

INTELLIGENT TRANSPORTATION SPECIAL

CIOReview

APRIL 23, 2018

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CIO INSIGHTS

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PRODUCTS PVT LTD*

IN MY OPINION

*Amitabh Ray,
Managing Director,
Ericsson*

VINAYAK PANDIT,
CEO

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CIOReview

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Editorial

The IoT Enabled ITS

According to a Transparency Market Research, the demand in the global intelligent transportation system market is expected to expand at an impressive CAGR of 12.7% till 2024. Increasing emphasis on public safety on the back of forever incrementing cases of road mishaps, growing need to employ advanced systems to manage traffic congestions, government support for effective traffic management, and rising demand for eco-friendly methods are some of the key factors augmenting the demand in the intelligent transportation system market. Internet of things (IoT) is transforming the transportation sector with the generation of intelligent transportation system (ITS) that is eventually optimizing logistics & fleet management, movement of people, goods & services, traffic management and driver assistance. Intelligent transportation system helps in automating railways, roadways, airways and marine which enhances customer experience about the way goods are transported, tracked and delivered. By generating an intelligent transportation system (ITS), IoT can help optimize logistics and fleet management, tracking and monitoring of goods and services, traffic management, driver assistance, etc. In fact, it can automate an entire vehicle. All such advantages are causing a stir in the transportation industry thereby spelling a bright future for the IoT in intelligent transportation system market, worldwide.

Congestion on urban roads and rising accidents which need smart transport management solutions leveraging sensing, communications, and data processing technologies are already serving to drive the IoT in intelligent transportation market. In addition, IoT is being used for smart parking solutions, traffic management solutions, passenger entertainment, fleet management and telematics solutions, and security solutions. Moreover, with the projection for prices of sensors to come down in the near future, it is also expected to drive sales.

In this issue, CIOReview India presents to you '20 Most Promising Intelligent Transportation Solution Providers' who have proved their mettle with their innovative offerings. These companies pride themselves on keeping pace with the latest technological advancements in this domain. We hope this issue gives you helpful insight into this market landscape.

Sudhakar Singh

Sudhakar Singh
Editor
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IN MY OPINION

ARTIFICIAL INTELLIGENCE AND 5G TO EASE GLOBAL TRAFFIC WOES WITH INTELLIGENT TRANSPORT SYSTEMS

By Amitabh Ray, Managing Director, Ericsson

If we sent up a drone camera to take pictures of Indian roads during peak traffic, it would resemble a mass of unmoving metal with bumper-to-bumper traffic gridlocking every major road. The situation is so bad and turning worse each day that people point out Bangalore's most infamous logjam at Silk Board Junction which has inspired its own Twitter parody account as "India's largest parking lot." Traffic snarl-ups not only causes frustrations to millions of passengers, the estimated financial cost is over \$2000 billion per year worldwide.

But it's not Bangalore, Mumbai or New Delhi that takes the crown for the most gridlocked city in the world; it's Los Angeles. The Global Traffic Scorecard, from INRIX, a transportation analytics company, found

that LA drivers spend an average of 102 peak hours in congestion – 11 hours longer than the next most congested cities, New York and Moscow. Sao Paulo's drivers sit in fourth place, with 86 hours spent in traffic, while San Francisco ranks fifth with 83 hours. Out of the 1,360 cities analyzed, London was seventh, behind Bogota who had 75 peak hours of congestion. On average in the UK, drivers spend an average of 31 hours a year in traffic which in 2017 led to a loss of more than £37.7 billion in related costs.

The easiest solution we often think is to spend money on infrastructure, but that's not a silver bullet. The solution lies in a combination of measures from remote working, to spreading the business districts, ride sharing, road user pricing and of course Intelligent Transport Solutions (ITS) such as dynamic traffic lights, the



wider use of all lane running on motorways and the efficient planning of road works.

The best starting point to implement an ITS is with collecting data and running algorithms with it to find out the source of the current problem and forecasting what will happen next. If we know what can be the possible areas of bottlenecks in the next few hours, the traffic management system can be pressed into action to avoid the gridlocks.

Longer range forecasting will help policymakers and transportation professionals to know when and where congestion is worst, to prioritize investments with limited budgets. Scientists at Nanyang Technological University in Singapore have developed a new intelligent routing algorithm that attempts to minimize the occurrence of spontaneous traffic jams.

The lower latency and high throughput of 5G will support connected cars, transportation, and retail logistics that consist of fleets of connected/driverless vehicles transporting people and goods

A team from the Texas Advanced Computing Center (TACC), has demonstrated that AI can help to optimize traffic flow. Their work is on developing searchable traffic analyses using deep learning and data mining. The tool uses the raw data generated from traffic cameras, with their algorithm capable of recognizing the various objects in the footage and then characterizing how those objects move and interact. This information can then be queried by traffic planners to better understand the transport network.


The system automatically tags each object it encounters in the raw data and then tracks their movements throughout the footage. By comparing outputs from each frame, the algorithm discovers relationships among the objects. The system was tested in two practical use cases. The first saw it count the number of vehicles travelling down a road while the second identified near-misses between vehicles and pedestrians. The results showed that the algorithm was around 95% accurate when counting the vehicles.

According to a McKinsey report, Artificial Intelligence and Machine Learning will be the technological foundation for both ITS and autonomous vehicles. The



convergence of Internet of Things in connected cars, autonomous vehicles, and sensor-based traffic management systems will become a reality with the launch of 5G. One of the key advantages of 5G is low latency which will help autonomous vehicles to respond in real time to dynamic situations.

The lower latency and high throughput of 5G will support connected cars, transportation, and retail logistics that consist of fleets of connected/driverless vehicles transporting people and goods. The key network requirements for mission-critical automotive driving are high throughput and low latency up to 100 milliseconds. A journey from A to B in a driverless vehicle could involve vehicle-to-vehicle connections, connections between vehicles and street infrastructure for traffic management, and high-speed reliable connectivity to support cloud applications which will be made possible by 5G. Failure is not an option in these cases.

These technological advancements are making possible improved transport. The governments across the globe are also taking initiatives to focus on research of cutting-edge technology related to advanced products such as vehicle ad hoc networks. These major trends are poised to fuel the growth of the global market for intelligent transport systems which according to estimates is likely to cross \$30 billion by 2022. 

