produce additional data with the aim of garnering investor support for their activities and thereby increase the value of their shares. Financial Market Analysts apply de ned nancial metrics and a great deal of expertise to compare and contrast published gures against those of the client company's peers in order to forecast the likely future impact on share prices.

INDUSTRY MARKET ANALYSTS

Industry Market Analysts often specialise in particular market sectors i.e. semiconductors, mobile phones or computers. They investigate the behaviour of the market sector and track the actions organisations are making to drive change, based on forecast demand and macro-economic conditions. A good example is the recently published report by Gartner which suggests that the global semiconductor revenue as a percentage of the content of electronic systems markets is likely to decline in 2019/20. It is however critically important that any statistical data is analysed by an industry expert with knowledge about the data and the market. Whilst I don't doubt the accuracy of Gartner's statistical data it's only the current decline in the selling price of commodity memory products from a high point in 2018 that's causing this decline. In reality only mobile phones, PC and datacentre markets are impacted and not the wider industrial market in which most UK based organisations operate.

> "ANALYSTS INVESTIGATE THE BEHAVIOUR OF THE MARKET SECTOR"

NATIONAL AND LOCAL BUSINESS ASSOCIATIONS

National, international and local Business Associations such as regional Chambers of Commerce collect gures from across a wide and diverse range of industries and "overlay" the data on to consolidated national economic performance (GDP) gures. The results obtained enable member companies to compare their performance with the local or national economy and are often used as ammunition with which to lobby governments on changes needed to stimulate growth.

INDUSTRY ASSOCIATIONS

Industry or Trade Associations often accept responsibility for the collection of very speci c data on behalf of their member organisations. Always mindful of commercial sensitivity, trade bodies usually aggregate the gures before compiling periodic reports, which enable comparison to the average and interpretation of key factors affecting their industry, the market or the economies they serve.

In the UK the Electronic Components Supply Network (csn) has collected and reported Distributor T otal Available Market (DTAM) and Total Available M arket (TAM) gures

for electronic components sold to industrial markets since the association's inception in 1970. The early recording system was very basic: Members verbally submitted reports on a few metrics, which the association's chairman then consolidated and shared with interested parties.

"MANAGERS ASK FOR A WIDE RANGE OF METRICS RELEVANT FOR THEIR BUSINESS"

Then - as today - managers wanted to focus on the metrics most relevant to their business i.e. semiconductors, passives or connectors and by the mid 1980's were demanding that the reports included a wider range of metrics, requiring the establishment of a formal reporting system and software-based system for recording, manipulating and subsequently disseminating the consolidated data, Today ecsn collates over four hundred data points each month from its members in the UK, Ireland and the Nordic region. These reports enable members to compare their organisation's performance against the local country average at a very high level of detail i.e. op-amps, ceramic capacitors or circular connectors, and at an even higher level using the total data.

The statistical reporting process is hugely valuable to ecsn members but so is a comprehensive overall market view as it enables trends to be easily identified. Members quickly came to realise the value of complementing the statistical data with considered industry expert analysis and to this end ecsn provides a monthly "Chairman's Comment" where key data is highlighted and compared to the industry annual forecast. In addition, a much more detailed "Quarterly Summary" is provided by an ecsn expert Industry Analyst who identifies and plots trends, relates them to issues within the market and external economic factors that could impact the overall economy and therefore the electronic components market.

"IDEA SHARES THE BEST INDUSTRY PRACTICE PROMOTING THE VALUE OF AUTHORIZED DISTRIBUTORS"

GLOBAL STATISTICAL REPORTING STANDARD

In 1988 ecsn along with other local country electronic components industry associations established the International Distribution of Electronics Association (IDEA). This "association of associations" has proved very effective in helping share best industry practice, resolving common industry problems and promoting the value of Manufacturers and Authorised Distributors to the wider industry and government.

Common reporting standards offer many benefits to the global electronic components market: It enables all parties to gain a clear, true and transparent view of the each component product category by individual country, and facilitates cross checking of data validity between statistical providers and analysts, who all tend to use highly individual methods to collect and collate their data. A major achievement for IDEA in 2012 was the introduction of a Global Statistical Reporting Standard.

"THERE IS A DISCREPANCY OF LESS THAN 1% BETWEEN PROVIDERS"

The model was modified to harmonise the individual components product categories to align perfectly with the reporting standards of Bishop Inc., (the leading analyst in the Connector Market) and DMASS, (a leading trade body for semiconductor manufacturers). I'm delighted to report that the new standard has been fully implemented in Europe, resulting in current and historical data with a very high degree of statistical accuracy. Currently there is a discrepancy of less than a 1% between the published results of all contributing providers.

It's becoming widely recognised by the wider electronic systems community that the provision of timely, accurate, statistical reporting is able to directly influence organisational and geographic investment decisions, helping the global electronic components supply network to remain healthy and vibrant. The active international collaboration between IDEA members has enhanced the statistical reporting process immensely and has delivered a very wide range of data and graphics which the associated organisations in the UK and the wider UK electronic systems community are able to benefit.

The future of our industry
is called Circular Economy

The economic paradigm of the 21st century for a sustainable development of the industrial world
(Source: Intesa SanPaolo data)

The current economic model based on the extraction of raw materials and on the production and use of products that then turn into waste generates an enormous loss of value and is no longer sustainable on an economic and environmental level. The scenario envisaged by 2050 is worrying and must make us all re ect, forcing us to change. Not just as individuals, but as a system.

FACTS AND FIGURES:

- In 2050 the population will increase and the people who inhabit the planet will be more than 2.3 billion. Consequently, there will be an increase of the production of food of 70% to be achieved with only a 20% of still cultivable land;
- For every euro spent on food production we pay 2 euros in health and environmental impact costs;
- The value of plastic packaging dispersed in the environment each year (95% of the total) is 80-120 billion dollars. By 2050 in the oceans there will be more plastic than sh;
- The value lost each year for the non-recovery and reuse of clothes is 500 billion euros. And every second a textile waste truck ends up in land lls;
- More than 50% of greenhouse gas emissions are due to the use of virgin raw materials

Source: Ellen MacArthur Foundation

FROM LINEAR ECONOMY TO CIRCULAR ECONOMY

The Linear E conomy model no longer works because it wastes materials and resources. We lose most of the materials we use, the goods we produce are under-used and we focus on treating the symptoms rather than the causes.

The Circular E conomy is instead a virtuous economic and industrial model in which the development of businesses and territories is disconnected from the consumption of exhaustible natural resources, maintaining their value over time. The principle behind this model is to rethink and redesign production processes, separating them from the consumption of exhaustible resources.

This means:
- Designing for zero waste and pollution
- Keeping products and materials in use
- Regenerating natural systems

How?
Turning to renewable energies and materials for example. Sharing assets (cars, appliances, etc.) or re-using second-hand goods. Extending products life and increasing their performance / ef ciency. Removing waste from production and supply chain and recycling materials. Applying new technologies and using big data and automation systems.

> "WE NEED TO RETHINK AND REDESIGN PRODUCTION PROCESSES SEPARATING THEM FROM THE CONSUMPTION OF EXHAUSTIBLE RESOURCES„

The 6 winning steps of the Circular Economy
1. Adopt energy or renewable resources for your processes
2. Produce or purchase reusable or recycled materials
3. Design your products to be repaired and reused
4. Adopt innovative technologies
5. Optimize resource consumption in your production cycle
6. Create "reverse logistics" policies to regain value from products that have exhausted their life cycle.

