

26 Mighty move
Moving the NASA Shuttle carrier to its final resting place.



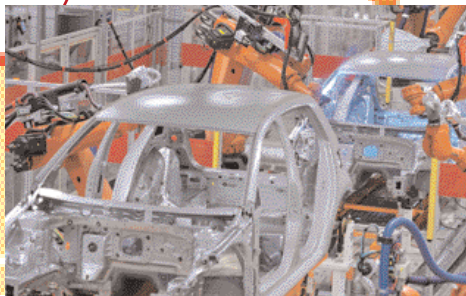
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Agility services major shows in Shanghai and Beijing.



Tradelanes

In this issue of *Tradelanes*, we focus on the auto industry, a sector at the forefront of advanced supply chain practices. For a look at how shifting automotive manufacturing patterns are creating new challenges *Tradelanes* went to the experts.

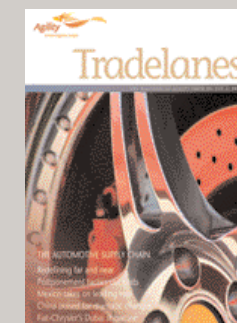
Christopher Ludwig, editor of *Automotive Logistics* magazine, discusses how the supply chain is simultaneously converging and becoming more dispersed. He speculates that manufacturing is moving towards two super regions, one centered in China, the other straddling the United States and Mexico.

Thomas Blank, CEO of Agility GIL Central Europe, draws on his long experience of working with vehicle and component manufacturers to discuss how lean principles have shaped requirements in the field of logistics and driven the demand for visibility in the supply chain.

We also look at Agility operations in Dubai and Gothenburg, where Agility has built facilities customized for auto industry clients that include Fiat Chrysler and major component suppliers to Volvo.

On the special events front, we report on a number of auto-related events serviced by Agility's specialty division, Fairs & Events. These span the globe, from motor sports events in the UK and Abu Dhabi, to China's major auto showcases.

agility.com



*Automotive supply chains:
constant challenges to
increase efficiency and
shave costs.*

Distance is Relative

WHAT'S FAR TO YOU IS NEAR TO ME

3

As someone who spends a lot of time travelling to major automotive markets and speaking with logistics managers, I am often asked about global trends and even to make predictions about automotive logistics. That's natural since *Automotive Logistics* has some claim to being a publication of record in this niche sector. But it's equally humbling, as we are neither industry practitioners nor futurists. I am usually more comfortable asking the questions than answering them.



Christopher Ludwig
Editor, *Automotive Logistics*

In truth, comparing the strategies of manufacturers in New Delhi with those in Beijing, Moscow or Detroit is as confusing as it is revealing. While there are some nearly universal issues (the push for lower inventories, the importance of supply visibility, a shortage of qualified drivers and managers), many other hot topics take on different meanings when you cross

boundaries, or when you move upstream or downstream. A prime example is for "near-shoring" localization, which is being discussed at length from the US to the UK, Russia and China. If you look carefully at what is happening globally, the supply chain is hardly returning to some mid-20th century vertical integration; rather, our reporting has found that it is simultaneously converging and becoming more dispersed. ►





Dubai is homebase for the Fiat Chrysler MOPAR center, built and run by Agility and serving 40 countries in ME, Africa and CIS region. See page 12

Cutting logistics costs

Firstly, transport costs, currency fluctuations and risks of line stoppages have long encouraged local supply for car plants. The notion of a “global” supply chain has always been somewhat exaggerated; by weight, major factories bring most supplies from within a few hundred kilometers. But a degree of low-cost country sourcing, vehicle platforms shared across regions, and a host of historic supplier decisions have in recent years led to longer average distances for inbound deliveries to plants.

As a result, some carmakers are tightening the screws on their supply chains, particularly in North America and Europe. General Motors has a goal of cutting \$1 billion in logistics costs over four years, and bringing tier suppliers closer to its plants is a stated objective. Nissan, meanwhile, intends to take out 5% of logistics costs year-on-year for the next three years; it has not only encouraged suppliers to locate nearby, but has brought some inside its plants, including in Tennessee; Aguascalientes, Mexico; and Sunderland in the UK.