COVER
STORY

PAKO

TECHNOLOGIES

MAKING INTELLIGENT TRANSPORTATION A REALITY

By Suchita Gonsalves

Still in its nascent stage in developing countries like India, Intelligent Transportation System (ITS), an integrated system is being gradually implemented across the traffic-plagued streets. These systems are globally approved as they optimize the utilization of the existing transport infrastructure and enhance the transportation systems in terms of quality, efficiency, comfort, and safety. It leverages a wide range of communication, control, vehicle sensing and electronics technologies to solve and effectively manage the consistent traffic problems. Recognizing the gamut of benefits it has to offer, the Government of India (GoI) mandated that all public transport vehicles

manufactured post-2014 must be fitted with an Intelligent Transportation System. The systems were bound with the Urban Bus Standards Specifications; second version (UBS-II) released that year. The specification required not only multi-camera live view and recording system but also demanded multiple communication interfaces like WiFi and 3G. An audio interface, USB ports, a touchscreen display were part of the list of requirements. Additionally, the system had to be sturdy enough to withstand 85 degrees operating zero humidity for 16 hours and insisted on an IP-65 rating thereby demanding the system to be fan-less. The standard also necessitated a battery of certifications to be passed through ARAI.

“

AN END-TO-END
SOLUTION PROVIDER
IN THE ITS DOMAIN,
PAKO HAS INVESTED
IN A DIY-IOT-M2M
APPLICATION
DEVELOPMENT
AND DEPLOYMENT
PLATFORM. THE
PLATFORM IS
COMPLETELY
CONFIGURABLE AND
CUSTOMIZABLE

VINAYAK PANDIT,
CEO



While the vendors in this domain witnessed a huge struggle to adapt their systems to the UBS II standard, PAKO Technologies, situated in Pune, was one of the first companies to launch a product within just two months post GoI mandating the standard. Aligning to the 'Design and Make in India' initiative, their success is attributed to the foresight shown by the technologically skilled development and product innovation team. "PAKO Technologies has since sold more than 6000 systems of its ITS offering. Since then, the



THE HARDWARE PRODUCTS, BOTH AUTOMOTIVE AS WELL AS OTHER RUGGED SYSTEMS ARE RIGOROUSLY TESTED IN OUR IN-HOUSE ESS AND OTHER TEST EQUIPMENT ENSURING A SMOOTH CERTIFICATION PROCESS

team has designed and certified two next-generation versions of the ITS product line," reveals Vinayak Pandit, CEO at PAKO Technologies and a veteran in the domain of automation, healthcare, special purpose machine manufacturing industry, complex computing and defense industry across India. PAKO has further invested in re-engineering the same product specifically from

the cost-reduction perspective, while simultaneously increasing the capabilities of the product.

While the transport and Vehicle OEMs sector have begun adopting ITS solutions, they encounter a gamut of challenges that need to be addressed. Some of the topmost challenges being that customers are on the lookout for vendors with tailor-made hardware/software solutions, maintenance poses as a major challenge, lack of awareness of the consumer's requirements of convenience & User Experience and finally, lack of knowledge to implement the specified standards in a holistic manner. Perfectly understanding the aforementioned dilemmas, the team leverage their vast industry rich expertise and engineer their hardware/software offerings taking into account the compliance needs as well as providing additional features which are required by the transport sector. This is achieved by adopting a consultative approach with every customer where the core objective is to study the customer's needs and provide the right solution at the right price rather than 'selling the company's inventory of products at M.R.P.'

Offering a Comprehensive Suite of Services

An end-to-end solution provider in the ITS domain, PAKO has invested in a DIY-IoT-M2M Application Development and Deployment Platform. This platform is completely configurable and customizable. "Most importantly it is device agnostic and can support any device communication in the world," informs an enthusiastic

A Systems-driven Approach to Product Development

Founded in 2000, the company boasts of a select team of technically adept engineers that work with the client to understand their needs and requirements and shape those ideas into indispensable products. PAKO possesses in-house manufacturing capabilities that encompass a dynamic range of system integration expertise. Having catered to a gamut of renowned clientele in this sector for close to two decades, the experience gained in this area has given a raise to a database containing large number of usage scenarios, inter-component compatibility issues, operating system expertise as well as customization expertise for certain operating systems. In addition to this, PAKO has forged various partnerships and alliances that have assisted in securing an in-depth understanding of various processes involved in PCB, PCBA and other activities required for manufacturing of a cost and quality-controlled product proficient at withstanding the rigors of automotive and similar environments.

The company is sufficiently geared with in-house 3D printing capabilities that translate to quick prototyping of nearly all additive process manufacturable components. Vinayak says, "Additionally, the thermal management issues that plague rugged systems are addressed at an early stage through design simulation and analysis of actual prototypes by personnel specialized in appropriate areas." The in-house ESS and vibration test set up and other equipment are utilized during the prototype stage to perceive feasibility of using certain materials in specific cases. This allows for a fast feasibility study before committing to a particular material or design.



Vinayak. With close to two decades of expertise in the product conception, design and manufacturing sector, PAKO extends its services with cutting-edge solutions, which include, the ITS and VTS Devices as well as the Server side IOT platform and applications. Developing hardware and software products aligned to the Industry 4.0 philosophy, PAKO provides a host of technology solutions to a broad range of industry verticals; In-Bus Intelligent Transport System which is compliant to UBS-II, VTS device that is compliant to AIS-140, Red Light Violation detection system, parking assistance systems, Advanced Driver Assistance Systems, signage solutions and cloud-based ITS platform. These innovative products have been meticulously designed in an extensible manner permitting an adaptation to a much larger number of application areas. "The hardware products, both automotive as well as other rugged systems are rigorously tested in our in-house ESS and other test equipment ensuring a smooth certification process," adds Vinayak.

Feature-rich and Economical Solutions


With a proven track record, the company has carved a niche for themselves in this sector and credit their success to the set process the company has put in place.

With cross-industry expertise, the team is fully aware of the pivotal role design plays in developing the desired product. Keeping up with trending technologies, the team begins with conducting an interaction with the customer to attain and map out the complete product requirements. This allows feature and consequently cost optimization early on in the development phase.

The company's wide range of memberships to a plethora of organizations like IPC grants access to a comprehensive set of standards that are demanded to be complied with by products designed for the various domains. "The access to standards means that the product's compliance requirements are not compromised while optimizing cost," explains Vinayak. Additionally, the company has continually invested in Research & Development since 2012 in order to adopt advanced technologies to bring down the cost of the solutions immensely while improving the richness of the features.

