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INDUSTRIAL AUTOMATION & PROCESS CONTROL

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Your key to the latest industrial automation and process control information

## 2016 in Review! The Insider Looks Back at an Interesting Year!

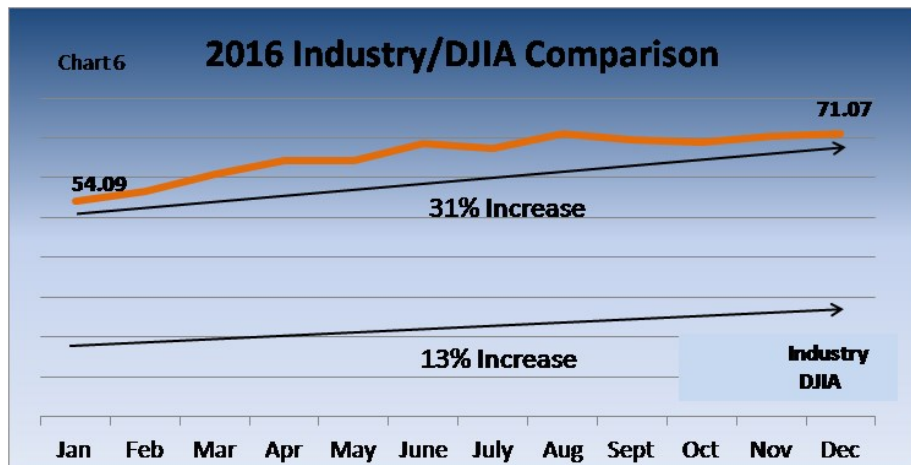
The year started with brave predictions that the price of oil would go up, and up, and up. Of course, that didn't happen until the last couple of weeks of the year, and that didn't last long.

For the automation-using industries, this was a disaster. The entire industry contracted, the automation vendors panicked and initiated major reorganizations, and CEOs used words like, "difficult" and "hard" and "challenging" to describe their companies' results at the User Group Meetings throughout 2016.

At the same time, though, the automation and controls industry didn't do badly. As you can see from the chart we produced for the Health Watch (page 11), the industry actually performed quite well against the Dow-Jones Indus-

Companies tried all sorts of measures, some more desperate than others.

Schneider Electric tried perhaps the most desperate reorganization of all. Having spent most of its available cash on the acquisition of Invensys' automation companies, the management of Schneider Electric faced the fact that they really didn't know how to run a large software company (the former Invensys Software Group—Wonderware, SimSci, Avantis, et al.) but they didn't want to sell it off for peanuts, either. They'd bought Invensys at the height of the oil boom, for the oil and gas customers of Foxboro, Triconex, and Eurotherm. Suddenly, those companies weren't doing well, because oil wasn't doing well. So, they reasoned, we should buy a software company that would understand how to use what we've purchased. Their eyes fell on Aveva. Schneider concocted a strange deal whereby they would buy just over half of



trial Average.

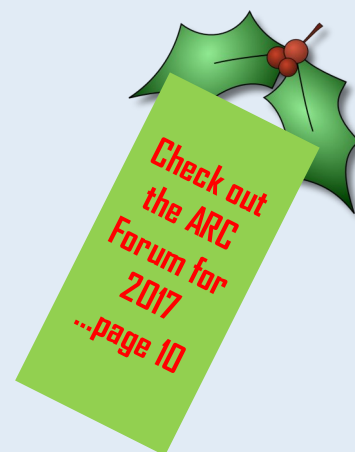
So what happened?

Aveva, merge Schneider software with the UK based engineering software company, and eventually, wind up owning the whole

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## 2016 in Review! The Insider Looks Back at an Interesting Year! (continued)

thing. They'd get a big software company, for a relatively small outlay. Only it didn't work that way.

After tying up Schneider's M&A department for eight months, Aveva finally left them standing at the altar. Richard Longdon, CEO of Aveva, was pushed out, or jumped, and Clemens Blum, the Schneider EVP who was selected to take the fall on the Schneider side, did so.



Clemens Blum

How people felt about this depended on which side you were on. The former Invensys people breathed a huge sigh of relief, since they had just completed a very bold integration with the existing Schneider software units, and just wanted to get on with things. The old guard in Paris was understandably annoyed, because they had hoped to get rid of the rival software company, and make a few francs on the deal.

ABB decided to become involved in the Industrial Internet of Things, after several years of paying virtually no attention to the company's automation portfolio. They brought on Guido Jouret from Cisco to be Chief Digital Officer, a supposedly c-level post reporting directly to Ulrich Spiesshoffer, ABB CEO. ABB appears to have finally noticed that more than half of their offerings are software, not hardware, and that there is more to life than utilities and shipbuilding.



Guido Jouret

One of the most interesting reorganizations came from Emerson Electric. For years, Emerson Process Management was the big kahuna within Emerson, accounting for between 25 and 30% of revenues and a similar profit margin. But Emerson Process Management had stolidly kept to the process industries, especially the oil and gas market, while a stepsister unit of Emerson Electric, Emerson Industrial Automation, tried with a set of mis-matched divisions, to be a presence in the factory automation space.

In March, the Emerson Electric management team decided that Steve Sonnenberg, who had been CEO of Emerson Process Management couldn't handle a reorg, so they handed the reins of both Emerson Process and Emerson Industrial Automation

to long-time Emerson executive Mike Train, with the job of consolidating the two groups into one, Emerson Automation Solutions, and finding a way forward.



New Emerson CEO Mike Train

For years, analysts and observers, including this writer, have been suggesting this kind of integration, followed it would be hoped, by the acquisition of a major factory automation player. Rumors have swirled for years about a potential takeover of Rockwell, for example. But there are dozens of European companies who might fit the bill. But Emerson will have to do something to diversify even further in the coming years.

Rockwell Automation changed CEOs for the first time this century, naming Blake Moret to replace Keith Nosbusch, who remains Chairman of the Board. In a rather dramatic first big move, Moret acquired Maverick Technologies, thereby putting the fear of the Almighty into Rockwell's justly famous system integrator core, and shaking up the distribution force at the same time. Moret, however, said that the reason for the acquisition was to get the talent that Maverick CEO Paul Galeski had put together. Galeski had craftily gone after retiring subject matter experts from Dow, DuPont, ExxonMobil and other first tier companies, amassing a couple of hundred very valuable grey heads. Clever of Rockwell to see that, and value it appropriately.



Rockwell's Blake Moret: new boss NOT same as the old boss

Honeywell Process Solutions also began a digital transformation, just like everybody else, but they have the advantage that they own UOP, and have access to more process data than anybody else, including some asset owners. Seeing a way to help their customers while helping themselves, Honeywell has set up a deep intertie between themselves and the control systems, and UOP and the process data. So far, no end users have suggested that UOP might be shopping their proprietary information, which would be the only negative.