Distance is relative

However, without considering the total supply chain, shifting the location of final component assembly can be a zero sum game. More of the value and technology of a car comes from tier suppliers, and the top companies are not always next door to car plants. They have global supply chains of their own. A German diesel system manufacturer with a plant in China will localize production of most components but may still import certain pumps and applications from Germany. Tier two and tier three *Mittelstand* suppliers in Germany, or clusters of component makers in the Shanghai region, have strong economies of scale in both production and advanced engineering. Uprooting or extending these companies too quickly could lead to costly part changes or quality issues that exceed logistics savings.

Of course, many carmakers have learned the hard way that the inverse can also be true, where the costs of shipping parts (especially following changes) from afar can be much higher than any initial labor or engineering savings. In either case, neither proximity nor cheap labor can make up for botched quality.

There is therefore a hyper-fine balance to be struck between what supplies should be localized or doubled-tooled, and those that can be sourced from far away. Analytics can play a role in helping to determine this, particularly when considering a region’s risks and development potential. Some metal stampings might be



NISSAN INFINITI

In 2014, Nissan and Daimler opened the first Infiniti engine plant outside Japan in Tennessee; however, the plant will serve both Mercedes-Benz in Alabama as well as Infiniti in Japan, and seems destined to supply Mexican production as well.

Distance is relative



obvious parts to bring closer, but there may not be an algorithm to determine the pace at which an OEM should localize all of its powertrain or safety technology. And even when it does, supply is likely to be more than local. In June, Nissan and Daimler opened the first Infiniti engine plant outside Japan in Tennessee; however, the plant will serve both Mercedes-Benz in Alabama as well as Infiniti in Japan, and eventually it seems likely to supply Mexican production as well.

What’s far to you is near to me

The Nissan example shows how the “near-sourcing/re-shoring” topic can also get lost in translation without a full understanding of the infrastructure and logistics competence of a region. The definitions of “far” and “near” differ from one market to another.

Supply chains wound too closely can be more inefficient than those spread out. While it is clearly attractive for plants to be located in regional clusters surrounded by suppliers, in countries with poor infrastructure and underdeveloped logistics services, poor communication between clusters can hold back development and scale. A supplier based in Kaluga, south of Moscow, might serve OEMs locally but

would struggle to supply others 400km away in Nizhniy Novgorod, a distance that would be covered across consolidation or “milkrun” services if they were in the US and western Europe. The suppliers in each cluster therefore risk fragmentation and over dependence on fewer ▶



Agility in Gothenburg has a key role in providing logistics services to Sweden’s vehicle and component manufacturers. See page 19



Distance is relative

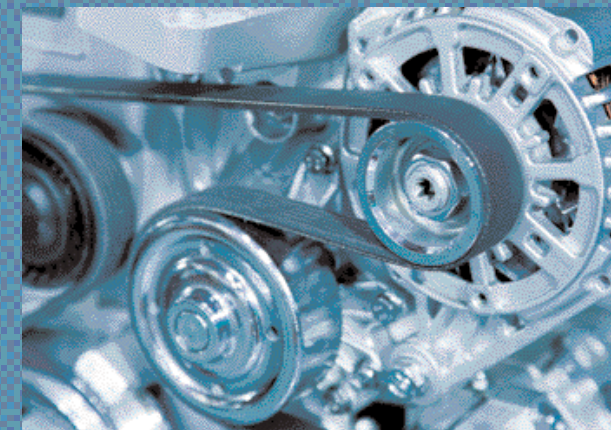
Distance is relative



Special events for the auto and motor racing industries are the domain of Agility Fairs & Events. See page 23

DID YOU KNOW?

The average car is made up of about 1,800 separate parts. This includes large components, such as the engine, which contain thousands of individual pieces. When every individual piece is counted down to the smallest screw, a single car contains about 30,000 items.



customers, while carmakers lose the flexibility and competition of alternative suppliers.

The opposite side of the spectrum might well be cross-border trade between the US and Mexico, where NAFTA integration and strong intermodal logistics and consolidation services allow manufacturers to increasingly make use of the best suppliers on either side of the border. What does “near-sourcing” mean when in some cases a supply chain is integrated across 3,000 km, from the American Midwest to the *Bajío* in central Mexico? And with the number of OEMs growing with plants or plans to build in both the southeast US and Mexico, parts exchanges are likely to increase across these regions as well.