The cost, feature and adaptability matrix is optimally managed by a number of internally developed and set procedures. This is usually supported by an all-encompassing charting of a broad spectrum of scenarios that may arise in a typical product development environment. A centrally maintained version controlled, tightly access managed system permits complete version review that can be accessed at any point of time in the product's development phase thereby assuring smooth teamwork.

In conjunction with this, PAKO has an in-house support team of engineers with deep technical expertise in product design that not only strives to repair but works towards locating the root cause, improves the product design and ships back the product in the shortest turnaround time.

Maintaining their leadership position in India as experts in programmable engine and transmission control unit firmware, PAKO is working towards becoming a 'One Stop Shop' for all the customer needs with offerings that encompass all crucial aspects of an automobile such as navigation, safety, driver assistance, passenger comfort, entertainment units and integrated dashboard systems. Striving to attain a leadership position in this domain with their expertise and novel solutions, the company should be launching soon its PCB and Electronic Product Manufacturing setup in Hinjewadi that is spread across five acres. Additionally, PAKO has recently invested in the IoT-M2M Platform software and is in the process of building integrated IOT Application solutions in the area of Transport, Building management, Smart Factory and Smart city segments. 

IT'S TIME TO ADOPT INTELLIGENT TRANSPORTATION SYSTEM

By Shailendra Choudhary, VP & Head-IT at INTERARCH BUILDING PRODUCTS PVT LTD



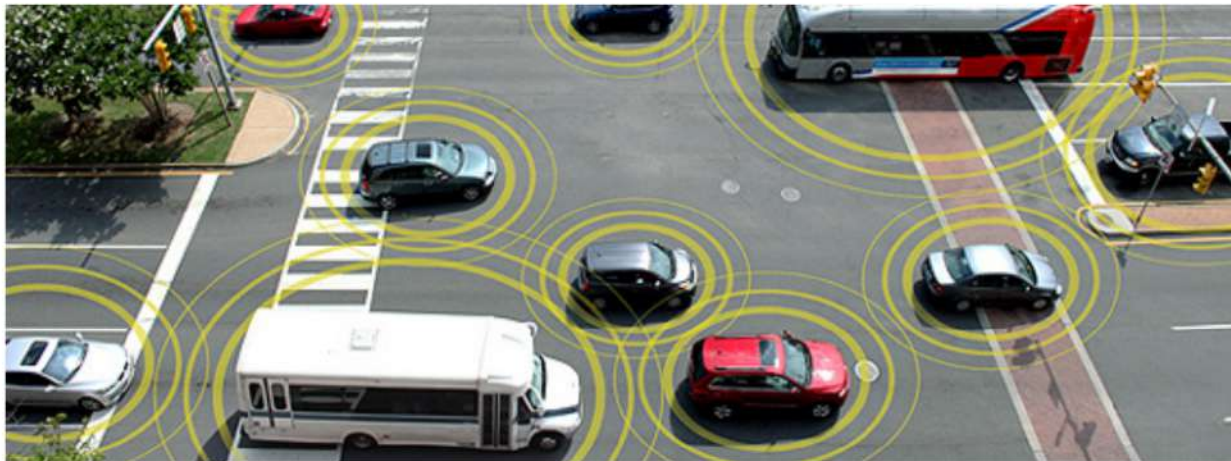
Shailendra Choudhary

The rapidly increasing vehicle population in India, spurred by the population boom and economic upturn lays a critical burden on traffic management in the metropolitan cities and towns of the country. Intelligent transportation is an established route to resolve or at least minimize traffic problems. India has already made a foray into intelligent transportation system in organizing traffic, more extensive and urgent integration of advanced technology and concepts into mainstream traffic management is imperative. The main social and institutional issues facing the deployment of intelligent transportation system in India are an underdeveloped road network, severe restrictions, explosive urbanization and growth, lack of resources for maintenance and operation. In our own lifetimes, we have witnessed the third industrial revolution.

Intelligent transportation sensing, analysis, control and communications technologies to ground transportation in order to improve safety, mobility, and efficiency. Intelligent transportation that process and share information to ease congestion, improve traffic management, minimize environmental impact and increase the benefits of transportation to commercial users and the public in general.

An intelligent information and data activation capability is key in digital transformation success in several ways and requires attention from multiple angles. It is no longer just "Information Technology." It is Intelligent Transportation - a transportation that is driven by big data, cloud, and Internet of things. Intelligent transportation is part of the Internet of things, includes V2V (Vehicle-to-vehicle) and V2I (Vehicle-to-Infrastructure) technology. Wireless technology is used to connect vehicle information and location to other vehicles, other transportation modes, local infrastructure and remote infrastructure in the cloud.

Intelligent transportation system is the application of computer, electronics and communication technologies and management strategies in an integrated manner to provide traveler information to increase the safety and efficiency of the road transportation system. The Intelligent transportation which provides a common framework



for planning, defining, and integrating intelligent transportation system is briefly described emphasizing logical and physical architecture.

The major objectives of intelligent transportation are to evaluate, develop, analyze and integrate new sensor, information and communication technologies, and concepts to achieve traffic efficiency, improve environment quality and enhance safety

Intelligent transportation is having a significant effect on transportation in applications such as electronic toll collection, ramp meters, traffic light cameras, traffic-signal coordination, transit signal priority and traveler-information systems.

- Electronic Toll Collection of payment at toll plazas using an automated system that increases the operational efficiency and convenience of toll collection.
- Ramp Meter alternate between red and green signals to control the flow of vehicles entering the freeway.
- Red Light Camera detects a motor vehicle that passes over sensors in the pavement after a traffic signal has turned red.
- Traffic Signal Coordination provides the ability to synchronize multiple intersections to enhance the operation of one or more directional movements in a system.
- Transit Signal Priority give special treatment to transit vehicles at signalized intersections and use sensors to detect approaching transit vehicles and after signal, timings to improve transit performance.

• Traveler Information Systems use a variety of technologies, including Internet websites, telephone hotlines, and television and radio to allow users to make informed decisions regarding trip departures, routes, and mode of travel.