Siemens continued to press forward with Industrie 4.0, even in the face of new nationalist divisiveness. It is not clear what the effects of Brexit in the UK, and the un-mandated election of Donald Trump in the United States will have on the Industrial Internet of Things, Industrie 4.0 and Smart Manufacturing. All of those initiatives require closecoupled collaboration across global lines. With LePen leading polls in France, and Germany's right wing party

## 2016 in Review! The Insider Looks Back at an Interesting Year! (continued)

gaining strength, the fate of the European Community, and the US

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**MADE IN CHINA 2025**  
The making of a high-tech superpower and  
consequences for industrial countries

were automated out of existence. This may, in the future, cause some negative publicity and pushback against the new manufacturing theories, such as Industrie 4.0, on the grounds that they are all heavily dependent on increased automation, especially in the middle management and professional ranks, where automation has not been a threat before.

That leaves China, which has not been standing still. With home-grown automation companies like Hollysys competing on the world stage, China has launched a new master plan called “Made in China 2025” which is intended to make the Chinese economy one of the leading industrial countries by 2049. The strategy, announced in 2015 by President Xi Jinping, is to hothouse Chinese suppliers of advanced manufacturing technologies, so that they reach a market share in the domestic Chinese market of 70% by 2025.

China aims to leap from the manufacturing technologies of the 1950s and 1960s directly into the age of smart manufacturing and connected supply chains. To do so, the Chinese government has established a “National Investment Fund for Advanced Manufacturing Industry” with an endowment of 20 billion yuan (about 2.6

billion Euros) and the “National Integrated Circuit Fund” received about 139 billion yuan (19 billion Euros). Chinese companies have also begun to make investments in European and American manufacturing technology companies like robotics manufacturer Kuka and lighting company Osram.

The MERICS study can be found at [www.merics.org/en/merics-analysis/papers-on-china/made-in-china-2025](http://www.merics.org/en/merics-analysis/papers-on-china/made-in-china-2025)

The MERICS study, “Made in China 2025” suggests that China will be successful in this endeavor, and suggests that European and American enterprises need “smart answers” to the Chinese initiative. With Europe and the USA failing to maintain their forward momentum in the face of nationalist political power, and with the rest of the BRIC countries derailed, Brazil by corruption scandals, bad tax and government policy and inflation, Russia seduced by the success of their intervention in American politics and the desire to regain their position as a world superpower, China and India may be left a clean playing field in which to become the real manufacturing superpowers of the 21st Century.

With all this as preamble, what are the future trends to be watching?

Obviously, the politics in the EU and the USA. This almost

Of course, [software and sensors] are two views of the same edifice, but it might be instructive for companies to decide which major view they wish to pursue. Depending on what the company wants to concentrate on, they can move down from the enterprise, manipulating data, or up from the edge providing that very same data.

goes without saying, but in view of the fact that Brexit and Trump have already substantially destabilized the political economy of half the world, it is worth reminding us to take notice.

The Internet of Things, and its manufacturing offspring, the INDUSTRIAL Internet of Things, may actually prove to have some there, there. After years of searching for the killer apps that made virtualization and advanced process control become widely used in a very short time, it may be that there is something. The IoT is bifurcating into two significantly different ways

of looking at interconnecting the enterprise. One is a view from the sensors looking up the chain, and the other is a data centric model, with cloud-based apps and data centers and Big Data and analytics as the core of the IoT.

Of course, they are two views of the same edifice, but it might be instructive for companies to decide which major view they wish to pursue. Depending on what the company

## 2016 in Review! The Insider Looks Back at an Interesting Year! (continued)

wants to concentrate on, they can move down from the enterprise, manipulating data, or up from the edge providing that very same data.

It is not an accident that nearly every one of the big automation vendors has de-emphasized the sensors play. Automation companies have been complaining, and criticized for, for years that they have a feast or famine business model, based on project business. When a company like Emerson or Honeywell is doing well in the projects won area, they are doing well in the profits area, and the analysts love them. But when projects are few, small, and far between, as they have been the last several years since the price of oil dived, their profits are lessened and the analysts don't like them quite so much.

Harry Forbes, of ARC Advisory Group, has coined one of the most important concepts in the last few years. He points out that the way to move from feast or famine is to provide ongoing services to the asset owners that they cannot provide themselves, or acquire from other vendors. He notes that automation companies will do nearly anything to protect their installed user base, because that's where they believe future revenues will come, and come more easily than winning projects. Harry calls this the "vendor annuity."

It is for this reason that most large automation vendors have been pushing their way into the Big Data, analytics and IoT plays. They have started to offer software as a service, yes, but also "service as a service" and "complete operations as a service." This is another reason Rockwell bought Maverick: Maverick had pioneered remote operations as a service over the past five years.

The vendors see that their future, and the big money, is to tie asset owners to their apron strings, and charge them for everything, a little bit at a time.

Of course, there is already push back to this notion of allowing the vendors to be in control of the end users' future.

ExxonMobil has been working for several years, both in Upstream and Midstream, to break the stranglehold the control and automation vendors have on the asset owners.

ExxonMobil has retained Lockheed-Martin and the Open Group to prototype a control system that is vendor agnostic. The lure of this concept is obvious for asset owners, just as the danger of this concept is obvious to the automation companies, all of whom are dragging their feet as invisibly as they can, not wanting to anger ExxonMobil.

The Smart Manufacturing Leadership Coalition (disclosure, the Insider's Walt Boyes sits on the board of SMLC) has been working on a similar set of concepts for seven or eight years,

culminating in the win late this year, of a National Center for Manufacturing Excellence around Smart Manufacturing.

Other initiatives abound.

So, here are some things to be looking for, in the coming years.

1. Destabilization of the USA and EU by their right wing political parties. This should aid China and India, and other, smaller companies.
2. Automation vendors who are capable of restructuring themselves as user performance enhancing companies will win; vendors who attempt to continue as usual, or just do lip service to the IoT and the new centers of manufacturing excellence in China and India, will lose.
3. The continuing push toward more fully realized automation will generate social and political pushback. Vendor companies and end user/asset owner companies need to be prepared for public stigma, as politicians blame them for unemployment and poor job situations.
4. The trend toward bifurcation of the industry into software companies and sensor companies will continue. Sensors will continue to face extreme downward pricing pressure. There will likely be destabilization from companies intruding into the sensor market from outside.
5. Remote operations management may become even more important if the political situation in some countries continues to degenerate.
6. Fracking may not save the oil and gas industries, or the automation vendors who are counting on revenue from fracking companies. The populace is getting very concerned about the problems with water pollution and earthquakes, and unless fracking technologies can be developed to avoid those things, fracking may not be a long-term proposition.
7. The dismantling of the social safety net in the US and Britain may require companies to pick up the difference, and set up training schools and funding for health, safety, and retirement for their workers, or they might have trouble getting quality workers.
8. Vendor companies need to create ecosystems, not customers.
9. Younger workers will demand to be treated differently than Baby Boomers. This is obvious, but needs restating often.
10. Automation technologies are blurring the lines between industry, buildings, data centers, and the like. This will continue.



## The INSIDER's December 2016 Roundup

### A year of disruption and the Internet of Things came to Africa

By Steven Meyer

Economically, 2016 got off to a rocky start for most South Africans with many, myself included, believing that things would deteriorate even further. At the beginning of January, global stock markets plummeted in a paranoid reaction to the slowdown in the Chinese economy. As a result, commodity prices collapsed with the price of crude oil dropping below \$30 per barrel; while copper and iron ore prices plummeted new lows in sympathy. This had a profound effect on some of the continent's most established mining houses, which resulted in many new projects being scrapped as CEO's scrambled to reorganise operations in a bid to salvage shareholder value (and in certain cases their own credibility) – some just never recovered.