The challenges of the Distributor 4.0

GEORG STEINBERGER, DMASS & IDEA

The macroeconomic context that surrounds us is not encouraging. According to the IMF (International Monetary Fund) 2019 will see a slowdown of the global economy, with a GDP growth that will be close to 1% (only!) for Europe.
In addition, Brexit and the war of duties between the US and China are creating much uncertainty. While new policies of protectionism and nationalism are acting as unfavorable elements for the global economic growth...
On the European side, the political bodies seem to be in a state of immobility with no real investments or plans for the future.

Looking closely at the electronics market, the semiconductor sector has suffered and is continuing to suffer with production capacity problems not yet aligned with the demand and for the drastic fall of the memory sector. The IP&E (passives and electromechanicals) sector is coming out from a period of shortage that has not yet ended.

> "THE VALUE OF DISTRIBUTION IS GROWING"

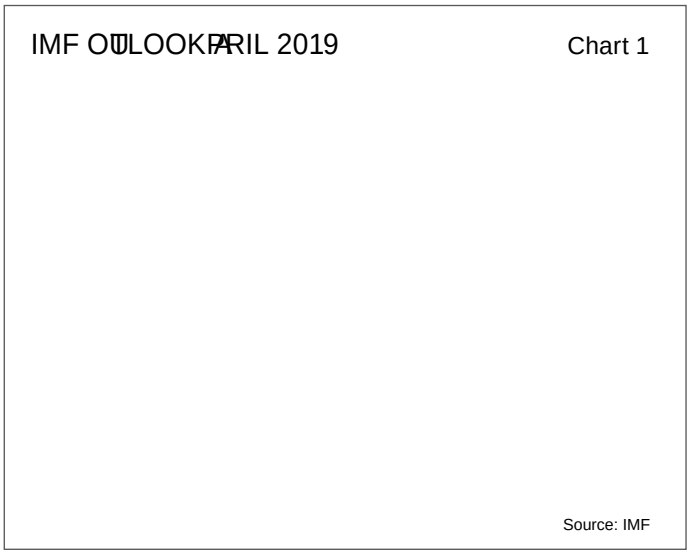
And yet... the electronic components market is destined to grow and there is optimism in the long run.
The view emerges from a presentation by **Georg Steinberger**, president of IDEA and DMASS and leading expert in the sector that describes the opportunities and challenges of today's distributor.

MANY OPPORTUNITIES TO BE SEIZED

Let's see which are the favourable elements that can make us bet on the market:

- We will have (and ask for) more efficiency, highly automated transactions, digital customer experience
- The market will remain highly competitive (including manufacturers)
- Digital transformation is requesting data analytics and marketing automation in every sector
- Hardware alone is not enough: the market needs an ecosystems to support product lifecycles
- IoT and AI are growing
- The value of distribution is growing (also in other industries)
- Legislation, liability, traceability, sustainability are creating a more complex system along the supply chain

IMF OUTLOOK APRIL 2019 Chart 1



Source: IMF

What does all this mean? That there are many growing opportunities and that the electronics distribution market in EMEA could double its value by 2030.

ONE STEP BACK

The global market of electronic components, from 1987 up to now, has increased exponentially from 40 to 620 billion dollars. The growth of the sector, especially in recent years, has been driven by the demand of tablets and smartphones.
At a European level, the market has increased from 10 to 60 billion dollars, progressively losing weight in the global market. The EU market has been mainly driven by the automotive and industrial sectors.

If we look only at the European electronics distribution, the market value has grown, between 1987 and 2019, from 2 to 17 billion dollars. And the DTAM (Distribution Total Available Market) share has grown slightly from 20 to 27%.
But the sector - and we know it well - has not only changed in terms of numbers. The rules of the game have changed radically. The actual situation sees:

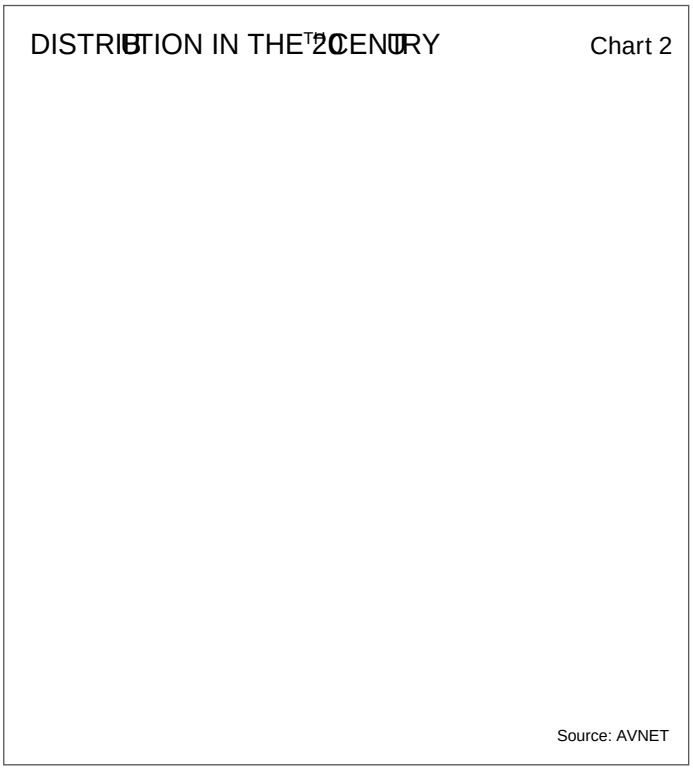
- Concentration and consolidation to a smaller number of volume distributors
- Bigger customers which request more services
- Growing technical complexities
- More educated customers
- More regulations
- Supplier-driven price and margin model
- A huge number of customer specific instructions to be respected
- Online Distribution has replaced classic catalogues
- High Service (Availability, Speed, Convenience)

What are the consequences?

- Price and margin pressure will continue
- Market split will change
- There will be more e-commerce and self-service buying processes
- Services need to be separated from margin
- Digital Transformation is impacting all businesses
- Automated data transfer (lights-off supply chain)
- Higher solutions expertise is requested

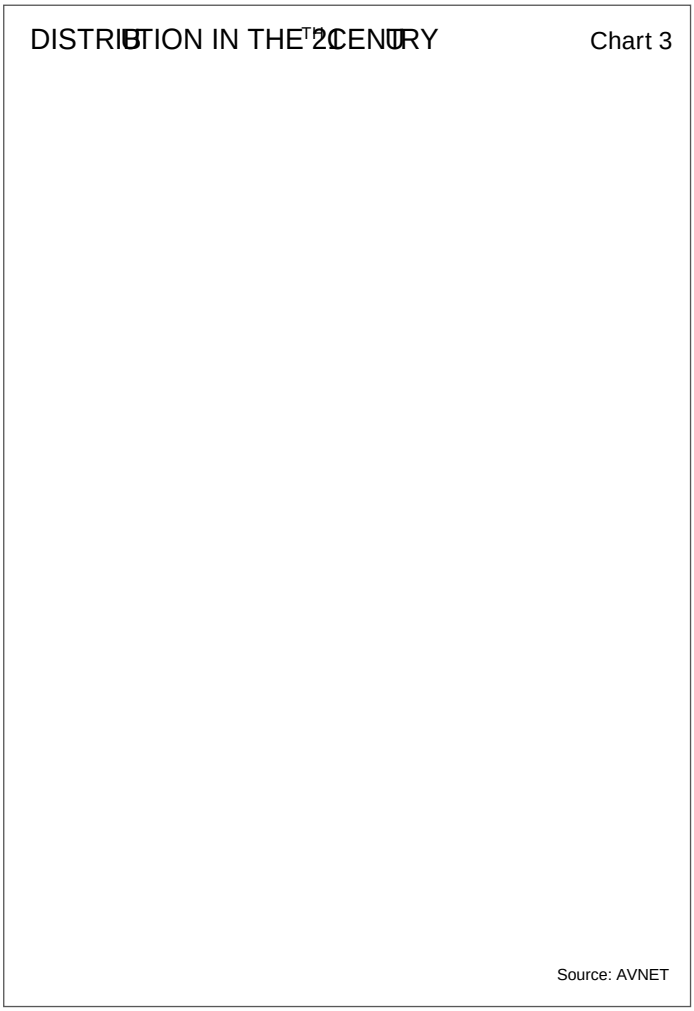
“EMEA DISTRIBUTION MARKET COULD DOUBLE ITS VALUE BY 2030”

DISTRIBUTION IN THE 21TH CENTURY Chart 2



Source: AVNET

DISTRIBUTION IN THE 21TH CENTURY Chart 3



Source: AVNET

A MARKET OF 1 TRILLION DOLLARS

Georg Steinberger believes that we will see a new growth of the electronics sector that will become more and more pervasive in every sector arriving to a market value of 1 trillion dollars.