Here are a few intelligent information activation core capacities you need to have:

1. Safety
2. Mobility
3. Environment

The major objectives of intelligent transportation are to evaluate, develop, analyze and integrate new sensor, information and communication technologies, and concepts to achieve traffic efficiency, improve environment quality and enhance safety. These smart devices, incorporated with various sensors, will continuously sense our environment and send the data about our world to the cloud. In order to store and process these ever increasing big data, and to support the delivery to cloud content and services, the data center infrastructure is also transforming to be more agile, flexible and intelligent.

Many benefits exist for further deployment and continued development of Intelligent Transportation technologies. Most of the developed countries already have Intelligent Transportation system and there, it is possible to integrate these advancements into vehicles and infrastructure, but underdeveloped countries are yet to have Intelligent Transportation system and they are adopting the Intelligent transportation system. The purpose of transportation system technology is to process and share information that can prevent potential crashes, keep traffic moving, and decrease the negative environmental impacts of the transportation in the sector on society. The ultimate benefit of a transformed transportation system is that it is fully connected, information-rich and able to address safety, mobility and environmental impacts. **CR**

CIO Review 20 Most Promising INTELLIGENT TRANSPORTATION Solution Providers 2018 INDIA

Various economies, be it developed or under-developed, have been struggling with ever-growing obstacles in traffic management. The rise of Intelligent Transportation Systems (ITS) under such conditions is a major game changer. Estimated to be worth a whopping USD 23.35 Billion in 2018 by MarketsandMarkets, ITS solutions are being commended globally for their ability to address safety and security concerns that often lead to road fatalities. Together with the advantages such as reduced travel time, fuel consumption, greenhouse gas emissions and enhanced ability to respond to emergencies, the demand for ITS systems has witnessed a steep rise in recent due to the integration of these systems with mobile devices. Multipurpose vehicle computing systems that leverage real-time data along with tracking abilities are driving the market to the next level of advancement. Collaboration between the private and public bodies can be expected to further bolster this highly fragmented market segment.

However, despite the encouraging trends in ITS technologies and the market, the slow growth of infrastructure and high costs incurred in the installation of these systems have emerged as factors restraining its growth. A threat such as cyber attacks and breach in user information are amongst the other challenges to needs immediate attention. CIOReview India brings to you the list of "20 Most Promising Intelligent Transportation Solution Providers 2018". A distinguished panel of CEOs, CIOs, industry analysts and the CIOReview India editorial team have closely scrutinized and nominated the vendors who are not just revolutionizing the Intelligent Transportations Systems solutions market through their unparalleled domain expertise but are constantly innovating to address the many challenges that plague the market segment while boosting its growth and enabling users to realise the benefits of ITS on the road.

Company	Management	Description
Aarya ITES Ahmedabad, Gujarat a-ites.com	Manan Bhavsar, MD	Provider of an Android based handheld toll collection system and other intelligent solutions such as Intelligent Vehicle Access Control Systems and others
Aeon Software Mumbai, Maharashtra aeonsoftware.net	Ambresh Bhagwan Sagar, Director	Provider of GPS Vehicle Tracking solution
AGMA Technologies Bengaluru, Karnataka agmatech.in	Amrutha H M, Director	Provider of embedded systems with collaborating software
AllGoVision Technologies Bengaluru, Karnataka allgovision.com	Ashwin Amarapur, Director	Provider of a Video Analytics Solution
Arya Omnitalk Pune, Maharashtra aryaomnitalk.com	Saumil Dhru, CTO	Provider of Walky Talky and GPS Vehicle Tracking Systems
ATT Group Singapore attsystemsgroup.com	Kenny Teo, CEO	Provider of Traffic Management Solutions that offers tested and proven Integrated Traffic Technology

Company	Management	Description
AUM Infotech Bengaluru, Karnataka auminfotech.com	Srinivas Shankar, Director	Provider of ITS Solutions for Indian Bus Transport Corporations
Cyrrup Hyderabad, Telangana cyrrup.com	Gaurav Kumar, Founder	Provider of Wi-Fi and GPS-enabled devices and around-the-clock support system
eTrans Solutions Kolkata, West Bengal etranssolutions.com	Shoummo Acharya, CEO	Provider of Vehicle Tracking Solutions to major corporate Shippers and Transporters
GetParking Mumbai, Maharashtra getparking.in	Sachin Naik, Director	Provider of smart parking solution
GPS Allied Roorkee, Uttarakhand gpsallied.in	Abhishek R Sharma, CEO	Provider of solutions for vehicle tracking, personal or asset tracking, navigation, payment solutions, security and surveillance and Intelligent Transport System
iParko Chennai, Tamil Nadu iparko.com	Shreekesh Pillai, Co-founder & Business Head	Provider of mobile parking application to facilitate better handling of parking and traffic across cities
PAKO Technologies Pune, Maharashtra pakoindia.com	Vinayak Pandit, CEO	Provider of solutions for all crucial aspects of an automobile such as navigation, safety, driver assistance, passenger comfort, entertainment units and integrated dashboard systems
ParkUpNow Mumbai, Maharashtra parkupnow.com	Ruchir Shah, Founder	Provider of a mobile app based end-to-end parking solution for events, concerts and more
Pickcel Bengaluru, Karnataka pickcel.com	Abhijit Chaudhary, CEO	Provider of cloud based Digital Signage solution
SenSen Networks Hyderabad, Telangana sensennetworks.com	Madan Kumar, Director - India Operations	Provider of solutions for the ITS industry including civic compliance, parking management, and speed and toll enforcement
Sixth Sensor Technology Mumbai, Maharashtra sixthsensor.in	Paritosh Dagli, MD	Provider of solution to prevent vehicle collision
Trackyo Hyderabad, Telangana trackyotech.com	Yash Agarwal, CEO	Provider of security solutions for vehicle monitoring and driver assistance systems targeting gated societies
Vbron Technologies New Delhi smartroadwitness.com	Dilip Kumar, Director	Provider of a vehicle video camera recording and fleet management system
VehicleST Bengaluru, Karnataka vehiclest.com	Alvin George, MD	Provider of travelling solution acting as platform connecting customers with vehicle owners, be it cabs, auto, travellers, trucks, special vehicles etc

Aarya ITES: Offering an Efficient and Easy to Use Toll Collection System

Estimated to be worth USD 30.74 Billion by 2023, the intelligent transportation systems (ITS) market has been playing a key role in addressing the demands of the growing population for effective management of traffic. However, the high cost of installation of ITS systems has also emerged as a major setback, significantly hindering its widespread adoption, especially in developing countries. Despite these odds, Ahmedabad based Aarya ITES has embarked in the ITS domain with the vision to emerge as one of the most trusted brand in the field.