Politically, the 'Three Finance Ministers in Four Days'<sup>1</sup> affair and the #FeesMustFall<sup>2</sup> campaign sent the Rand into free-fall, with the currency reaching R16.84 to the dollar in late January – and then there was Brexit.

However, despite all of the negativity around during the first quarter, things did not in fact get worse; they got better. There are still problems, but it seems as if the people finally rallied together and said enough is enough, and mostly, we are better off because of it.

From a technology perspective, 2016 was the year the Industrial Internet of Things (IIoT) staked its claim in Africa's manufacturing fraternity. It is not [yet] deserving of the status of an 'Industrial Revolution', as it has not [yet] fundamentally changed the way African producers operate, but rather, the ideas gained traction in areas like Reliability Centred Maintenance.

### Wonderware opens proceedings

The first inkling came at Wonderware Southern Africa's annual X-Change User Conference



Ravi Gopinath

where keynote speaker Ravi Gopinath, VP Software Business at Schneider Electric, identified Cloud-based platforms and the Industrial Internet of Things (IIoT) as key inflection points in the future of industrial software. "The IIoT," he ex-

plained to delegates, "has the potential to make a meaningful difference in areas like predictive maintenance."

PRiSM, the company's latest predictive analytics software solution, provided evidence of this. Designed to provide early warning notification and diagnosis of equipment related issues, PRiSM can identify problems well before they turn into failures. A further benefit is the capability for knowledge cap-



Rockwell's Barry Elliot

– Rockwell Automation

ture and transfer, which ensures that maintenance decisions and processes are repeatable over time, and across the geographic breadth of an organisation. These are big plusses for many an African utility faced with the twin problems of diversely located facilities and a critical shortage of skilled personnel – hopefully they were taking notes.

### Rockwell Automation introduces the connected mine

At this year's Electra Mining Show – Africa's largest exhibition of mining and electrical engineering technology introduced the industry to its Con-



MESA heavyweights (from left): Duane Gauche (1 Worx), Daniel Spies (CDS Consulting and chairman MESA Africa), Gerhard Botha (Sasol), Yashin Parsad (Omnia), Thomas Copley (SRI), Gawie Reyneke (Lonmin), Halilou Mohaman (Boxmore), Gerhard Greeff (Bytes Technology and vice chairman MESA Africa), Varshan Mahabel (Wilec), Gert Coetzee (Dynamic Build Systems) and Andre Brits (CSI).

connected Enterprise technology, and specifically how the concepts can be applied in mining.

Managing director Barry Elliot was on hand to explain how

## The INSIDER's December 2016 Roundup (continued)

industrial operators should not think of the IIoT as a large scale overhaul of the organisations control and automation infrastructure. “In most cases the data already exists,” he said. “Our challenge is to implement systems that enable us to turn this into actionable information to streamline productivity and efficiency.”

In the scramble of a global commodity market crunch, the potential ‘to do more with assets the organisation already owns’ was timed perfectly in the market’s sweet spot.

What resonated particularly well, I thought, was the acknowledgement that the majority of data generated within devices is not actually being used. Aggregating this into an analytics layer that highlights where costs can be reduced while limiting any downside on productivity is undeniably an advantage, particularly when recovery margins are cut to the bone; now if only we could get our hands on a case study to publish.

### MESA Africa joins the party

I cannot think of a single manufacturing related conference that I attended this year where the Industrial Internet of Things was not a central feature. The African branch of the Manufacturing Enterprise Solutions Association (MESA) joined the party in November at its 8<sup>th</sup> annual conference under the theme ‘Mastering The Fourth Industrial Revolution: Smart MOM 4 Industrie’.

While much of what one reads about the IIoT is pure marketing hyperbole, underneath that there are some real benefits on offer. The findings of a recent survey by PricewaterhouseCoopers (<http://tinyurl.com/jqdofcg>) revealed that South African companies plan to spend around R6 billion per year, until 2020, to implement the ideas of the fourth industrial revolution. According to PwC they will do this because they are aware of the impact of technology on their businesses, and that there is very little chance of survival without it.

Local PwC director, Pieter Theron, discussed the findings during the opening keynote, where he postulated how technology will disrupt business in the age of the digital enterprise. An interesting observation highlighted by Theron is that companies will need to find the right collaboration partners in order to improve their business efficiency through the technologies of the fourth industrial era – very few have the capability to go it alone.

Head of Sasol Group MES Architecture, Gerhard Botha, continued this theme with his thought-provoking account of technology trends in the disruptive age that will change manufacturing over the next thirty years: anything from self-healing materials to human-computer integration to the disappearance of physical money to designer babies to the first human colony on Mars. On a more down to earth note, GE Mining’s Francis Rousseau highlighted how the industrial Internet is transforming the realities of the new production plant. She showed delegates how General Electric has created a completely new software business for the IIoT, GE Digital, based on the open source platform Predix.

As the conference progressed, it became obvious that while more and more success stories are emerging, these tend to be application specific rather than an integrated shop floor to top floor solution across all the organisations processes. Of course, the latter is somewhat idealistic and it may turn out that the IIoT never delivers against this vision. But then again, all good revolutions are built on ideals.

### Siemens puts it into perspective

Siemens tied it all together at a yearend breakfast function to announce the findings of its African Digitalization Maturity Report, designed to determine a digitalization benchmark across four countries namely South Africa, Nigeria, Kenya and Ethiopia, as well as key vertical industries – transport, manufacturing and energy.



Siemens' Sabine Dall'Omo

Siemens Southern Africa CEO Sabine Dall'Omo said the four countries were selected as some of the fastest growing economies in Africa, as well as having made great strides in ICT (Information and Communications Technology) adoption.

Manufacturing showed the most maturity, but the adoption level of the smart technologies that will accelerate Industry 4.0 remains at a foundation stage. However awareness of the significance and potential of this technology is high. In the energy sector, the report noted that without stable electricity it is challenging to do anything digitally. In fact, as we Africans have learnt firsthand, it is challenging to do anything at all.

The test confronting the continent’s power industry then is how to overcome the multiple problems of ageing infrastructure, high transmission costs, limited workforce skills and underdeveloped customer and billing management systems. The good news is that utilities can find more efficient ways to maintain and monitor their critical assets through the introduction of networked smart grids made up of intelligent devices. Utilities please take note – load-shedding is bad for the economy.

The same messages are broadcast over and over again, but of course the solutions are not as simple as they seem. Overcom-



## The INSIDER's December 2016 Roundup (continued)

ing the harsh political and demographic realities in Africa is something altogether different from discussing the benefits of digitalization in the comfortable surrounds of a first world conference facility. What gelled for me about the Siemens report though is one of its key recommendations:

In an African context, disruptive technology drives development rather than disruption. Developed economy solutions are not necessarily going to work in under-developed economies. In Africa, especially, true innovation comes from necessity.

2016 has been a tough year for us both politically and economically, and who knows what 2017 has in store. Might it just be the year in which the Internet of Things makes a meaningful difference in Africa?

