power. ■

IMAGES • HE Saeed Mohammed Al Tayer, MD and CEO, DEWA; views of the Mohammed Bin Rashid Al Maktoum Solar Park.

THE NEW FACE OF MINING

In the build-up to this year's World Economic Forum (WEF) in Davos, WEF founder and executive chairman Klaus Schwab made an impassioned plea for leaders to deliver a new vision of globalization: “Clinging to an outdated mindset and tinkering with our existing processes and institutions will not do. Rather, we need to redesign them from the ground up.”

Perhaps nowhere is this new paradigm emerging more rapidly than in the mining industry, where business processes and partnerships are being rethought not only from the ground up but also from deep inside the earth's crust.

In a sector traditionally regarded as set in its ways, leading miners are now embracing innovation, increasing their productivity, minimizing their impact on the natural environment and transforming their relations with local communities.

“It is now no longer enough to say that mining will supply the metals needed for modern lives,” says Tom Butler, CEO of the International Council on Mining and Metals (ICMM), which brings together the world's most forward-thinking mining companies. “We also have to show that the metals needed are mined with principles.”

In many cases, it is technological breakthroughs that are inspiring and enabling the rise of principle-based

mining. The sector is already using new technologies to ensure the responsible use of resources such as fresh water: For example, mining giant Anglo American is deploying state-of-the-art fiber-optic sensors to monitor water flows, remotely and in real time. As part of its FutureSmart Mining™ vision, the industry leader is also testing new technologies and processes that require less water to extract valuable minerals and metals from waste rock.

By 2030, Anglo American aims to halve its extraction of freshwater in water-scarce regions and take its overall sustainability performance to an entirely new level.

“We are reimagining mining to improve people's lives.”

Mark Cutifani, CEO, Anglo American

“Traditional technologies will not be sufficient to achieve those levels of improvement,” says CEO Mark Cutifani. “To meet our sustainability goals, we will need innovation, new technologies and new approaches across our business.”

Elsewhere, Canadian gold producer Goldcorp plans to completely eliminate its use of conventional wet tailings. “We aim to introduce groundbreaking technologies to minimize our water

consumption, reduce our use of energy, and improve safety and efficiency,” says Brent Bergeron, Goldcorp's EVP for corporate affairs and sustainability.



To support the responsible use of water, land and other sensitive environmental resources, global mining companies are also strengthening their ties with local communities and forging new partnerships. In its operations in Peru and Suriname, gold and copper producer Newmont Mining has teamed up with the Project WET Foundation to train teachers in water awareness and build water education programs.

“Leading mining companies today recognize that we cannot improve our social and environmental performance without building lasting partnerships,” says Elaine Dorward-King, Newmont's EVP for sustainability and external relations.

As well as delivering tangible environmental and social benefits, compelling financial motivations are driving the new approach to mining. At Anglo American, Cutifani says that each person is now producing double what they were producing just five years ago, thanks to changes in the company's portfolio and investments in improving efficiency. To sustain that rate of change in the future, new technologies and fresh thinking will be critical. “Innovation will be the key to the next five years of transformation,” Cutifani says.

Already, Anglo American is exploring the potential of automation to increase productivity and deliver

safety improvements: As automation becomes a reality and mines go deeper into the earth, the company is testing the latest robotics technology to send vehicles into deep tunnels,

reducing safety risks and enabling precision mining.

Anglo American's innovation-centered strategy for the future extends well beyond its extractive activities. The company is playing an increasing role in developing new end markets for its metals, such as renewable energy and zero-carbon transport. A high proportion of today's electric cars use nickel and copper extracted from the earth by Anglo American, while the hydrogen fuel cells of tomorrow are expected to make extensive use of platinum group metals—of which Anglo American is the world's largest producer.

“We need to show our commitment to mining with principles.”

Tom Butler, CEO, ICMM

“The global mining industry already drives much of the world's economic activity,” Cutifani says. “But our role is far greater than simply to be a supplier of physical products. I want Anglo American to play its part in creating a sustainable future for the world and improving the lives of all of us who live here.” ■

IMAGE • LEFT TO RIGHT: Brent Bergeron, EVP Corporate Affairs and Sustainability, Goldcorp; Elaine Dorward-King, EVP Sustainability and External Relations, Newmont Mining Corporation; Mark Cutifani, CEO, Anglo American



Hard hats meet software at Anglo American

THE UNDERGROUND REVOLUTION

For hundreds of years, miners have had to contend with high levels of noise and pollution.

That is about to change, as an ambitious project aspires to achieve nothing less than the full electrification of a gold mine.

“The days of diesel use for underground mining equipment are numbered,” says Brent Bergeron, EVP for corporate affairs and sustainability at Goldcorp, the giant gold mining company that is developing the mine at Borden in northern Ontario.

Goldcorp has worked closely with key suppliers such as Sandvik to develop customized electric mining equipment. At Borden, the first workers are already riding into the mine on battery-powered personnel carriers and are using giant electric drills to bore tunnels deep into the rock.

In the second half of 2019, when the mine will start producing its first gold commercially, all-electric

40-ton trucks will transport ore from inside the mine to the earth’s surface. Finally, to truck the material to an offsite processing plant, Goldcorp is exploring options that include vehicles powered by battery or even hydrogen.

“Borden is our blueprint for the mine of the future.”

Brent Bergeron,
EVP Corporate Affairs & Sustainability, Goldcorp

Partnerships with like-minded technology suppliers, provincial and federal governments and First Nations are helping to commercialize clean technologies, improve health and safety performance, and reduce greenhouse gas emissions. They will improve the viability, sustainability and profitability of Borden. Bergeron says that because electric vehicles are cleaner and cheaper to run, Goldcorp will save around \$9 million a year in energy and ventilation costs.



Goldcorp’s Borden all-electric gold mine the sound of the tires against the ground and a slight hum, the electric vehicles make no noise,” Bergeron adds. “Our employees are already thrilled with the technology.”

Electric equipment may be more expensive, but this initial capital investment will soon pay for itself with cost cuts and productivity improvements, Bergeron says. “As much as 15% of a mine’s operating costs come from energy, so it makes good business to focus our innovation efforts on energy efficiency.”

As the world of mining monitors developments at Borden closely, Bergeron says the project could help inspire an entirely new paradigm for business models in the mining sector.

The benefits of electrification extend well beyond a mining company’s bottom line. The Borden mine will produce 70% fewer emissions of greenhouse gases than if it had been designed for diesel. Miners’ health will also benefit from a significant improvement in air quality. “With the exception of

“Investors want to see our industry move toward more sustainable types of mining operations. At Borden we are demonstrating that there is a very compelling business case for developing new types of technology that can increase the sustainability of underground mining.” ■

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