Boasting of a nine year long exposure in IT, ITES, networks, security, safety and automation, Aarya ITES believes their rich experience with a wide array of industry verticals together with an enviable clientele in transportation and infrastructure sector will enable the firm to stand as a real game changer. In close alignment with this

not just for toll collection but also for traffic clearing at toll plaza during emergencies, SecTMS helps users centrally manage toll operations using a single integrated solution.

Designed to deliver utmost efficiency and ease of use, SecTMS is capable of making up to 10 transactions per minute



Manan Bhavsar
MD

and delivers 8 to 10 hours of seamless operations. Running on the proprietary SecTMS software, the device can also be easily managed via cloud. Inbuilt with Wi-Fi and 4G connectivity, SecTMS brings in the advantage of real-time data transfer to the central server. The device comes equipped with a card swiping system and an RFID reader and also accepts payments via NFC and mobile wallets. Inbuilt printer and bardarcode/qr code scanner facilitates toll operators to validate return journeys and daily passes. What's more, integration with camera enables toll collectors to take images of vehicles and its license plate for further authorization. Scope

for transaction authorization and a robust reporting module only makes SecTMS all the more lucrative.

SecTMS is also available in multiple variants such as SecTMSLite and SecTMSPro along with a specialized weight based toll management variant called SecWTMS and another variant for enterprise toll collection called SecTMSEnt. Highlighting the various advantages that clients are likely to experience with SecTMS, Manan Bhavsar - MD, Aarya ITES shares, "Our system provides clients with the freedom to select the hardware of their choice. We are always ready to integrate our system with new hardware or the client's existing hardware, and while doing so we provide new generation solution. Available in OPEX/SAS model, clients can procure SecTMS outright without paying the license fee for the software every time they use the system."

Along with SecTMS, Aarya ITES also delivers a plethora of intelligent solutions such as Intelligent Vehicle Access Control Systems, Enterprise Resource Planning, management system for system integrators and service providers, employees' attendance management and field tracking solutions and more. Currently, Aarya ITES is in the process of expanding their services and is also collaborating with one of the largest infrastructure/toll collection company. Continuing its efforts to revolutionize the domain, Aarya ITES hope to emerge as a common name. **CR**

**SecTMS helps
users centrally
manage toll
operations using a
single integrated
solution**

vision, Aarya ITES has introduced SecTMS- an Android based handheld toll collection system. Ideal

DIGITAL TRANSFORMATION OF Transport & Logistics

By **Purnendu Shekhar**, Founder, Cogoport

20+ years of Global experience as a leader of leaders. Ex-Master Mariner who has molded his talents and strengths to build a fast growing, profitable organization. A thought leader who believes in his nurturing the skills of his Cogoport family to bring out a significant impact.

When we think of how much technology has helped us, it would baffle our minds to what heights it has reached today. Bringing digitization into this world has had its perks. To judge the true nature of technology is each individual's perception of it. Our lifestyle has changed for the better due to the increasing presence of digitization.

This present era has primarily dedicated toward digitization of various sectors. We have covered banking, engineering, health care and now the gripping hands of technology have caught transport and Logistics. Several industries are racing fast, catching up to the accelerating evolutions taking place in the current digital environment. Specifically, one such industry or sector is the Logistic domain, which sees tremendous opportunities for a change in infrastructure, processes, operation and even transport.

Logistics domain has gone through the various stages of metamorphosis from the medieval ages. Fast forward to the current period, here if we were to observe

closely, we notice a number of inefficiencies. In Transport & Logistics, speed and timing have been crucial, apart from that the various sectors involved in the supply chain need complete optimization. To understand the need for change is to reinvent itself by opening the doors to Digital Transformation.

The digitization of the Transport & Logistics domain can provide better Customer experiences by improving the efficiency, as a result, the profitability is eventually increased. For instance, the cab aggregators of today such as Ola and Uber gained an increased popularity. Why would we say this? Definitely, they realized the need for optimization and realized that digitization could be driven by the consumer needs. The intervention of online aggregators including car sharing or personal car rental app is bringing the old and worn out methods to a standstill, instead, their innovative solution has made transport aka. Transport an enjoyable journey.

Similarly, let us take the shipping industry into account. Freight industry has battled mismanagement and dis-organization for years now. The coordination among the various



department is usually not in sync. Bring technology into the frame, you will find yourself unraveling solutions making processes and individual activities easier to carry forward.

Not to forget the gains we can receive from the "Startup Initiative" drive by the Digital India Forum, our esteemed Prime Minister Modi has been diligently working toward. Many small companies and startups have been benefited hugely. This must be the objective of several large-scale or small-scale industries to make the most of the Digital India campaign, allowing them to compete with established giants out there.

Speaking from 20 years of experience in the Shipping industry, our shift to "digital platform" is a must. On a fundamental aspect, the digitization is disrupting the Logistics sector, helping in the reduction of in-competencies that are



numerous to count. 'Time' and 'Cost' have been the two main parameters that require optimization in the Shipping Industry. Play with these

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factors, to remodel the Transport & Logistic domain utilizing the Digital platform. Our motive should be to streamline the complex operation and standardize the structural and strategic processes. The cutting-edge technology has enabled GPS enabled trucking to cut down on the environmental losses such as energy and fuel consumption. Live tracking solution made the customers worry less and trust more. The digital storage of dynamic data logs has enabled the shippers with instant freight quotes, simplifying the process of booking shipments online.