1. On the night of Wednesday 9 December 2015, South Africa's well respected minister of finance, Nhlanhla Nene, was removed from office and replaced with little known Des van Rooyen. The move had a disastrous affect on financial markets and on Monday 14 December van Rooyen was replaced by the eminently credible Pravin Gordhan.

2. The #FeesMustFall protests began as a student uprising in response to an announcement that the fees for academic tuition were to be increased forthwith. The situation soon turned violent with the confrontations between students and riot police somewhat reminiscent of the conflict on American campuses during the 1960's.

### Brazil Update

By David W. Spitzer



Former President Dilma Rousseff

ment was finalized. A number of his cabinet ministers resigned due to ongoing corruption investigations.

The Brazilian Congress passed anti-corruption legislation that will make filling open cabinet positions more difficult for President Temer and future presidents. A law limiting governmental spending (indexed to inflation) over the next 20 years also passed. There is some speculation that this is a bad idea. In addition, a proposal to reform Brasil's generous (expensive) retirement pension system is being considered. The INSIDER opines that these acts will be positive for Brasil.

On a side note, the anti-corruption legislation details conditions under which judges and police can be prosecuted for abuse of power. This is interesting because shortly before this legislation

The president of the lower house of the legislature was removed from office and jailed while being investigated for corruption. In addition, the president of the upper house of the legislature is under investigation. President Temer at the helm after Dilma's impeachment.



New President Temer

was passed, ex-president Lula used existing statutes to initiate legal proceedings to jail the judge investigating him --- alleging abuse of power by the judge. Lula similarly filed a complaint with the United Nations Commission on Human Rights alleging abuse of his rights. The INSIDER questions, "Is investigating an alleged crime just that --- or an abuse of power against an alleged perpetrator?"

Nonetheless Lula's activities (and those of his son) are being investigated. Lula was subsequently accused of:

- alleged ownership of an apartment remodeled under Lula family direction (with questionable funds) that was divested after authorities discovered its existence
- alleged ownership of a country home extensively occupied by Lula but officially owned by friends of Lula and remodeled at Lula's direction with funds (cash) from an engineering company
- alleged ownership of an apartment that was allegedly indirectly paid for by an engineering company
- alleged improprieties involving a foreign fighter airplane contract with the Brazilian government

There is also the issue of Lula's son accepting large contracts to allegedly aggregate publically available information from the internet.

Protests were held across Brasil in early December in support of the (multiple) ongoing corruption investigations involving ex-president Lula and many other high-ranking politicians.



Former President Lula da Silva



Marcelo Odebrecht

Odebrecht is one of the largest engineering firms in Brasil. Its history spans over 70 years and its family DNA in engineering extends back over 150 years. The ex-president of Odebrecht (who has already been in jail for well over a year) agreed to Odebrecht turning State's Evidence in exchange for some form of immunity for

## The INSIDER's November 2016 Roundup (continued)

himself and over 70 Odebrecht executives plus pay a fine of approximately USD 2 billion over a number of years. On December 19, Odebrecht and its partner Braskem agreed to pay \$4.9 Billion to settle a US Corrupt Practices Act investigation—the largest such fine in history.

The Odebrecht testimony garnered grave concern at the highest levels of the Brazilian government and political structure. The INSIDER opines that this concern is well founded because Odebrecht is at the center of many large projects --- maintaining an entire department to administrate the logistics of making payments to various people and political parties. It is estimated that over 130 senators, representatives and ministers, over 20 governors and ex-governors plus other influential politicians might be implicated as this process goes forward. President Temer has called for this to proceed quickly --- letting the chips fall where they may. The investigators performed the depositions quickly and are expected to complete analyzing them in early 2017.



Jailed Finance Minister  
Guido Mantega

On a local level, the ex-governor of the State of Rio de Janeiro and the ex-mayor of the City of Rio de Janeiro have been jailed in conjunction with unrelated kickbacks received from various state and city construction projects over the last decade or so. The ex-mayor's wife has been jailed for money-laundering and barred from practicing law (albeit temporarily).

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The Brazilian economy is projected to contract by approximately four percent in 2016 and grow by approximately one percent in 2017. Both numbers were recently revised downward from previous estimates. Additional layoffs have reportedly occurred among instrumentation suppliers. Economic activity and capital expenditures are still slow and (anecdotally) show few signs of revival. Oh... and did I mention that most state and local governments are in a heap of debt and not paying their obligations (such as salaries) on time? The INSIDER opines that the Brazilian economy could contract again in 2017.

The good news is that the Brazilian democracy is strong and the political processes are working as prescribed by the constitution. The current state of Brazilian politics and the economy do not bode well for instrumentation sales in the short to medium term. Corruption has been ingrained in the culture for decades (if not centuries) so current anti-corruption efforts (if ultimately successful) should put the country in a better position to grow in the future. The INSIDER continues to opine that it will take a while for Brasil to work through its problems --- especially with a sluggish global economy.

### Yokogawa Changes Course and Makes Significant IIoT Investments

By Nick Denbow  
(portions of this report previously appeared on Processing-Talk.info)

Yokogawa has made some significant investments in the resources needed to develop future techniques for IIOT cybersecurity, first with a new engineering centre to be established in California, and second, by investing US\$900,000 into Bayshore Networks, as a partner in a current round of venture capital funding.

#### New IIOT Division

The new Yokogawa Architecture Development Division in California will pursue



VP Marketing Ted Abe, new head of Marketing HQ Business Development Center

the development of the core technologies needed to establish the robust and flexible architecture required to improve operational efficiency and productivity when using the IIoT. The new division will function as a unit of the Yokogawa Marketing Headquarters Business Development Centre, and will keep up with the new technologies being developed every day in the IIoT sector – as well as facilitate close co-ordination with



## The *INSIDER*'s November 2016 Roundup (continued)

partner companies. The West Coast of the USA is therefore the correct location for this work. The division will be staffed by engineers from Yokogawa who have an extensive knowledge of Yokogawa systems and services, and locally recruited engineers who are conversant in a range of IT fields. The first employees of the division have been located at the local engineering office of a partner company since November 2016, but their own offices are scheduled to open in April 2017. Subsequently, the division will add functions for planning services that use the IIoT and cloud computing, and it is expected that the number of staff will be increased to around 50 over the next five years.

### Investment in Bayshore



Bayshore CEO Mike Dager

A parallel press release from Yokogawa explains that there has also been a \$900k strategic equity investment into Bayshore Networks, a company established in 2012 that has gained rapid recognition for its expertise in cybersecurity.

Mike Dager, CEO of Bayshore, commented "Yokogawa shares our vision for a secure industrial internet of things enabling new applications that will increase safety, optimize processes, and drive efficiencies. We are proud

and excited to partner with such a renowned global leader in industrial controls."

This Yokogawa investment is part of the recent US\$6.6M Series A funding for Bayshore, arranged by Trident Capital Cybersecurity, and its existing angel investors.