What will drive this growth? IoT and Artificial Intelligence will be the most important drivers of the market.
According to McKinsey, the potential economic impact of the IoT by 2025 will be $ 3.9-11 trillion, while according to Gartner, spending on endpoints and services will reach $ 3.9 trillion by 2021. But the challenges remain multiple: 74% of IoT projects fail due to lack of a clear business project; 60% of IoT challenges are more complex than expected and require difficult integration between hw, sw, data analysis, security, warehouse etc. Finally, some IoT projects require at least 10 different partners before they can be developped.

A NEW VALUE PROPOSITION

What then will be the new value proposition of Distributor 4.0? Focusing on services and solutions, which must however be recognized and paid for. Making a business and marketing transformation. And always listening to the customer needs.
In a few words, the role of the distributor will increasingly be to "answer to any customers challenges at any given step in the products lifecycle ". A role of aggregator, facilitator and problem solving that will be vital for the development of industry and society.

THE ROAD TO ONE TRILLION DOLLARS II Chart 4

Source: AVNET

Q2 2019 Slowing Global Economy stalls European Component Distribution Growth

Growth in the sales of Electronic Components through Distribution in Europe stalled in the second quarter of 2019, as the global economic slowdown took effect.

AUBREY DUNFORD, IDEA

With the global economy slowing further in the second quarter of 2019, growth in the European Electronic Components Distribution Market as shown in the Q2 2019 European Electronic Components Statistics has stopped. Billings measured across Europe in Q2 2019 were virtually the same as in the second quarter of 2018 bringing a historic period of growth to an end. In many countries the seasonal pattern is for the first quarter of the year to be higher than the second quarter and so when compared to Q1 2019 billings were -6.3% lower in the second quarter with all countries showing this trend except France.

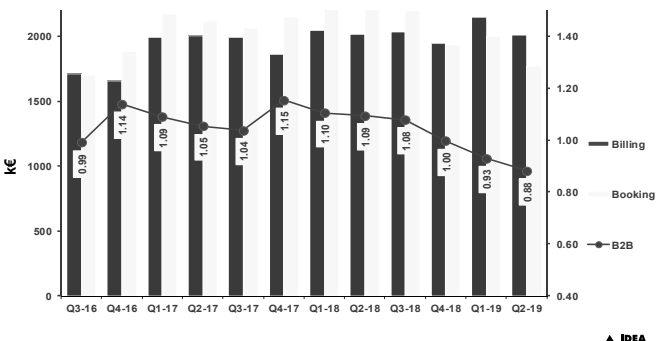
However, taking the first half of 2019 sales were still 2.4% greater than in the first half of 2018. The signs of the end of the growth period are also clearly seen in the bookings where the level is nearly -20% compared to the same quarter last year and -10.6% for the first half as a whole.

As can be seen from Graphic T1the book:bill having been above one for 8 successive quarters dropped in the last quarter of 2018 to 1 and in the first two quarters of 2019 to 0.93 and 0.88. This continues a slowing trend that had been seen throughout 2018. With the slowing of the global economy the supply/demand has to come back into balance and so companies are now looking to reduce stock levels. It continues to be difficult to assess how much of the current slowdown is due to this effect and how much the under-lying demand has slowed. Sectors such as automotive are clearly reducing demand. The outlook for the second half of 2019 is therefore for the European Market to decline. With the impact of trade issues becoming more apparent in many sectors and currently few signs that these issues will be solved soon it is difficult to forecast any different view for the rest of the year.

THE ECONOMIC OUTLOOK: STILL SLUGGISH GLOBAL GROWTH

According to the International Monetary Fund's World Economic Outlook published in July 2019 - "Against a difficult backdrop that included intensified US-China trade and technology tensions as well as prolonged uncertainty on Brexit, momentum in global activity remained soft in the first half of 2019. There were positive surprises to growth in advanced economies, but weaker-than-expected activity in emerging market and developing economies.
Growth was better than expected in the United States and Japan, and one-off factors that had hurt growth in the euro

2ND QTR. 2019 TOTAL COMPONENTS BOOKING, BILLING & BOOK : BILL RATIO Graphic T1
Total distribution electronic components booking, billing and Book:bill ratio for Germany, France, Italy, UK, Sweden, Norway, Denmark, Finland, Switzerland and Austria



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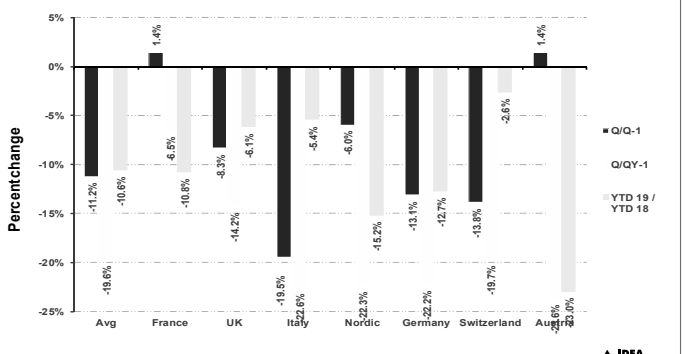
2ND QTR. 2019 TOTAL COMPONENTS BOOKING TREND Graphic T2
Distribution orders for Electronic components by country comparing current qtr with prior quarter (Q/Q1)and same quarter prior year (Q/QY-1) and YTD 18/17



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area in 2018 (notably, adjustments to new auto emissions standards) appeared to fade as anticipated.
Among emerging market and developing economies, rst quarter GDP in China was stronger than forecast, but indicators for the second quarter suggest a weakening of activity. Elsewhere in emerging Asia, as well as in Latin America, activity has disappointed.
Global growth is projected at 3.2 percent for 2019, improving to 3.5 percent in 2020 (0.1 percentage point lower for both years than in the April 2019 WEO forecast). On the trade front, the forecast re ects the May 2019 increase of US tariffs on $200 billion of Chinese exports from 10 percent to 25 percent, and retaliation by China. The downgrades to the growth forecast for China and emerging Asia are broadly consistent with the simulated impact of intensifying trade tensions and associated con dence effects".