The integration across the European Union has long been an example of this potential. In the future, if infrastructure and logistics services were to develop, deeper trade ties in Southeast Asia should launch similar supply chains, including across Thailand, Indonesia and Malaysia.

I am not denying the trend or the rationale of OEMs in simplifying what have, in some cases, become unnecessarily complex logistics flows. But being global or local, near or far is relative these days. Car platforms are usually global, even if built locally. When capacity is full in one location, supply will be taken from another, whether it is between Georgia and Alabama or Rayong and Sao Paulo. That is a flexibility few manufacturers will give up, no matter where it comes from.

For more information about *Automotive Logistics* magazine go to:
www.automotivelogisticsmagazine.com

Trend Spotting

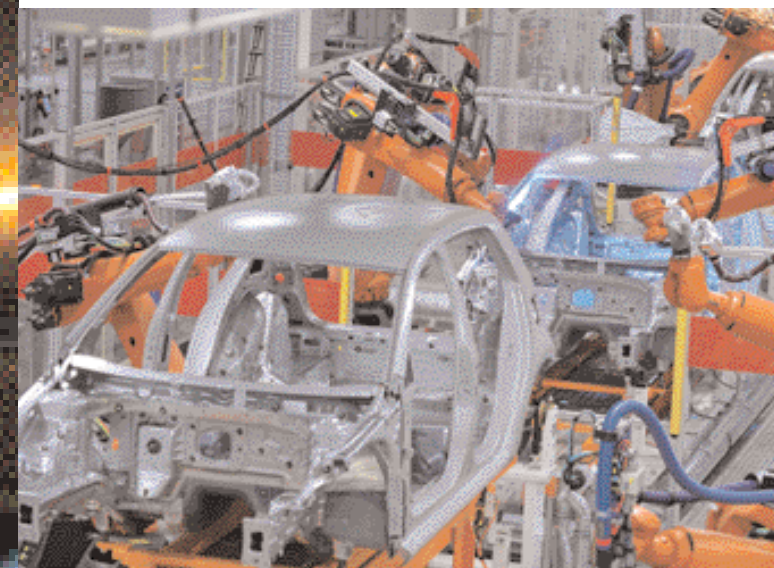
Where, when, how

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Tradelanes asked *Automotive Logistics'* Christopher Ludwig to identify trends and developments worth watching.

Near-shoring/re-shoring

There are many factors at work here, notably strategies to avoid currency fluctuations, reduce supply chain risk and the cost of engineering changes. Some OEMs – including General Motors and Nissan – also have aggressive targets to reduce logistics costs directly by bringing suppliers closer to assembly plants. At the same time, the move towards consolidated platforms and modular platforms, along with global vehicle products and launches, means the supply chain has to be as flexible as possible to respond to global needs. In some cases, there could be contradictions to these approaches, including for tier suppliers who could lose economies of scale by fragmenting their operations.



Changing focus for emerging markets

Some of the BRICs or other notable emerging markets are facing risks or instability. We've seen carmakers delaying or cancelling investments in places including Russia & CIS, India, Thailand, Turkey, and the Middle East. Brazil also looks unsteady. The major focus now seems to be increasingly on China and, for the North American market, plant investments in Mexico. This will reshape the geographies of flows to some extent, as well as the direction of investments by suppliers. With Europe and Japan looking stagnant or with modest rises at best, the industry could move ►

**DID YOU KNOW?**

There are several projects to develop a driverless car, but perhaps the most promising is that being championed by Google. After logging over 300,000 miles on active roads using vehicles retrofitted to autopilot themselves, there have so far only been two incidents: one where the vehicle was being manually controlled by a human, and another where the vehicle was struck by another motorist.

increasingly towards two “super regions.” That could have implications for international flows (container, air and ro-ro shipping) as well as logistics acquisitions and investment. But there are risks, too, notably a slowdown in China or saturation in the US market.

Automated driving

There is a lot of hype around the technology and the companies getting involved. I’ve spoken to some experts who suggest that automated truck driving (or a strongly automated driver-assist technology) could come to the market even before advances in passenger cars are widely available. Owing especially to complex regulatory hurdles, this might begin only for “closed-access roads,” including private roads in and around plants or ports. But in the long run, when such trucks reach the highways, the potential could be huge, not least considering the global shortage of drivers. That said, there are many questions, including how to deal with loading/unloading and final handoffs.