### Trident Capital

Trident Capital Cybersecurity is a venture capital firm that invests in early-stage companies leveraging emerging technologies in cybersecurity. The firm is a spinout of (or maybe the successor to) Trident Capital, which in 1998 became one of the pioneers of cybersecurity venture capital investing. Renowned as the venture capital firm with the most valuable network of cybersecurity relationships, Trident Capital Cybersecurity also relies on input from a 40-person Cybersecurity Advisory Council, consisting of industry CEOs, customers and former top-level government leaders. "We led the Series A Investment because Bayshore has been recognized as an innovator and early leader in an emerging cybersecurity segment that is largely untapped to date," said J. Alberto Yépez, managing director of Trident Capital Cybersecurity. "We are honoured to have Yokogawa join us in supporting the development of the cutting-edge Bayshore technology and business."



Alberto Yépez

The Trident Capital Cybersecurity website claims 28 cybersecurity investments and 16 successful exits. These have included the Solera acquisition by BlueCoat in 2013, the Qualys IPO in 2012, the acquisition of Accertify by American Express in 2010, the Sygate acquisition by Symantec in 2006 and the Signio acquisition by VeriSign in 2000.

### The Bayshore technology

The Bayshore cloud-based software, called the Bayshore IT/OT Gateway, provides IT departments with visibility into OT (Operational Technology) infrastructure, networks, applications, machines and workers. These OT networks are undergoing transformation and require services traditionally available for IT networks, such as secure remote access and analytics. Bayshore provides immediate value by preventing OT process disruptions and enhancing operational efficiency and business continuity. The software is distinguished by extremely granular inspection and filtering of network flows – all the way down to machine sensor values – and the ability to provide security enforcement and application segmentation and isolation via flexible, rapidly deployed policies. The Bayshore policy engine is capable of supporting common industrial protocols and quickly adapting to new and proprietary protocols.

These capabilities are built from the ground up for Industrial Internet and provide Bayshore customers with future-proof, cloud-based solutions that are complementary to legacy hardware-based industrial firewalls. Designed for IT perimeter security, firewalls look for IP addresses and ports, which means they block attacks according to standard Internet parameters. Because industrial cyber-attacks are typically based on granular machine instructions that alter sensor values, the unique Bayshore technology is well positioned to detect industrial attacks that are often overlooked by other security technologies.

Bayshore has strategic alliances with leading technology companies including AT&T, BAE Systems, Cisco Systems, and VMware. It is currently based in New York, but intends to relocate the HQ to Bethesda, Maryland. No engineering base is quoted as existing in California.

### 2017 Business plan comes together

Earlier, Yokogawa had announced the completion of the acquisition of Soteica Visual Mesa (SVM), the leading energy management technology provider, which will be integrated into KBC Advanced Technologies (acquired in April 2016) alongside "Data as a Service" (DaaS) provider Industrial Knowledge (acquired December 2015). Satoru Kurosu, executive vice president and head of Yokogawa's Solutions Service Business Headquarters, commented that these moves delivered on a number of the key objectives of the Yokogawa Transformation 2017 mid-term business plan: "Key strategic objectives of Yokogawa's Transformation 2017 plan are to expand the solution service business, focus on customers, and co-create new value with customers through innovative technologies and services."



Sato Kurosu

Presenting the 21st Annual ARC Industry Forum  
Industry in Transition: Realizing the Digital Enterprise

February 6-9, 2017 - Orlando, Florida

Industrial companies are starting to employ 'digitalized' business processes and exploit the increasing convergence between operational technology (OT), information technology (IT), and engineering technology (ET) on the plant floor. How will disruptive technologies change existing products and plants? How will open source solutions impact traditional software and automation domains? Is cybersecurity a threat to digitalization? How 'smart' are smart machines? How do Big Data and predictive and prescriptive analytics enable operational change? Join us to learn how the digital enterprise benefits from smarter products, new service and operating models, new production techniques, and new approaches to design and sourcing.

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**Keynote Speakers:**

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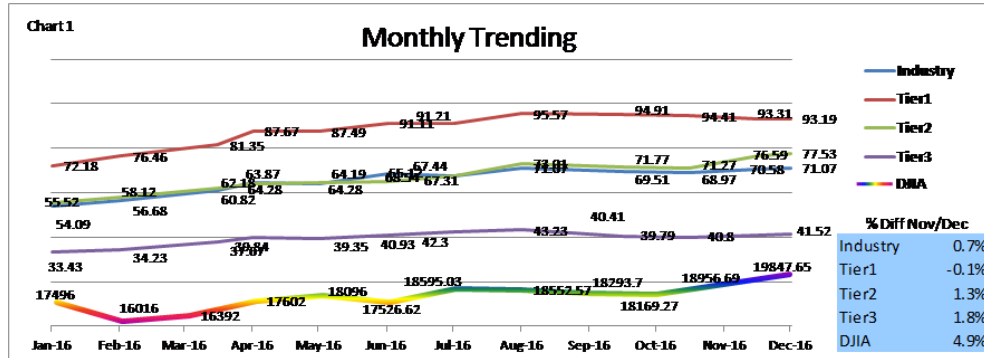
- CEOs, COOs, and Presidents
- CFOs, VPs, and Directors of Finance
  - CIOs and CTOs
  - VPs and Directors of IT
- VPs, Directors, and Managers of Operations
- VPs, Directors, and Managers of Engineering
- VPs, Directors, and Managers of New Projects
- VPs, Directors, and Managers of Procurement
- VPs, Directors, and Managers of Supply Chain and Logistics
- Directors, Managers and Architects of Automation and Enterprise Integration
  - Plant Managers and Supervisors
  - Production Managers and Supervisors

In past Forums, over 50% of the attendees have titles like Chairman, CXO, President, Vice President, Director, or Partner.

# The Health Watch Index in Review

**INSIDER**  
INDUSTRIAL AUTOMATION & PROCESS CONTROL

## Health Watch



promises turn out to be empty, which due to unforeseen and or uncontrollable circumstances is often the case with political hyperbole, the market can correct with the same speed it skyrocketed. If our industry is less susceptible to the campaign promises that drove the market up, it will hopefully be less susceptible to the potential of broken promises that will take it down.

Before we jump into discussion of the year as a whole, the latest reporting period, spanning Mid-November till Mid-December, deserves a quick review, not because of any spectacular industry related changes, but because there were none. While the Dow rose almost 5%, our industry showed a modest increase of less than 1%. The discrepancy in performance is not necessarily however, a negative, and could be construed as a sign of control automation industry stability.