2ND QTR. 2019 TOTAL COMPONENTS BILLING TREND Graphic T3
Distribution sales for Electronic components by country comparing current qtr with prior quarter (Q/Q1)and same quarter prior year (Q/QY-1) and YTD 18/17

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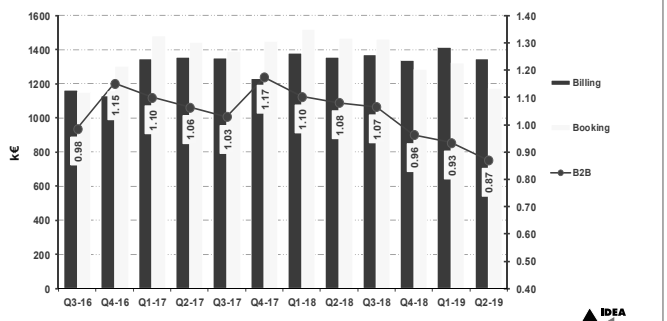
2ND QTR. 2019 SEMICONDUCTOR BOOKINGS, BILLINGS & BOOK:BILL RA TIO Graphic S1
Semiconductor components bookings, billings & book:bill ratio for Germany, France, Italy, UK, Sweden, Norway, Denmark, Finland, Switzerland and Austria



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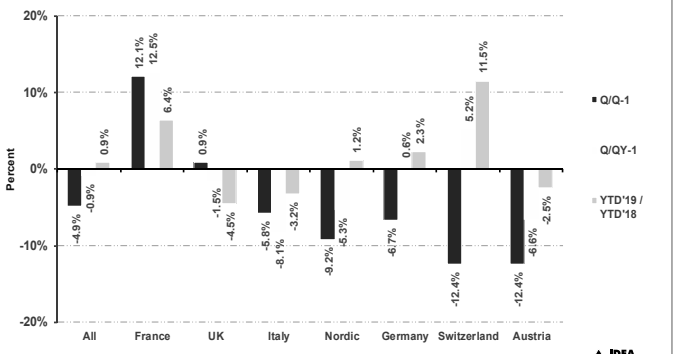
2ND QTR 2019 SEMICONDUCTOR BILLING TREND Graphic S3
Distribution sales for semiconductors by country compared with the prior quarter (Q/Q1) and the same quarter prior year (Q/QY-1) and YTD 18/17



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" THE OUTLOOK FOR THE SECOND HALF OF 2019 IS THEREFORE FOR THE EUROPEAN MARKET TO DECLINE "

However since the IMF issued its update in July, **China** has released second-quarter gures showing that its economy slowed to 6.2% - the weakest rate in at least 27 years, as the country's trade war with the U.S. took its toll. That was in line with the expectations of analysts, and lower than the 6.4% year-on-year growth in the rst quarter of 2019. The second quarter economic growth was the country's slowest pace since the rst quarter of 1992 - the earliest quarterly data on record. China's statistics bureau said the economy faces a complex situation with increasing external uncertainties.
Japan's economy expanded by more than forecast in the second quarter of 2019, according to preliminary data, released by the country's Cabinet Of ce. This showed that Japan logged annualised growth of 1.8 per cent in the three months to June against the previous quarter. That pace was achieved despite the continuing atmosphere of alarm surrounding US-China relations and Japan's vulnerability to forces affecting its exports. Concerns had tamped down market expectations, so the growth gure was substantially above the 0.4 per cent forecast by economists, and just under the 2.2 per cent growth recorded in the previous three months.
The U.S. economy slowed a bit more than initially thought in the second quarter as the strongest growth in consumer spending in 4-1/2 years was offset by declining exports and a smaller inventory build. Gross domestic product increased at a 2.0% annualized rate, the Commerce Department said in its second reading of second-quarter GDP. The economy grew at a 3.1% rate in the January-March quarter. It expanded 2.6% in the rst half of the year.

2ND QTR. 2019 PASSIVE COMPONENTS BOOKING TREND Graphic P2
Distribution orders for passive components by country comparing Q2 2017 with the prior quarter (Q/Q-1) and the same quarter prior year (Q/QY-1)

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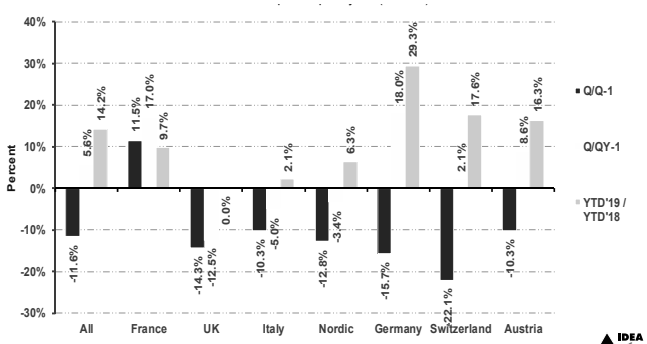
2ND QTR. 2019 PASSIVE COMPONENTS BILLINGS TREND Graphic P3
Distribution sales for passive components by country comparing Q2 2017 with the prior quarter (Q/Q-1) and the same quarter prior year (Q/QY-1)



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European Union statistics of ce Eurostat said gross domestic product (GDP) growth in the 19-country euro zone was 0.2% in the second quarter versus the previous quarter, a slowdown from 0.4% percent in the rst three months of 2019.

"BOOKINGS IN Q2 2019 WERE OVERALL -19.6% LOWER THAN Q2 2018"

GROWTH IN GERMANY AND FRANCE PREVENTS MARKET DECLINE

As can be seen in Graphic T3there has been decline in billings (sales) Q2 2019 over Q2 2018 in Austria, Italy Nordic and the UK and a growth in France, Germany and Switzerland that means that for Europe as a whole the market has remained virtually at with a decline of just -0.3%. Growth was highest in France at 9.4% and lowest in Italy with a decline of -6.8%. The gures shown in Graphic T2 show that bookings in Q2 2019 were overall -19.6% lower than Q2 2018, compared to a decline of -12.3% in Q1.

Overall bookings were -10.6% lower in the rst half of 2019 than they were in the same period in 2018. There was virtually the same picture in all countries although France had the best gures with a decline of bookings of only -6.5%. The largest decline in bookings was in Austria.

QUARTERLY SALES BY PRODUCT FAMILY

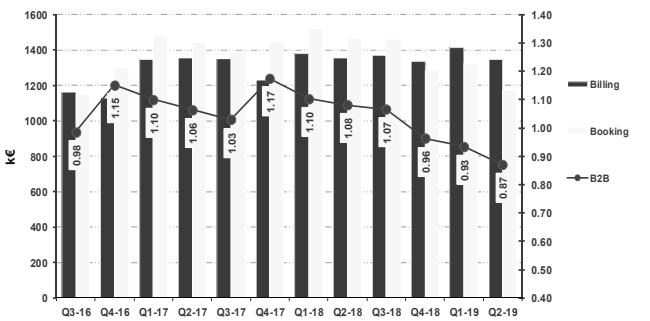
As we do each quarter, we look at the booking and billing trends by product and regional market.

Semiconductors

The book:bill ratio for semiconductors as shown in Graphic S1 shows the same pattern as for the total components with 8 quarters with the ratio being above one but a decline throughout 2018, dropping below unity in Q4 2018 and declining to 0.87 in the second quarter of 2019. This distinct slowing within the semiconductor market in Europe is consistent with gures from other sources showing the slowdown in the global market.

As can be seen in Graphic S3Billings in Q2 2019 were -4.9% lower than in Q1 2019 but slightly down compared with Q2 2018.