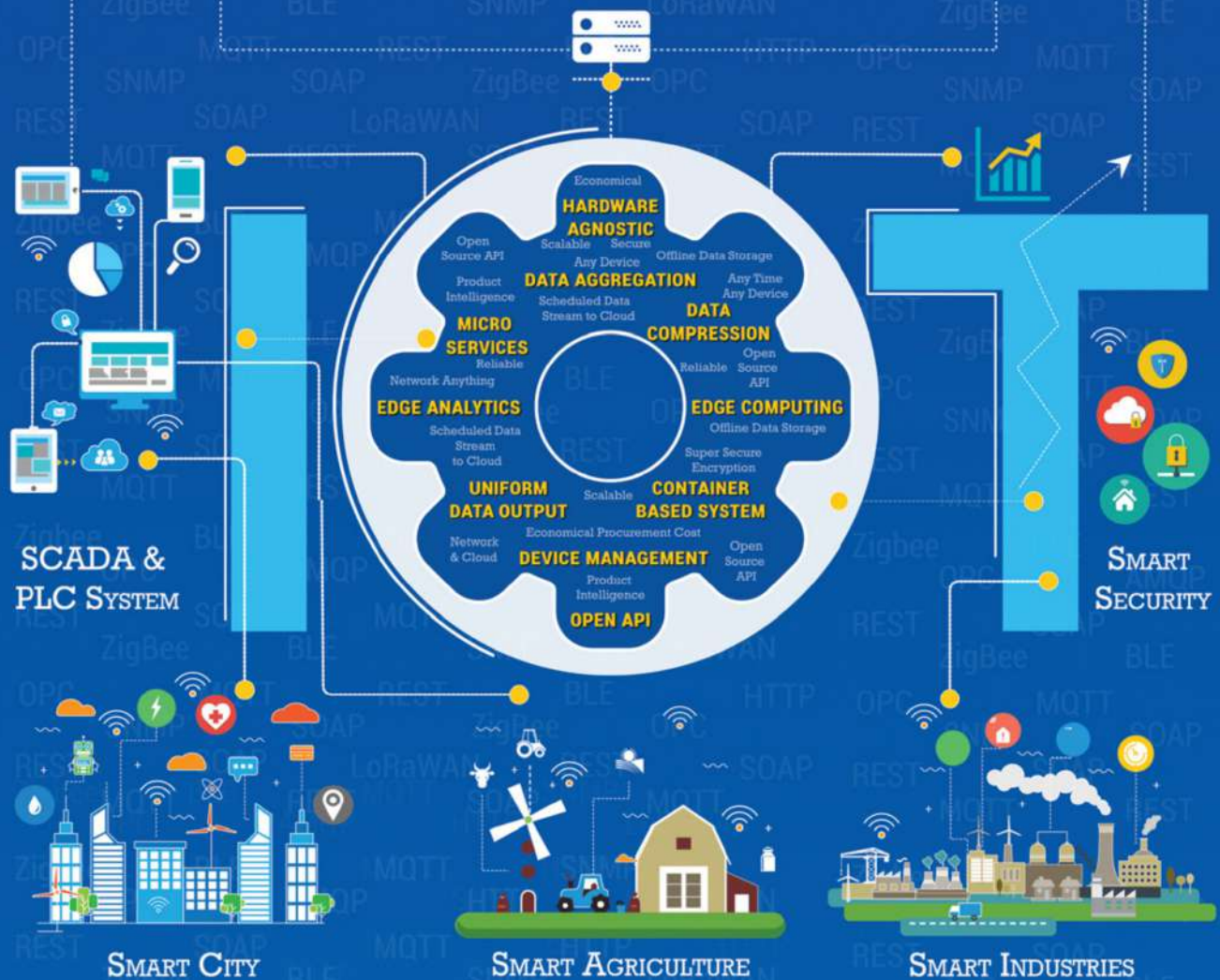
I have observed the uprising of many Freight Industries, serving the sole purpose of improving the customer experience. Automation of activities, which in general scenario would have been time consuming and unsynchronized. Vendor mismanagement, freight rate comparison, documentation non-compliance are few anomalies we notice from time to time. The

occurrence of these limitations is causing a stunted growth of our still developing nation, the increased ignorance of this situation if not realized sooner, the consequences will be a big blow to the trade and economy of our country.

The significant increase of digital transformation in the Transport & Logistics domain has created a portal for service providers to connect with potential clients. We, the masses, the customers, the entrepreneurs have envisioned Digital Transportation infrastructure for a promising future of our Nation. We need to be in the position to facilitate our customers belonging to a various range of sectors, by being a digitally transformed provider of Transport and Logistic services. With this one mission, we can soon build a dominant global market, in coming years, the better provider of user experience as well as UI will determine who will be the winners and losers of this Digital race. 🇫🇷



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ATT Group: Alleviating Traffic Congestions with Robust Traffic Management Solutions

Leveraging various navigation and communication technologies, Singapore is witnessing an improvement in the overall transportation infrastructure and monitoring of vehicles. The important applications that belong to the Intelligent Transportation Systems (ITS) market are fleet management and asset monitoring, traffic monitoring, traffic signal control system, collision avoidance system, and traffic enforcement cameras. However, this domain is still in a very nascent stage in developing countries and has a massive scope for improvement. Playing a key role in this sector is ATT Group, inception in 1998, with their robust



Kenny Teo,
CEO

Traffic Management Solutions that proffers tested and proven Integrated Traffic Technology. It caters to both, authority to better manage local traffic conditions and commuters to be ahead of demanding and chaotic traffic situations in Singapore.

Yet another of the company's innovative offerings, Highway Traffic Management System (HTMS), is a comprehensive real-time system that ensures efficient traffic operations

and promotes rapid rescue and relief to road users in distress. With an intuitive user interface, HTMS utilizes Central Control System (CCS), an all-inclusive software system that permits users to control various components of HTMS. Understanding the workings of this system, real-time traffic data from a traffic detection system flows into a Command Control Centre (CCC) which is seamlessly integrated and processed and may result in actions with the objective of improving traffic flow, enhancing road safety, reducing journey time and minimizing losses.

Despite the adoption of such solutions, there is a need to curb the multitude of traffic violators. Catering to this need, the team with their vast industry knowledge and expertise introduced the Illegal Parking Enforcement System. These technical recording devices are automatically triggered by a traffic violation. Linked to an automated ticketing system, the information of the violating vehicle is recorded and used to identify the said vehicle for the purpose of sanctioning the owner or driver.

With a global reach through its subsidiaries, ATT Group established an Indian subsidiary ATT Systems (India) in 2007 and has been operating from a rural village in Chitradurga since 2013. In its first year of inception, ATT Systems (India) Pvt Ltd, received an overwhelming response and succeeded in securing four prestigious projects from GMR Infrastructure for the supply of Advanced Traffic Management Systems (ATMS) and Toll Management Systems (TMS) subsystems. Continually endeavoring to deliver customized and technologically advanced

solutions, GMR Ambala Chandigarh Expressways, GMR Pochampally Expressways, GMR Jadcherla Expressway, L&T for NE1 and NH8 in the State of Gujarat, IRB TCBOT in Karnataka and Trichy Toll ways in Tamil Nadu are some of the finished projects that boast of high customer satisfaction.