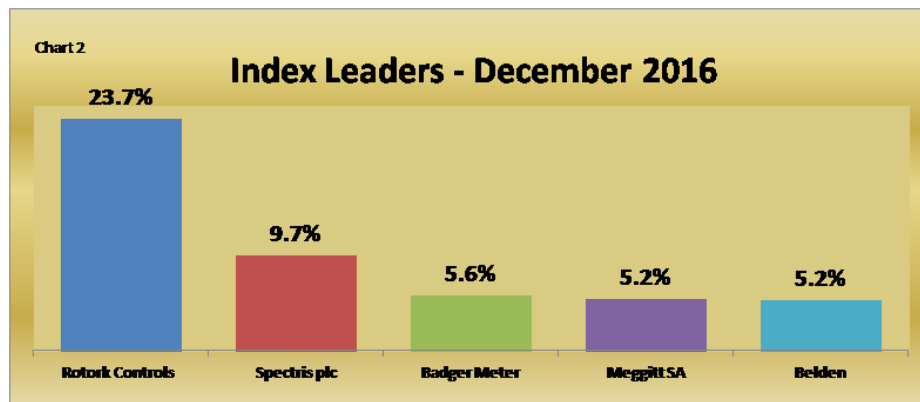
It is an accepted fact that the stock market as a whole is extremely sensitive to current events, and there have certainly been some rather significant ones in the past month. The U.S. elected a leader with no previous political experience, OPEC and non-

OPEC oil producers agreed to curtail oil production helping to ensure that oil prices will stay above \$50 per barrel in 2017, and the new Republican government promises new jobs, a strong economy, and programs to help businesses thrive, causing high optimism. As CNN warns however, even though "the Trump rally on Wall Street has sent the Dow skyrocketing 1,600 points and within spitting distance from the 20,000 milestone...the

### Rotork Is This Month's Index Leader

Looking at individual performance for this period, only a few companies stood out. The most prominent is Rotork, with an increase of 24% since last reporting. What drove Rotork's phenomenal increase is unclear, but could be due to several factors. First, the company has spent the last couple of years acquiring companies that increase its offering and footprint, while also increasing its revenue and profit margin. For example, in April of 2016, Rotork acquired Mastergear,

which according to Peter France, Rotork Chief Executive, "...has a well-regarded product portfolio that will enable Rotork to offer its customers a more comprehensive range of products and services. The acquisition is in line with our strategy and strengthens our presence in the flow control sector, including the water distribution and treatment market." Mastergear's adjusted



stock market can't go up in a straight line forever." If the new regime's campaign

EBITDA for 2015 was \$3.7m based on revenue of \$22m.



# The Health Watch Index in Review

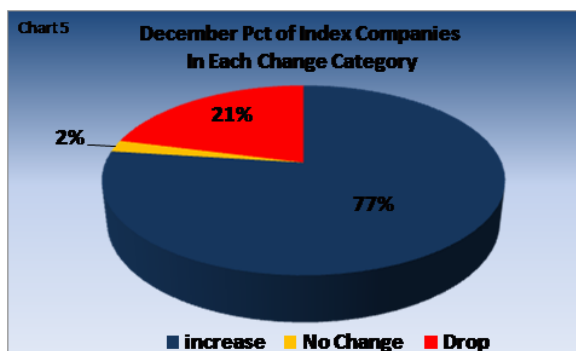
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## Health Watch

It can be speculated that Rotork's recent quarterly reporting results might also be driving the increase. In a trading update released November 22<sup>nd</sup>, Rotork reported revenue up 28.9% and order intake up 22.2% compared to same point last year. It also noted that currency movements and a contribution from acquisitions also played a positive role.

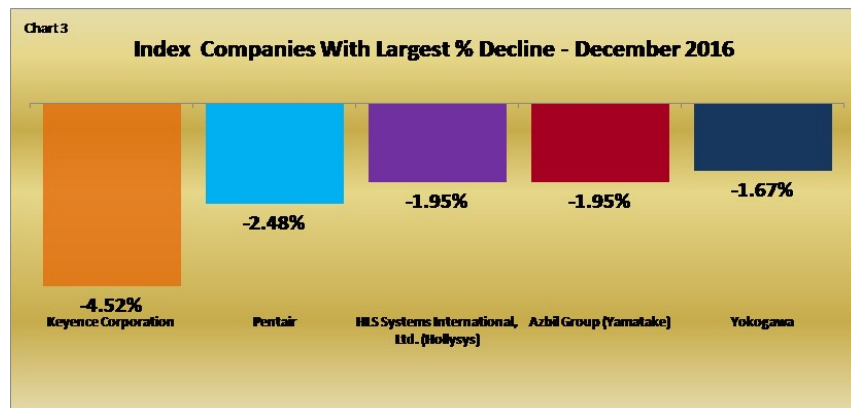
### No Real Losers

Keyence Corp posted largest decrease seen for this period, with a drop of 4.5%. Every other company in the Index showed a modest gain, remained stable,



Change', and 'Loss' categories. While gains, like losses were modest, roughly 3 out of 4 com-

The mid-range, Tier 2 companies in the Index, which include players such as FLIR, MKS, Mettler Toledo, and Parker Hannifin, won the race by a good margin, with scores that increased 40% since January. Following the winner in a not so close second place position are the industry giants of Tier 1, which includes ABB, Siemens, Rockwell and Yokogawa, to name a few. The Tier 1 group finished the year 9% behind Tier 2, with an increase of 29%. Tier 3 also had a more than respectable showing with a score increase of 24%. Chart 4 plots the January and December 2016 scores for the industry as a whole, and for the individual Tiers.



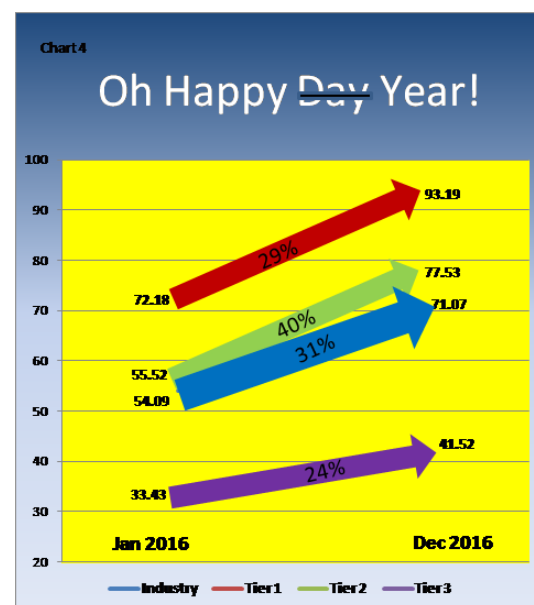
or showed a loss of less than 2.5%.

The modest losses shown in Chart 3 are yet another indication of the hard earned but unfortunately unguaranteed current stability of the industry. To provide a more in-depth and detailed picture of the past period performance, Chart 5 shows the actual percentage of companies in the Index who fall into the 'Gain', 'No

panies' stock price increased since Mid-November, while only one in five experienced a modest drop.

### On To Yearly Performance

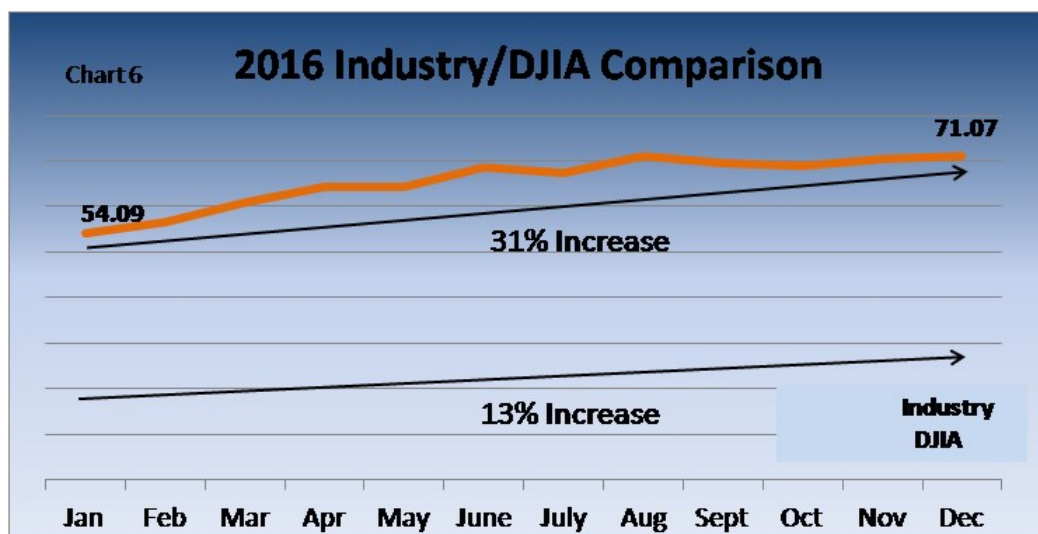
Overall, 2016 numbers draw a very happy picture for industry performance. The industry as a whole increased 31% over the past year, with individual Tiers' increases ranging from 24% to 40%.