2ND QTR. 2019 SEMICONDUCTOR BOOKING, BILLING & BOOK:BILL RA TIO Graphic S1
Semiconductor components Bookings, billings & book:bill ratio for Germany, France, Italy, UK, Sweden, Norway, Denmark, Finland, Switzerland and Austria



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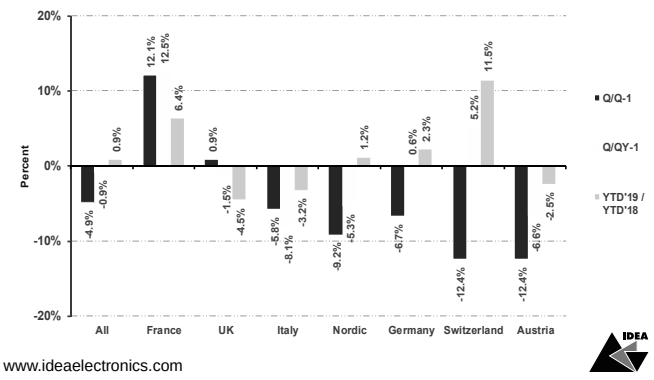
2ND QTR. 2019 SEMICONDUCTOR BILLING TREND Graphic E1
Distribution sales for semiconductors by country compared with the prior quarter (Q/Q-1) and same qtr prior year (Q/QY-1) plus YTD 19'18



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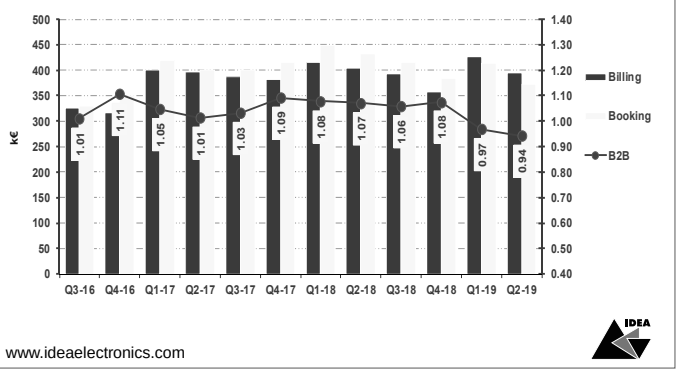
2ND QTR. 2019 EMECH COMPONENTS BOOKING, BILLING & BOOK:BILL RA TIO Graphic E1
EMECH components Bookings, billings & book:bill ratio for Germany, France, Italy, UK, Sweden, Norway, Denmark, Finland, Switzerland and Austria



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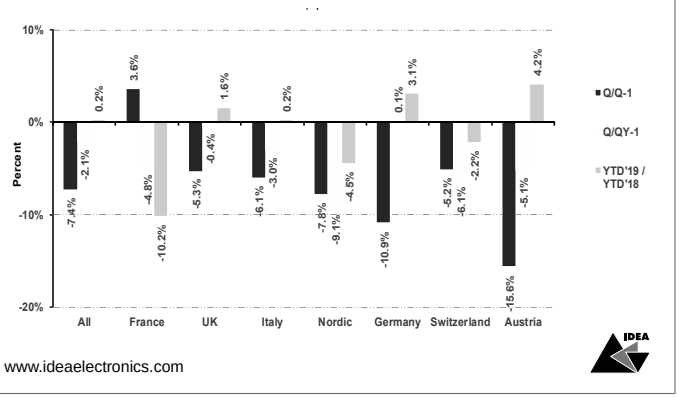
2ND QTR. 2019 EMECH COMPONENTS BILLINGS TREND Graphic E3
Distribution sales of emech components comparing current qtr with prior qtr (Q/Q-1) and same qtr prior year (Q/QY-1) plus YTD trend



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"THE E-MECH SECTOR IS MORE STABLE THAN THE SEMICONDUCTOR SECTOR"

The pattern is similar in all countries except France, The steepest decline was in Italy at -8.1%, Overall the market for semiconductors was just under 1% higher in the first half of 2019 than in the first half of 2018.
The bookings of semiconductors show exactly the same pattern as for total components.

Passives

In the Passives Sector the book:bill ratio was positive for nine consecutive quarters, remaining positive even in the fourth quarter of 2018 but has now dropped to 0.86 and 0.85 in the first two quarters of 2019 respectively.
As can be seen from Graphic P3 there continues to be growth in this sector. Overall sales in Q2 2019 are -11.6% lower than in Q1 2019 but 5.6% higher when compared to Q2 2018. There was strong growth in some countries, most notably in France and Germany but declines in Italy, Nordic and the UK.
As Graphic P2 shows this growth in billings has not been supported by a growth in bookings and hence the drop in the book:bill ratio. Bookings overall were -12.4% lower than in the first quarter of 2019 and -25.2% lower than the second quarter of 2018. This picture was consistent across most countries with the exception of Austria. The steepest decline in bookings has been in Switzerland at nearly -40%.

E-Mech and Other Components

As can be seen from the graphic E1 the trend for the book:bill ratio is slightly different from the other two product categories. The ratio has been more stable and did not show a decline in the last quarter of 2018 staying above unity for a tenth consecutive quarter. Although there was a decline in the first quarter of 2019 the ratio was only just below unity at 0.97 and has only dropped to 0.94 in the second quarter indicating the much more stable nature of this sector compared to semiconductors.

Graphic E3 shows that overall there was a decline of -7.4% of bookings in the second quarter of 2019 over the first quarter with all countries showing decline except France with a growth of 3.6%. When compared to Q2 2018, billings declined by -2.1% with all countries showing a decline except Germany where billings increased by 0.1%.
Bookings decreased overall by -9.9% compared to Q1 2019 and declined by -13.9% compared to Q2 2018. On this measure there was a decline in every country with the biggest being in France and Austria.

Horticultural lighting
an overview of the market

FRANCO MUSIARI, ASSODEL

Thanks to their spectral characteristics and the energy saving they allow, LEDs have already conquered the horticultural sector

Horticulture is the science of growing plants by improving their characteristics, like speed of growth, fruit production, yield, quality and nutritional values. This is even more true today with LED lighting technologies which are able to control the light spectrum.

THE POSITIVE ASPECTS OF INDOOR HORTICULTURE

Indoor horticulture offers several advantages:

- The ability to control the environment and best adapt it to the growth of plants. For example, protection from pests or the optimal adaptation of environmental parameters such as temperature and humidity.
- It allows cultivation in places where natural environmental conditions could be unsuitable.

Arti cial lighting can bring further advantages in the cultivation of different plants by:

- Allowing the light intensity and the spectrum to be adapted to the needs of each individual plant
- Controlling light exposure
- Controlling both light intensity and light spectrum which can lead to faster growths, shorten growth cycles and improved yields
- Reducing the luminous intensity (and consequently the heating effect of the sun) which can lead to lower water consumption.

LIGHTING FOR HORTICULTURE: A GROWING MARKET

All the reasons mentioned above nd a further stimulus with the following social needs:

- Population growth leading to a consequent increase in food demand.
- The constant urbanization is bringing more and more people to live in big cities that are increasingly distant from agricultural areas.

According to the market analysis “Horticultural LED Lighting: Market, Industry, and Technology Trends” carried out by Yole Development, the horticultural lighting market has reached a value of more than 3.8 billion dollars. The current business is mainly represented by greenhouses application which account for 92%, with solutions that still use old technologies (for example high-pressure sodium lamps) for 79% of the total. According to the data of this research, LED applications in greenhouses will see an average annual growth of 15% while indoor & vertical farming applications will grow with an average annual rate of over 65% until 2022 and then of 35% until 2027.

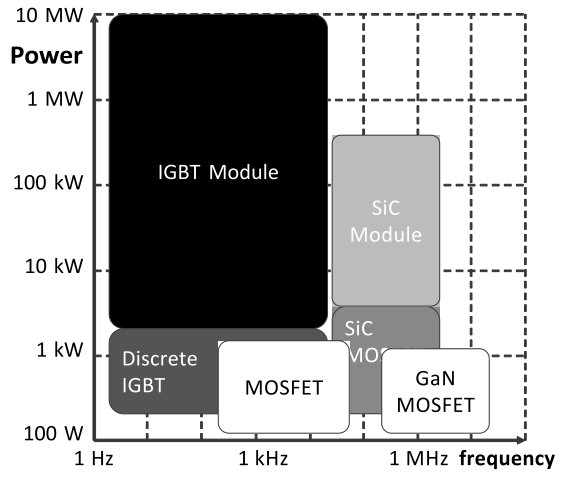
“LED CONSUMPTION WILL MOVE FROM 100 MILLION DOLLARS IN 2017 TO 700 MILLION IN 2027„

This will see LED consumption move from 100 million dollars in 2017 to 400 million in 2022 and then reach 700 million dollars in 2027.