Andrew Tan,
Managing Director

In conjunction with this, ATT Group has successfully honoured the contract from Indian Highways Management Company Limited (IHMCL) for Traffic Surveys Using Portable ATCC along National Highways in the state of UP, Bihar, and Jharkhand. With a clear vision to exceed customer expectations, the company further augments their services by facilitating clients with exceptional post sales service and round-the-clock customer-care service. Driven to make the Indian roads safer, the team is currently working with several prototypes including radar in order to make a system which is self-learning at the same time and simultaneously smart at enforcing the rules on a complicated Indian highways. **CR**

INTELLIGENT TRANSPORT SYSTEMS: BUILDING THE FUTURE OF MOBILITY

By Dattatreya Gaur, President of Robert Bosch Engineering and Business Solutions

Transportation has been a boon for the human civilization for centuries. Its various forms have also been a clear indicator of humanity's progress over the years as transportation has evolved from the wheel to the myriad advanced modes that we see today. However, it doesn't end here. The transportation sector is also judged by innovation, feasibility, speed,

access and other such variables that determine the effects that it has on our lives as humanities' subsistence and progress rest on its shoulders.

Like several inventions before and after it, transportation has its pros and it also brings with itself a certain set of cons. Traffic congestion and road accidents are some issues that have cost many lives and time wastages for decades, and their numbers do not seem to be dwindling anytime soon. According to a report

published by the Indian Ministry of Road Transport and Highways, the number of road accidents has only dropped by three percent and fatalities have only dropped by 4.75 percent between January and July 2017. India has an estimated 5.4 million kilometers of roads, so the possibility of traffic congestion in the country often leads to massive economic losses by making road commutes even harder to work around. This is one of the primal reasons behind



the inception of intelligent transport systems worldwide. Given that there are often multiple reasons that are the culprits behind traffic congestion worldwide, aiming to resolve such issues through intelligent transport systems can potentially increase the efficacy, infrastructure, reduce travel time, curb air pollution and control fuel consumption.

But what exactly does an intelligent transport system entail?

An Intelligent Transportation System (ITS) is an application which involves the integration of information technology and transportation systems to provide efficient and safer mobility services. Given the amount of traffic congestion that regularly strangles Indian cities, ride-hailing apps often seem like better alternatives to make it easier for the public to move around and reduce the traffic burden on the roads. Besides, it is also a cost-effective solution for the government to invest in as it can have a tremendous long-term impact on the automotive industry. This is just one aspect of intelligent transport systems that are making lives better. The initiation of the Smart Cities project by the Government of India will also ensure that transportation in the country is better equipped to meet the needs and demands of motorists from various cities through the use of connected technology.


Since connected services and technologies have already begun and are going to continue to define our lives in the future, ITS will play a vital role to define how we will run our daily lives

The purpose of such a system is to ease the effects of transportation on the environment and on people's lives. The multi-modal aspect of intelligent transportation helps to keep a check on myriad facets of transport such as infrastructure, connected devices, safety issues and more. This, in turn, helps in providing a one-stop solution for transport companies to monitor thousands of connected

vehicles with the help of IoT, GPS and Wi-Fi enabled devices that are used in the framework. Furthermore, the infusion of connected technologies helps in managing the traffic congestion and flow whilst rerouting the public to alternative routes to save money, time and lives. ITS usually consists of an integrated amalgamation of hardware and software which is connected to the driver's console to provide real-time insights and updates with regards to vehicle tracking systems and passenger information systems.

As far as the workforce involved in the system is concerned, ITS makes it easier for them to collect and analyze data that ensures efficient delivery and performance. The data also gives them a sense of reassurance that the mechanisms are well suited and can be adapted to any major unforeseen changes that may occur in the future. Since ITS amplifies the operators' abilities to dynamically gauge and respond to traffic incidents and other occurrences in real-time, it carries several benefits.

Globally, ITS represents a significant transition from traditional transport by adopting technology that enables connected mobility. Keeping such benefits in mind, Bosch has developed an Intelligent Transport Management System (iTams) – an app that is designed specifically for fleet operators and Original Equipment Manufacturers (OEMs) to manage their vehicles efficiently. This unified app works across various vehicle platforms such as commercial vehicles, passenger cars, two-wheelers and more. It also provides integrated data analytics to enable higher efficiency and offer deeper insights into vehicle performance, diagnostics, and driving behavior. For example, autonomous cars can aid motorists by directing them towards better alternative routes, which can, in turn, reduce traffic congestion in the area, save time and cut costs. By doing so, another benefit is that parking spaces can be reclaimed. Technically speaking, the comparatively compact and environmentally friendly power trains in autonomous cars also provide an added benefit to their myriad advantages.

Since connected services and technologies have already begun and are going to continue to define our lives in the future, ITS will play a vital role to define how we will run our daily lives. Needless to say, this scenario will be far more advanced and efficient than the one in which we do things today. 

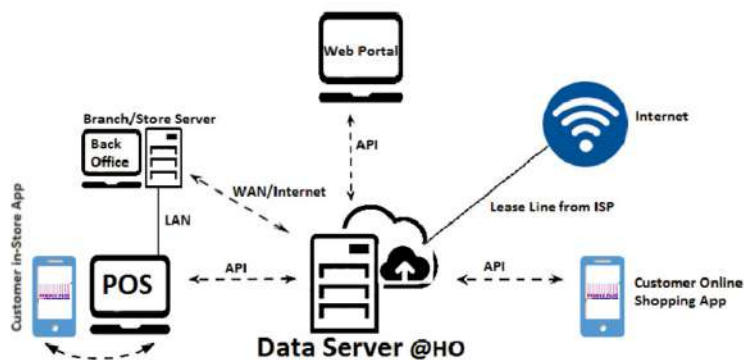


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iParko: Transforming Urban Infrastructures with Advanced Smart Parking Applications

The Global Smart Parking Market is set to gain immense momentum, with Technavio predicting the market to grow at a CAGR of over 18 percent and reach USD 26.2 billion by 2021. The growing adoption of intelligent transportation systems, increased usage of smart parking sensors, and the deployment of analytics on telematics to reduce traffic congestion, are some of the key factors contributing to this growth. Moreover, with functionalities for traffic management, vehicle diagnostics, and video surveillance, Smart Parking can facilitate smart management of transportation systems through automating and decreasing the time invested in finding optimal parking spots, while also contributing to increased safety, decreased management costs and reduced pollution. As a result, Smart Parking can be immensely beneficial in optimizing a country's infrastructure, particularly in India where the country's high population density levels and increased buying capacity, has led to major parking

problems across its metropolitan cities. Stepping forward to address these challenges, Chennai headquartered iParko leverages the benefits of Smart Parking to equip the country with advanced parking optimization applications.