# The Health Watch Index in Review

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## Health Watch



As we've already discussed, industry performance for 2016 is positive, with a slow and steady increase that netted the industry a 31% increase since January. Additional reason for celebration comes to light when 2016 industry performance is compared to that of the DJIA.

Even with the current "Trump Rally" that artificially inflated the market over the past month and is currently driving the Dow to try to hit an all time high of 20,000, our industry outperformed the DJIA by a healthy percentage for the year. Chart 6 plots the monthly performance for the year, of both the Dow and the Industry. The Industry Index performed more than twice as well as the Dow for 2016, bringing to mind the story of *The Tortoise And The Hare*. This is a perfect example of "slow and steady wins the race."

### And the 2016 Winners Are...

The industry performed extremely well overall, but we would be remiss if we failed to recognize specific companies who contributed greatly to that overall performance. The final chart provides a list of the companies in our Index whose stock increased at least 40%. Belden is the clear winner with an increase of 93% since January, but as is evident, several other companies also performed extremely well. As we finish out 2016, it is wonderful to do so

on such a positive note. Congratulations to the people in our industry who have worked so hard through the past several years as our industry battled falling oil prices, several economic crises that decimated some of our smaller industry members, and the added issue of fluctuating currency that made projection and the overall task of running a successful business extremely difficult. As we move forward, we send out a wish to each of you that the hard won stability that we are currently experiencing will hold steady in the year to come. We hope that your holiday is

happy, and that 2017 continues to bring prosperity to the Control Automation Industry.  
Regards,  
The Staff of The Insider

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# THE WAY I SEE IT

## Editorial

### The US Election: What it Means for Manufacturing and Globalism

We in the United States have had a shocking election turn of events. By less than 60,000 total votes, Donald Trump won the electoral college, and at the same time lost the popular vote by 2.9 million votes. This is hardly a mandate for anybody, but Mr. Trump has loudly proclaimed that he has one. In part, he can get away with this falsehood, like all the others he is on record as telling, because the Republican party holds a majority in both Houses of Congress, and they believe they can do whatever they want.

This, coupled with some basically terrible appointments to Mr. Trump's cabinet, is expected to provide a bumpy ride for the workers' social safety net, as well as giving cover to manufacturing companies to do whatever they want. Which, clearly, based on results after the election, is move offshore. As I said last month, Mr. Trump simply cannot keep the promises he made to bring back companies to the United States, and bring back jobs. The jobs simply do not exist. If you look at a modern steel mini-mill and compare it to the productivity of US Steel's Aliquippa Works in its heyday, the mini-mill is more productive with fewer workers, thanks to a high degree of

automation. This level of automation is pervasive, and will inject itself into every industry, manufacturing or service in the next decade.

And the United States is not alone. Nationalist and obstructionist parties are growing in Germany, France, Italy, and other European Union coun-

Mr. Trump, too, is presenting himself as an "America First" nationalist. He has, in fact, nearly caused a shooting war with the US' largest trading partner, and he isn't even President yet.

tries, and of course, there's Brexit. Ireland has never recovered from the 2008 crash. Neither has Spain, Greece, and other EC countries. Yet these parties want to pull inward, rather than continue to increase the interties with the rest of the globe.

Mr. Trump, too, is presenting himself as an "America First" nationalist. He has, in fact, nearly caused a shooting war with the US' largest trading partner, and he isn't even President yet.

Couple this with the Republican notion that government should not help private companies (except really big ones) and you've got a recipe

for global disaster.

The Obama Administration put a great deal of effort into supporting a 21st century manufacturing strategy. They created a series of National Manufacturing Centers of Excellence to produce Smart Manufacturing and Industrial Internet of Things prototypes so that companies large and small could have templates and philosophies to follow. Based on Trump's cabinet appointees, it is doubtful that these will continue to be funded.

So, we have a government that doesn't believe in supporting manufacturing, a government that doesn't believe in supporting workers, and a government that is determined to destroy the social safety net that has been carefully put in place since the 1930s, at just the time we will see about 40% of the working population no longer employable. While other countries are exploring the possibilities of minimum income payments, the United States is exploring the possibility of ending social security, medicare and the Affordable Care Act. As a practicing Futurist, I foresee serious problems ahead for the American economy, and for manufacturing in general. I also believe that the end of year run up of the Dow is the financial equivalent of whistling past the graveyard.

We had made a good start at Smart Manufacturing. But, paraphrasing Benjamin Franklin, we've been given a new chance, but only "if you can keep it"

*Walt Boyes*

Comments? Talk to me!  
waltboyes@spitzerandboyes.com

Read my Original Soundoff!! Blog:  
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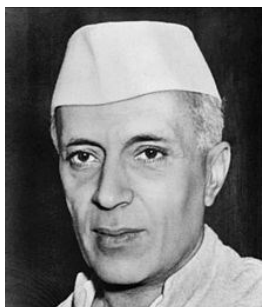
## Rajabahadur V. Arcot: India's development report in 2016, the seventieth year of its independence

This year, India, which gained its independence from the British rule on the midnight of August

15, 1947, celebrates its seventieth year of freedom.

In the words of Jawaharlal Nehru, India's first Prime Minister, the country's independence marks the coming of a moment "which comes but rarely in history, when we step out from the old to the new;

when an age ends and when the soul of a nation, long suppressed, finds utterance."



Jawaharlal Nehru

**"Are we brave enough and wise enough to grasp this opportunity and accept the challenge of the future?"**

**— Jawaharlal Nehru**

He reminded the people of the country that the solemn occasion signifies "...a step, an opening of opportunity, to the greater triumphs and achievements that await us" and went on to ask

"Are we brave enough and wise enough to grasp this opportunity

and accept the challenge of the future?"

In Jawaharlal Nehru's words "future is not one of ease or resting but of incessant striving ... we have to labor and to work, and work hard, to give reality to our dreams. Those dreams are for India, but they are also for the world, for all the nations and people are too closely knit together today for anyone of them to imagine that it can live apart."

India's first Prime Minister thus set the vision for India and laid out a roadmap for the country's economic development. After achieving political freedom, India has been striving to live up to the vision of emerging strong both

economically and politically. It hardly had the necessary industrial base and infrastructure to support the newfound economic and political ambitions.