WHO ARE THE MAIN PLAYERS

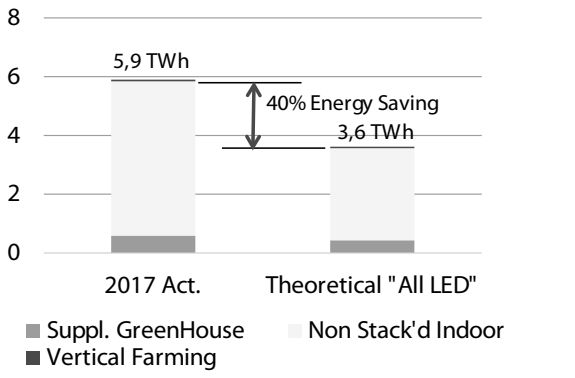
Lumileds, in 2016, already had launched a family of LEDs, called Luxeon SunPlus, which has recently been enriched by the 2835 series. These include LEDs with royal-blue, red and deep red emissions, which are often combined in horticultural lighting systems.
For its SunPlus family products, Lumileds performs tests and binning operations based on the ‘photosynthetic photon flux (PPF)’ making life easier for those who make lighting systems.
Cree has enriched its line of horticultural LEDs with the XLamp XP-E2 model with red and deep red emissions which, according to the company, offer a 68% improvement.

HORTICULTURAL LIGHTING MARKET REVENUE Chart 1



Source: Assodel

ENERGY SAVING IN HORTICULTURAL APPLICATION IF “ALL LED” *(FOR USA)* Chart 2



Source: US Dept. of Energy

Among the solutions offered by Cree, the XLamp XQ-E family of LEDs has been developed specifically for compact vertical farming: the device is the smallest in existence, designed for limited lighting systems.
Osram is on the market with the medium and high power OSCONIQ and OSLON LED families with high performance even in wet environments. With their small dimensions they allow the production of luminaires for professional applications. It is possible to obtain different relationships between deep blue, red and deep red simply by varying the numerical composition of LEDs without changing the layout of the PCB or the design of the lighting system.

“IT IS POSSIBLE TO OBTAIN DIFFERENT RELATIONSHIPS WITHOUT CHANGING THE LAYOUT OF THE PCB„

Philips Lighting continues to expand and improve its GreenPower Toplight modules, bringing its efficiency to 3.3 µmol / J and life to reach 35,000 hours.
Seoul Semiconductor has developed a complete line of LEDs for application in the industry that cover the entire spectrum used for plant growth by widening the emission spectrum from ultraviolet (UV-C) to deep red. The family also includes the series called SunLike whose emission spectrum emulates that of sunlight. The different spectral capacities are realized in different versions: COB, mid to high power.

2019 Top 10 European Connector Suppliers

RON BISHOP, BISHOP & ASSOCIATES

Bishop & Associates has completed its biennial European Customer Satisfaction Survey of the Electronic Connector Industry, which evaluate 30 connector manufacturers. A total of 312 customers answered 17 questions relating to important issues such as quality, pricing, delivery, lead times, technical support, and more to determine the top 10 European connector suppliers. In this article Bishop examines the top 10 European connector suppliers receiving the highest scores for best overa performance, product quality, price competitiveness, technical support and expertise, and on-time delivery.

The following chart details the breakdown of survey responses by industry and job function.

DISTRIBUTION OF CUSTOMER RESPONSES BY INDUSTRY AND JOB FUNCTION Chart 1

Source: Bishop & Associates

The distribution of responses by job function and sales channel is shown in Table 1. Distributors represent 28% of total responses. The distribution of responses by job function and sales channel is graphically represented in Chart 2.

DISTRIBUTION OF RESPONSES BY SALES CHANNEL & JOB FUNCTION Tab. 1

Source: Bishop & Associates

DISTRIBUTION OF CUSTOMER RESPONSES BY INDUSTRY AND JOB FUNCTION Chart 2

Source: Bishop & Associates

THE TOP 10 EUROPEAN CONNECTOR SUPPLIERS – BEST PERFORMANCE

The overall performance rankings were determined by averaging customer responses to 11 questions related to quality of products, price competitiveness, turnaround times,

and other characteristics using the following numerical scale.
6 = Extremely satis ed
5 = Very satis ed
4 = Satis ed
3 = Dissatis ed
2 = Very dissatis ed
1 = Extremely dissatis ed

Table 2 identi es the top 10 European connector suppliers that received the highest customer evaluations in overall best performance by average score, total responses, and base of operation origin.

BEST OVERALL PERFORMANCE Tab. 2

Source: Bishop & Associates

Samtec, ept, and Phoenix Contact respectively placed rst, second, and third in the 2019 European Customer Survey. Molex, which placed in the top 10 for the rst time, is also this year's most improved, up 12 places to tenth in 2019. In addition to Molex, another newcomer in this year's list of top 10 connector manufacturers in the overall performance group is Radiall.

"AN EXTENSIVE LINEUP OF FORWARD-LOOKING PRODUCTS GIVES THE COMPANY AN EDGE„

Samtec has held the rst position for more than a decade. Alan McLean, Samtec's European VP of Sales, explains why. "Samtec understands the importance of culture - known as our 'Samtec DNA,' our culture is embedded in everything we do. The principles of Speed, Flexibility, Innovation, and Win/Win guide and drive our associates to provide exceptional service to our customers and partners every day, through delivering Sudden Service, taking ownership, and thinking creatively to propose solutions that t each situation," he said.
"Europe, with 24 different languages and 28 separate currencies spread across 44 countries, is truly unique in its rich history and economic climate. While we operate globally, receiving our 11th Bishop Report Number One slot proves that Samtec exceeds expectations by appreciating the unique aspects of local culture in Europe, and understanding customers' application and commercial requirements as individuals."

An extensive lineup of forward-looking products also gives the company an edge, said Danny Boesing, product marketing director at Samtec. "Simply put, we strive to provide cutting-edge products and industry-leading signal integrity expertise and technical support to allow customers to optimize their entire serial channel in a high-performance system," he said. "Examples include our NovaRay and AcceleRate products, and Flyover technology. To support that goal we have six technology centers that focus on high-speed cable, advanced interconnect design, system signal integrity, microelectronics, optics, and precision RF."
Around the world, Samtec's people work together. "I hate to use the buzz word that we have synergy, but we do actually have synergy, again, because of our service DNA. We communicate, we work together as a team with customers, we're not divided by business units, and we have the systems and infrastructure in place to solve problems for our customers. We stress communication and try to create systems to make it happen. That probably sounds simplistic but it's the essence of what we do."

Table 3 is a comparison of this year's 10 top European connector suppliers' overall performance ranking versus the previous four years in which the survey was conducted.

BEST OVERALL PERFORMANCE
FOR THE PAST FIVE SURVEYS Tab. 3

Source: Bishop & Associates

Samtec placed first in the last five European customer satisfaction surveys of the electronic connector industry. Molex experienced the largest increase in rank from 2017 to 2019, jumping from 22nd to 10th place. Samtec, Phoenix Contact, WAGO, and HARTING all placed in the top ten in the last five European customer satisfaction surveys and ept has placed second or third during the same time frame, with exception of 2015, when it did not receive enough evaluations to be considered.