The future of Chinese automotive logistics

The growing market share and influence of western OEMs

has implications for logistics. The dominance of western brands over the Chinese in the world’s largest market has not always translated into benefits for the global 3PLs handling their domestic logistics because Chinese JV partners often have in-house logistics operations or a stronger (and much more price-focused) influence on domestic logistics. There are signs that these in-house monopolies are eroding, however, not least because such providers cannot keep up with the growth using their own assets or capacity alone,

Some experts suggest that automated truck driving could come to the market even before advances in passenger cars are widely available

and so are partnering with or subcontracting more to private companies. Also, in the future, should China’s National Reform and Development Commission allow OEMs to take financial control and majority stakes in their China JVs, we could see dramatic changes (although logistics management is unlikely to be a primary focus).

While Chinese carmakers have made limited headway in western markets, we are starting to see signs of Chinese LSPs moving more international automotive freight to China. There are examples of Chinese logistics companies and freight forwarders effectively taking control of some trade lanes for inbound parts and kits from Europe to China among the VW Group, BMW and Chery JLR, for example.

Logistics skills and temp/permanent labor

Everywhere I go I hear about a lack of qualified logistics professionals, both in operational and management roles. While some of this is down to demographics, particularly for driver shortages, there may be some overlap here with a significant rise in the use of temporary labor across the supply chain in both developing and developed markets. But in some regions, that cycle of labor outsourcing may now start to ebb or at least slow. I have heard of companies from Mexico to the US, UK and China that are looking at tipping the balance back towards permanent employees for some logistics operations, although the share of temporary is likely to remain high.



● Car sales in China are set to exceed 38,000 a day. That means someone buys a new car in China every 2.3 seconds! There are roughly 170 auto producers in China. The Chinese government aims to consolidate the many producers to create up to five globally competitive producers.

● Forbes magazine predicts that America’s car capital will soon be Mexico. With \$19 billion in new investment, production has doubled in the past five years to an estimated 3.2 million vehicles in 2014. More than half Mexico’s car output goes to the United States.



The major focus now seems to be increasingly on China and, for the North American market, plant investments in Mexico

MOPAR Dubai

FROM NECESSITY TO SHOWCASE

*Dr. Igor Egorov,
director of Supply Chain
Management for Fiat
Chrysler Middle East*



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Just five years ago, with its survival in doubt, Chrysler, maker of Chrysler, Jeep, Dodge, RAM and SRT brands, sought a loan from the US government and protection from bankruptcy courts, then formed an alliance with Italy's Fiat, which ultimately assumed control of the automaker.

Before Fiat stepped in, Chrysler was owned by Germany's Daimler, which ran Chrysler's international spare parts operation. With Daimler out and Fiat in, the need for a new network of parts distribution centers was urgent.

Chrysler turned to Agility to establish a warehouse and systems to serve its dealer-distributors in nearly 40 countries in the Middle East, Africa and the CIS region. The MOPAR Dubai distribution center, owned and operated by Agility, opened in November 2011 and was serving the entire Middle East region by the following January. Today, Fiat Chrysler considers MOPAR Dubai a showcase.



**MOPAR (MOTOR
PARTS) is the
customer care end
of the Fiat Chrysler
organization.**

"It was during the global recession, and we had a very short time frame to build the entire spare parts logistics operation from scratch. We had to close old warehouses and open new ones around the world," says Dr. Igor Egorov, director of Supply Chain Management for Fiat Chrysler Middle East.

Today, the operation is a success. "We've never experienced growth like we've seen over the past three years. We were building something from nothing, and at the same time we've had to cope with rapid growth. We've been fortunate to find the right partner and to grow together," Egorov says.

Chrysler used "MOTOR" and "PARTS" to create the MOPAR ►



'HOME BASE' IS MOPAR IN DUBAI

Fiat Chrysler's 18,000 square meter Dubai warehouse, owned and operated by Agility, was configured based on Chrysler MOPAR's unique "home base" methodology.