### The journey so far

The country sought to overcome these challenges by adopting a centrally planned command and control approach; the adoption of planning in 1951 called the *five-year plans* paved the way for the development of industries.

While some headway was made in establishing basic industrial base, such as steel plants, power plants, refineries, and others, the true impetus for the economic expansion had to wait for the economic policy reversal that happened in early nineties.

The then government of the day, facing a severe balance of payment crisis, ushered in several industrial and economic policy reforms that are often termed as *economic reforms*.

These involved opening the door for large scale private and foreign investments and liberalized procedures for setting up firms in industrial, trade, financial, and other sectors.

The reforms signaled a systemic shift to a more open economy with greater reliance upon market forces, a larger role for the private sector including foreign investment, and a restructuring of the role of government.

The effect was dramatic; India's economy began to get integrated with the global economy and growth picked up. India's economy grew at an impressive 6.7 percent in the first five years after the reforms; it slowed down to 5.4 percent in the next five years.

Even though India remained one among the

## Rajabhadur V. Arcot: India's development report in 2016, the seventieth year of its independence

(continued...)

fast growing economies, the slowdown made economic planners to develop alternate strategies to achieve higher rates of growth.

Changes had to wait for the new government headed by the present Prime Minister Narendra Modi to come to power in mid-2014. The new government realized that meaningful poverty alleviation has to go beyond providing subsidies on food, fertilizers, diesel, electricity and such others to the needy and

### Seventy years after gaining independence from the British rule, India's GDP overtook its former ruler's GDP!

It is not just symbolism but an economic reality! The year 2016 may well turn out to be an inflection point for the India's economy.

India, emerging as the world's growing fastest large-sized economy in 2015 with a 7.3 percent GDP growth rate, continuous to retain that ranking.

Since then the writing has been there on the wall; many developments in 2016 such as the following support the view that the country is on the move.



India's PM Narendra Modi

launched new initiatives. Building 100 smart cities, generating 100 GW of solar power, rejuvenation and transformation of around 500 existing mid-sized cities that have a population of around 100,000, digitizing India, and making India a global manufacturing hub are some of the pillars on which the new growth model is built. Improving the quality of life through better sanitation and health facilities, making electricity available

to all, and more equitable growth are some of the other essential components of these new initiatives. Alongside these initiatives, the country also launched a massive program that focuses on workforce skill development. It also launched the ambitious Start-up India Initiative that aims to fill gaps in the economy for the growth and development of start-ups and boost digital entrepreneurship at the grassroots. Implementing these initiatives requires stupendous efforts and we are witnessing positive changes on the ground.

### Developments in 2016

Seventy years after gaining independence from the British rule, India's GDP overtook its former ruler's GDP!

An article in Forbes points out "India's economy will be larger than the UK's for the first time in more than 100 years. This dramatic shift has been driven by India's rapid economic growth over the past 25 years."

The report, highlights that the gap will widen further as India's

GDP is expected to grow, for at least the next decade, at 6 to 8 percent annually compared to Great Britain's expected 1-2 percent.

The capital goods industry is important to spur the overall growth of manufacturing since it is this sector that produces and supplies machinery and equipment to other industries.

In order to boost the performance of the capital goods industry, the government has initiated measures and released its report "National Capital Goods Policy 2016 – Building India of Tomorrow."

The policy initiative aims at increasing the share of domestic production in the country's demand for capital goods from 60 percent to 80 percent; on the export front it expects to increase exports from the current 27 percent to 40 percent of the total capital goods' production in the country.



August 15, 1947

The objective is to make India a net exporter of capital goods and a partner in the global value chain.

### Space is the Place

In terms of achievements on the technology front, the Indian Space Research Organization (ISRO) has done the country proud.

It successfully propelled its Polar Satellite Launch Vehicle (PSLV) to join the other six satellites to form the Indian Regional Navigation Satellite System (IRNSS).

India has thus acquired independent regional navigation capability that covers the entire country and adjacent area of about 1500 sq.km. It has joined the ranks of the U.S., Russia, China, and Europe that all have their own satellite navigation systems. Yet an-

## Rajabhadur V. Arcot: India's development report in 2016, the seventieth year of its independence

(continued...)

other success story relates to the recent induction of the fourth generation Light Combat Aircraft 'Tejas,' designed and built in India, into the Indian Air Force's squadron.

It marked the realization of a 33-year national dream - to have an in-house made fighter in the country's air defense fleet.

The year 2016 also witnessed the Indian parliament passing the Goods and Services Tax (GST) act. GST replaces the present inefficient and cumbersome indirect tax system that involves, on one hand, multiple agencies collecting taxes and, on the other, levying taxes on taxes.

This tax reform is expected to give boost to the growth of the manufacturing industry & GDP growth rate and provide impetus for the growth of the export of merchandise goods. Many, dubbing GST as India's greatest tax reform, view it as a game changer for the country's economy.

In October 2016, India, by ratifying the Paris Climate Change Agreement, formally committed to stand by its earlier pledge made by it at the United Nations Climate Change Conference, known as the 21<sup>st</sup> Conference of the Parties (COP21), of bringing 40 percent of the country's installed power generating capacity under renewable in the next 15 years.

The commitment also includes creation of additional carbon sink of 2.5-3 billion tons of carbon dioxide equivalent through additional forest and tree cover by 2030. In order to meet these obligations India will be spending between now and 2030 around US\$ 2.5 trillion at current prices.

In terms of global competitiveness, India moved up 16 places in 2016 compared to last year to rank 39th among the world's most competitive economies—the biggest leap for any country according to the World Economic Forum's Global Competitiveness Report 2016-2017.

### Getting future-ready

As the year 2016 draws to close, India is getting ready to welcome the Year 2017 with great hopes and expectations.

The people of the country know that the journey that began seventy years ago is long and arduous. Their achievements

over the past seventy years give them the confidence in the country's future.

In terms of global competitiveness, India moved up 16 places in 2016 compared to last year to rank 39th among the world's most competitive economies—the biggest leap for any country according to the World Economic Forum's Global Competitiveness Report 2016-2017.

These include expanding the electric power generating capacity to over 300 GW from a mere 1362 MW in 1947. They also include raising the life expectancy to over 68 years in 2016 from 32 years at the time of independence, and increasing the food production from less than 50 million tons in 1947 to 250 million tons presently. India has increased the net irrigated area from 19.4 million hectares at the time of independence to close to 100 million hectares in 2010-11.

That makes India the largest irrigated land in the world.

They also know that despite their achievements they have to overcome numerous challenges as the country still has the largest number of poor in the world.

Editor's Note: India has a tremendous opportunity to step up into the manufacturing vacuum that will likely result from the Brexit decision and the election of Donald Trump in the United States. The only two countries with forward looking economic policies in the coming years may be India and China, as we've said in our cover story this month. With its high technology base further along than China's, India may become supplier of high tech to China, and competitor in the world markets to the Chinese. Watch this space for more from Rajabhadur Arcot.

—Walt Boyes

**Rajabhadur Arcot is an Independent Industry Analyst and Business Consultant, and Director Asia Operations for Spitzer and Boyes LLC with 40 years of senior management experience. He was responsible for ARC Advisory Group in India. Contact him at [rajabhadurav@gmail.com](mailto:rajabhadurav@gmail.com)**