THE TOP 10 EUROPEAN CONNECTOR SUPPLIERS FOR PRODUCT QUALITY, PRICE COMPETITIVENESS, AND TECHNICAL SUPPORT AND EXPERTISE

Survey participants were asked to evaluate their overall satisfaction with product quality, price competitiveness, and technical support and expertise using the following numerical scale.
6 = Extremely satisfied
5 = Very satisfied
4 = Satisfied
3 = Dissatisfied
2 = Very dissatisfied
1 = Extremely dissatisfied

2019 TOP 10 EUROPEAN CONNECTOR SUPPLIERS FOR PRODUCT QUALITY Tab. 4

Source: Bishop & Associates

Table 4 identifies the top 10 European connector suppliers that received the highest customer evaluations for product quality. The chart includes their country of origin, their respective average score, and the number of evaluations received.
Note: 6.000 is the highest possible score.
Samtec, ept, and Lemo respectively placed first, second, and third for product quality in the 2019 European Customer Satisfaction Survey. Phoenix Contact, Radiall, HUBER+SUHNER, and Rosenberger all moved into the top 10 in the 2019 survey.

Table 5 is a comparison of this year's 10 top European connector suppliers' product quality ranking versus the previous four years of survey results.

TOP 10 EUROPEAN CONNECTOR SUPPLIERS FOR PRODUCT QUALITY IN THE PAST FIVE SURVEYS Tab. 5

Source: Bishop & Associates

"OUR HIGHLY DEVELOPED VERTICAL MANUFACTURING PROVIDES A CERTAIN FLEXIBILITY„

Samtec is the only company that was placed in the top five in each of the last five surveys conducted. Phoenix Contact experienced the largest increase in rank from 2017 to 2019, jumping from 19th in 2017 to fourth place in 2019. In the past five European Customer Satisfaction Surveys, only Samtec and Lemo maintained their top 10 standing in the product quality category. In addition, although ept was not surveyed in 2015, the company placed in the top 10 in four of the last five surveys and has consistently kept its prices down without sacrificing quality, which has successfully led to high rankings in this survey, year after year.
"Our highly developed vertical manufacturing range provides a certain flexibility to quickly and accurately react to customer and market trends. Since we handle every production step necessary for manufacturing connectors in-house — development, construction, equipment manufacturing, stamping, molding, plating, and connector assembly — we possess the necessary expertise for every manufacturing

TOP 10 EUROPEAN CONNECTOR SUPPLIERS FOR PRICE COMPETITIVENESS Tab. 6

Source: Bishop & Associates

phase and are in complete control of the quality assurance cycle. Furthermore, we're able to handle requests in a flexible manner and can immediately adjust each link in the manufacturing chain separately," said Irina Lew, head of marketing communications at ept. "ept is a family-owned and -run company where technical expertise, precision, and quality have always had the highest priority. Operating the manufacturing procedures for connector production in-house in a competent way is only logical for us and expresses the high standards we hold ourselves to."

THE TOP 10 EUROPEAN CONNECTOR SUPPLIERS FOR PRICE COMPETITIVENESS

Table 6 identifies the top 10 European connector suppliers that received the highest customer evaluations for price competitiveness. The chart includes the company's country of origin, their respective average score, and the number of evaluations received.
Note: 6.000 is the highest possible score.
ept, Belden/Lumberg/Hirschmann, and Binder respectively placed first, second, and third in the 2019 European Customer Satisfaction Survey. Half (50%) of the companies in the top 10 for price competitiveness are headquartered in Germany and 40% are headquartered in the United States. J.S.T. placed seventh in the survey and is based in Japan.

TOP 10 EUROPEAN CONNECTOR SUPPLIERS FOR PRICE COMPETITIVENESS Tab. 7

Source: Bishop & Associates

Table 7 is a comparison of this year's 10 top European connector suppliers' price competitiveness rankings versus the previous four years of survey results.
WAGO is the only company to have placed in the top 10 in all five surveys. ept, CONEC, and J.S.T. have all ranked in the top 10 in four out of the last five surveys. Belden and Molex experienced the highest increase in rank in 2019, with both moving up eight positions.

THE TOP 10 EUROPEAN CONNECTOR COMPANIES FOR TECHNICAL SUPPORT AND EXPERTISE

Table 8 identifies the top 10 European connector companies that received the highest customer evaluations for technical support and expertise.
Table includes the company's country of origin, their respective average score, and the number of evaluations received.
Note: 6.000 is the highest possible score.

TOP 10 EUROPEAN CONNECTOR SUPPLIERS FOR PRICE COMPETITIVENESS IN THE LAST FIVE SURVEYS Tab. 8

Source: Bishop & Associates

ept, Samtec, and Lemo placed rst, second, and third respectively in the 2019 European Customer Satisfaction Survey. Some of the highest survey scores were recorded for this category. The industry average score for technical support and expertise was 4.382 and ranked second only to quality of products, which received an industry average of 4.669. This indicates a very high level of customer satisfaction with overall connector product quality and technical expertise.

Table 11 is a comparison of this year's top 10 European connector companies' technical support and expertise rankings versus the previous four years of survey results.
ept and Samtec jockeyed for rst or second position in the technical support and expertise category in four of the last ve surveys, spanning 2012 to 2019. Samtec, LEMO, and Phoenix Contact all placed in the top 10 in in the past ve European Customer Satisfaction Surveys, and ept ranked in the top 10 in four out of the last ve surveys, as they were not surveyed in 2015. WAGO had the highest increase in rank in 2019, moving up 14 positions from 19th place in 2015 to 8th place in 2019.

TOP 10 EUROPEAN CONNECTOR SUPPLIERS FOR PRICE COMPETITIVENESS IN THE LAST FIVE SURVEYS Tab. 9

Source: Bishop & Associates

> "WAGO HAD THE HIGHEST INCREASE IN RANK IN 2019,

Survey participants were asked to evaluate the percentage of the time these companies provide on-time delivery using the following numerical scale.
5 = 95–100
4 = 90–94
3 = 80–89
2 = 70–79
1 = <70
Table 10 identi es the top 10 European connector companies that received the highest customer evaluations for on-time delivery. The table includes their country of origin, their respective average score, and the number of evaluations received.

TOP 10 EUROPEAN CONNECTOR COMPANIES FOR ON-TIME DELIVERY Tab. 10

Source: Bishop & Associates

Note: 5.000 is the highest possible score.
Samtec, Binder, and Wago respectively placed rst, second, and third for on-time delivery in the 2019 European Customer Satisfaction Survey. Lemo, Lumberg Connect, Weidmüller, and ept all moved into the Top 10 in the 2019 survey.

Table 11 is a comparison of this year's top 10 European connector companies' on-time delivery rankings versus the previous four years of survey results.
Samtec placed rst or second in the on-time delivery category in the last ve surveys conducted. Lemo experienced the largest increase in rank from 2017 to 2019, jumping from 25th place in 2017 to 5th place in 2019. In the past ve European Customer Satisfaction Surveys, only two companies - Samtec and Phoenix Contact - remained in top 10 for best on-time delivery. Binder, Wago, and Harting placed in the top 10 in four of the last ve surveys.

TOP 10 EUROPEAN CONNECTOR COMPANIES FOR ON-TIME DELIVERY IN THE LAST FIVE SURVEYS Tab. 11

Source: Bishop & Associates

Are You Going?
The 2019 ECIA Executive Conference | October 20-22

The ecia Executive C onference 2019 brings together a wide range of authoritative speakers delivering interesting presentations on relevant and topical subjects. ”In my experience having attended for many years is that the presentations represent 20% of the conference value” commented Fletcher, Chairman IDEA, “the other 80% is the value delegates gain from meeting and engaging with a wide cross-section of their peer group within the electronic components industry”. “The value gained from these conversations may not be immediate but is likely to be productive over time when you can reach out or be reached out to, by an industry colleague who needs your expertise” he concluded.
The Executive Conference has been a must-attend event for over 30 years - there is no other that offers an in-depth look at the electronics components industry and is as geared towards industry-speci c education and fostering meaningful relationships across this section of the supply network.