Founded by Shreekesh Pillai, an MBA graduate and budding entrepreneur, and Pushpendra Tiwari, an IT graduate, iParko was established with a vision to transform the urban infrastructure of the country through



Pushpendra Tiwari,
SDE / Co-Founder

“We believe in growing together and thus work to support the growth of both the parking industry and the consumers, which in turn will indirectly grow the iParko app”

With an objective to optimize and augment the Parking industry, the iParko app works to hard code the parking information and equips users with details of the parking spot. The application accomplishes this with the help of its dashboard which communicates with parking owners in real-time and facilitates them with sales related information, thereby helping them increase their revenue. “We believe in growing together and thus work to support the growth of both the parking industry and the consumers, which in turn will indirectly grow the iParko app,” affirms Shreekesh. Furthermore, the app has been designed to also cater to Off Street Parking, and is focused on creating and providing more off-street parking spaces.

Despite a recent beginning, the iParko app has acquired an expansive clientele, which in turn has helped the company carve a niche for itself in this segment. Leveraging this expertise, the company has devised an elaborate blueprint for the future that involves carrying out research on IoT-based products and bringing smarter parking applications to ameliorate the infrastructure of smart cities, in the upcoming future. **CR**



Shreekesh Pillai,
Co-founder & Business Head

TURNING CONSTANT CHANGE INTO BUSINESS OPPORTUNITY: THE ROLE OF IT IN THE MODERN DAY SUPPLY CHAIN

By Neil Hampshire, SVP & CIO, ModusLink [NASDAQ:MLNK]

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hen Ancient Greek philosopher Heraclitus now-famously noted that “change is the only constant in life,” he couldn’t have possibly known how much that statement would resonate thousands of

years later.

Some may argue that we’re in a greater stage of change than ever before: consumerism, globalization and technology are driving dramatic shifts in our world every day. The global population has grown from one billion people to seven billion in just 200 years, and there has been more information generated in the last 10 years than was accumulated in the entirety of human history before that. The rise of the IoT will only increase the rate at which information and data is created, with Gartner predicting 27 billion IoT devices in use around the world by 2020.

This constant state of change is having a direct influence on the manufacturing and logistics industries—requiring a new supply chain that not only responds to, but is optimized for, a smarter data-driven world. As technologists, it’s our job to help successfully usher in this change by turning it into business opportunity.

Embrace the End-To-End Value Chain

Today’s supply chain is much different than it was just 10 years ago. The traditional view of the supply chain that encompassed common 3PL functions like procurement, manufacturing, distribution and delivery overlooks wide swaths that are present in what organizations need today. For example, managing access to and monetizing software on a piece of hardware long after it’s been put into customers’ hands or handling the influx of returns that now happen as more consumers shop online are two common needs today that barely existed just 15 years ago.



While digital and physical supply chain services have traditionally been separate, a number of technology advancements in the IoT, big data and robotics sectors, among others, are driving innovations that are eradicating the digital/physical border. When you embrace the digital and physical supply chain as a single entity, it transforms into a true value chain. The two modes of supply chain can interact with one another to form a seamless and communicative process where employees and machines work to accomplish the same goals, and data is gathered throughout both modes and then analyzed and applied to make supply chains—and most importantly, the business—more efficient moving forward.



Manage Transformation

Evolving from a disparate supply chain to a fully functioning, digital and physical value chain does require work—and in many organizations, it will demand sizable transformation. Fortunately, executives appear ready for the change. Forbes contributor Gil Press suggests that as early as next year, 67 percent of CEOs of Global 2000 enterprises will have digital transformation at the center of their corporate strategy.

This will mean that as IT leadership, you will have to have a seat at the table and will play a critical role in leading the future of the company. It will be your responsibility to cut through the clutter of technology buzzwords and instead focus on what all of the innovations really mean for the business.

For example, understanding that cloud provides considerable flexibility and a more scalable environment is hugely important for those of us in IT, but the business team will just want to know how it supports broader objectives.

Managing digital transformation will require an in-depth understanding of those business objectives, a thoughtful approach to identifying how emerging technologies can truly help at reaching them, and ultimately, a tactical plan to execute. Consider, for example:

- **IoT**—Embracing the IoT for tasks such as machine-driven replenishment and service and performance monitoring.
- **Automation**—Integrating bots and corresponding apps into operational workflows, taking care of everything from order entry to line-side replenishment.
- **Robotics**—Using smaller, more nimble machines to perform multiple tasks and work alongside humans, aiding in productivity.
- **Artificial Intelligence**—Applying it in the way you ship and deliver products, predicting demand and device failures as well as learning what customers want and need.

- **Big Data**—Working to capture their existing data and make it actionable and productive across operations.

At ModusLink, we are constantly assessing these and other new technology solutions and helping our clients determine where they can leverage them to bridge gaps that exist in their supply chains, whether it is deploying a new ecommerce platform to help a startup quickly and easily expand into a new region or country; automating sorting in a distribution facility so packages arrive in customers' hands faster; or helping a multinational B2B tech company gain greater control over its millions of software licenses currently in market.

Cast Out One-off Solutions

It can be tempting to look for quick fixes to supply chain challenges—and there is no shortage of technologies and vendors that claim to solve problems in such a manner. Building a solution internally often seems like a quick fix, but over total lifetime the cost to manage, develop and support it often massively outweighs the lower sticker price. With so much change on the horizon, it is critical to take a long-term view of any technology strategy. This is because no one technology will win, but instead the most cost efficient, successful supply chains will deploy a complex web of interconnected solutions.

For some companies, this could be as innovative as considering how, for example, their entire customer experience will be transformed as IoT connectivity can enable smoother order replenishment and lessen service calls. For others, and in the case of many of our clients, it could be as practical as leveraging a single global instance of SAP surrounded by best-of-breed systems to run highly efficient, operational processes that significantly reduce costs.

The many technology changes impacting our industry don't come without certain challenges. But, as technologists who understand it all best, we're in a unique position to see it for what it really presents: opportunity. **CR**