The one essential qualif cation for all great leaders is a clear and compelling vision of the future. As we set our sights on the next decade, the 2019 ECIA Executive Conference program is designed to illuminate industry challenges and enable leaders to successfully guide their organizations into the 2020s.

VISION 2020: LEADING WITH CLARITY

The conference program begins with a review of Industry 4.0 and the Digital Transformation of Manufacturing with **Tony Uphoff**, CEO of Thomas. For over 120 years, Thomas has served the manufacturing industry by providing manufacturers with a wide variety of B2B services and resources, further details at **www.thomasnet.com**

Cliff Waldman, podcast host and CEO, New World Economics **provides an overview of recent economic activity in the major industrialized and developing economies**… New World Economics, is a research and consulting rm that specialises in research into the areas of manufacturing, small business, and frontier markets…

ECIA’s Industry Analyst **Dale Ford, explores key forces shaping the future of the electronics component industry...** A respected industry analyst with 25 years experience. producing award winning market research, he brings expertise in technology trends, competitive analysis, forecasting and supply / demand research of the electronics, semiconductor and electronics components industries, more information at **www.ecianow.org**

> “THE EXECUTIVE CONFERENCE HAS BEEN A MUST ATTEND EVENT FOR OVER 30 YEARS„

Intelligent Transportation and Key Enablers. Rapid advances in automation and IT go hand in hand with technology innovation in self-driving vehicles. They are interdependent and not well understood. **Dwight Howard**, APTIV LPC (formerly Delphi) will explain why the capabilities must be harmonized, more information at **www.aptiv.com**

Check Your Blind Spot! The CEO Action for Diversity & Inclusion™, PwC’s CEO-driven business initiative, is gaining momentum. **Elena Richards** explains the commitment and the psychological research that helps us change our behavior and policies to improve the decisions we make in life and at work, more information at **www.pwc.com**

TTI’s **Michael Knight**, President, TTI Semiconductor Group and industry recruiter **Carla Mahrt**, President, JJM Search, lead a panel of senior leaders in a discussion on succession planning with: **Gordon Hunter**, Chairman, Littelfuse; **Joe Nelligan**, CEO, Molex and **David Kirk**, President and CEO Murata Inc.

Making the Cultural Shift from Product-Promoters to Problem-Solvers. Component industry business is driven by new product introductions but design engineers do not search for products, they search for solutions.
This is an opportunity for the industry. Lectrix CEO **Graham Kilshaw** explains how, more information at **www.lectrixgroup.com**

Pivoting for Performance: The Future of Change in the Electronic Components Industry.
In our industry, the best plans often do not pan out as expected.
To address the constant need to adapt, TEDx speaker and columnist **Shawn Rhodes** shares how the best teams and organizations leverage change, and how attendees can implement those practices, more information at **www.shoshinconsulting.com**

DAY TWO FOCUSES ON LEADERSHIP - BUILDING YOUR TEAM AND KEEPING THEM MOTIVATED

No Shortcuts to the Top. Author and renowned mountaineer **Ed Viesturs** has turned his journey into a metaphor: "climbing has to be a round trip". Perseverance and preparation enabled him to to complete a journey of climbing all fourteen of the world's 8,000 meter peaks without an oxygen tank.

He explains how this applies to managing risk and leading a team step-by-step to a common goal.

The Promise and Potential of 5G – Excitement, Confusion and Possibilities. **Francis Sideco**, VP at IHS Markit, walks us through the varied and sometimes conflicting interpretations of 5G; he discusses how to optimize short and long-term 5G adoption strategies, more information **https://ihsmarkit.com/index.html**

ECIA's CEO **Bill Bradford** offers his "**State of the Association**" with updates on board and council restructuring; increased market insights and committee deliverables...

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In this closing session, former professional baseball executive **Skip Weisman** provides insights, reasons and specific actionable strategies for creating a work environment that engages team members to do their best every day.

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www.ecianow.org/executive-conference.
Hotel accommodations at the Loews Chicago O'Hare can be made by calling direct: 847-544-5300.
Mention the ECIA 2019 meeting.

We look forward to welcoming you to the ecia Executive Conference, it's well worth the effort of travelling to Chicago to attend...

"WE LOOK FORWARD TO WELCOMING YOU TO THE CONFERENCE"

Are we regulating ourselves to death?

ANDREAS FALKE, director of FDBI

Berlin, 7 May 2019 - Where do I begin and where do I end? And most importantly, with what objective in mind? In times of increasingly complex structures and integration in the face of an accelerating pace of change, these questions should be familiar to everyone! It often feels like we can no longer see the wood for the trees, as if we are losing sight of the big picture.

But if we experience this in our “smaller, more manageable” lives, do we then understand how much more extreme things can get in relation to the grand ideas of our time? And are we less hasty to pass judgement?

There is no doubt that many in the EU are asking themselves this question: What was the goal or the big picture again? And does it really have to be mapped out in painstaking detail?
When it comes to implementation, this almost inevitably leads to demarcation problems and delays.

Surely, we need to be focusing more on taking courageous steps, and probably on making cuts, in order to keep the administrative apparatus small but the idea big!
Already years before the Brexit referendum, a former German President of the European Parliament remarked:

“NOW PEOPLE ARE CONFUSING THE IDEA WITH THE ADMINISTRATION AND ARE LEFT DISAPPOINTED„

"In the beginning was the idea, then came the administration. Now people are confusing the idea with the administration and are left disappointed!"

"EUROPE'S ECONOMIC STRENGHT IS BASED ON THE SME SECTOR"

We need to focus on the idea - an economic area, exchanging ideas and information, integration not across borders, but without them. It is an idea that we need more than ever today because we all know that the future is not about doing everything on our own. On the contrary, it is about collaboration between people, companies, states etc. as a federation (even if it is only for a single project) so as to achieve the best possible outcome thanks to the maximum divergence of expertise.

Germany's and Europe's economic strength is based on the SME sector - the domain of the "Hidden Champions" whose position in the marketplace is based on qualities that will remain in high demand in the future. The key players for future markets are emerging from the SME sector.
However, the picture becomes distorted if they become bogged down in a quagmire of rules and regulations as they attempt to establish networks and exchange ideas about projects. If redundant or ambiguous provisions mean that more specialists are required to check regulations and directives, than to collaborate on actual projects. This makes a mockery of the entire system. After all, the idea needs the infrastructure, expertise and a functioning network with the power to spur market participants onwards and upwards.

"THE IDEA NEEDS THE INFRASTRUCTURE, EXPERTISE AND A FUNCTIONING NETWORK"

At this point, I don't want to go into details about the regulations governing substances - are they regulations? Directives? What is the difference? Why are substances regulated according to RoHS and not or only to a limited extent according to REACH? Why insist on EU-wide regulation and then apply national regulations? In other words, why have different interpretations of the field of application for the products affected? Why have redundancy or national diversification when consistency and clarity are required?

In this context, one thing is for sure: The toughest negotiations are always those where a letter of intent needs to be enshrined in a binding contract because lawyers want to ensure maximum certainty of the respective position. In this scenario, everyone knows that simplicity is achieved through omission - but omission is not easy.
What I mean, is that a safeguard clause would be helpful: Issues not governed by the regulations could simply be replaced with a solution that is in keeping with the grand idea. After all, pragmatism is essential if we are to avoid suffocating SMEs as the driving force in the economy.

IDEA

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