Shelving, racking and cantilevers were installed to meet MOPAR's requirements. Parts storage was laid out according to MOPAR's specifications. The Warehouse Management System was developed to work with MOPAR's system to generate real-time updates on movement of stock.

Agility and Fiat Chrysler teams work together on site. Most current stock is US manufactured, so Agility manages pickup at the Jebel Ali Free Zone or at Dubai International Airport and handles customs clearance and haulage to the temperature-controlled warehouse.

The warehouse handles 35,000 SKUs and serves the company's authorized national dealer-distributors in the Middle East, Africa and CIS countries, including major Chrysler markets such as Saudi Arabia, the United Arab Emirates, Kuwait and Egypt. Agility is responsible for receiving, storing, and inventory management. It prepares outbound orders and handles freight management, typically shipping by road to GCC countries, by air to Africa and by ocean to other destinations.

Fueled by MOPAR's growth in the MEA region, today's operation occupies three times more space than originally envisioned. A successful wall-to-wall audit in 2013 "validated the success, dedication and professionalism of the MOPAR Dubai operation," Egorov says.

name, well known to "gear-heads" and automotive enthusiasts in the United States for 75 years. These days, the Dubai warehouse is expanding beyond its strong GCC

MOPAR Dubai



presence to serve a new market nearly every two weeks.

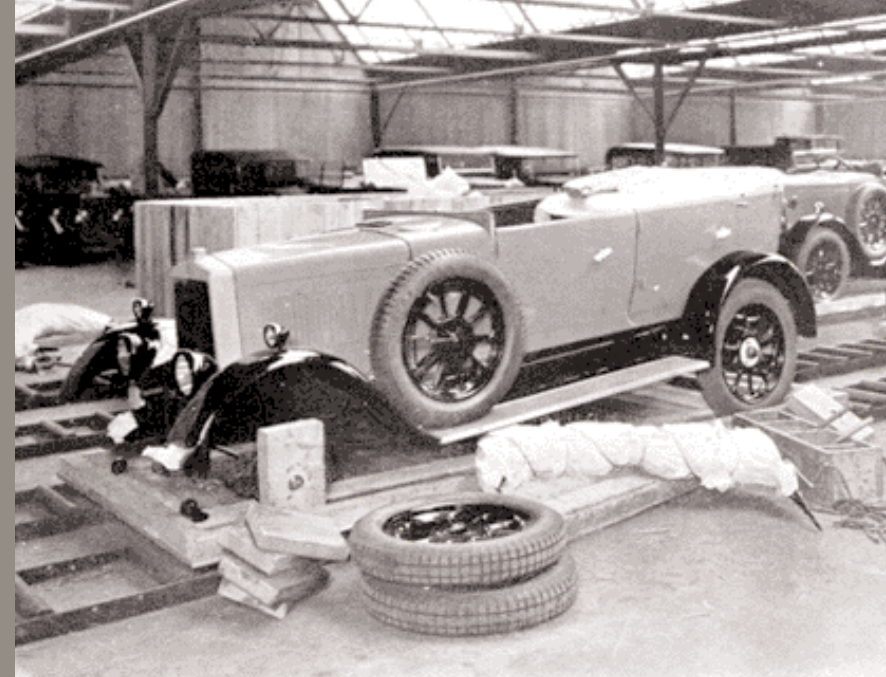
"Africa and the CIS require special attention because there are multiple customs requirements from the governments," Egorov says. "It's a moving target because the regulations are getting more complicated."

There are more challenges ahead. Fiat wants to expand in the Middle East and will need a spare parts operation to support Fiat and Alfa Romeo sales in the region. In addition, Fiat Chrysler has announced plans to transform the Jeep Renegade, made in Italy, into its first truly global product and using European suppliers for components.

Adding Fiat parts to the Dubai facility could prove especially difficult because MOPAR relies on a unique "home base" methodology for warehouse layout and workflow. Fiat uses a different method.

Egorov says he is confident MOPAR, which will now handle after-sales services for all corporate brands, can manage the challenge.

"This only works when the customer and supplier work really well as a team. It's not just, 'Here's my paperwork, I'll be back to see what you've done.' The entire logistics center, the racks and equipment here were built according to the plan we put together with Agility. And improvements happen every day."



EARLY INNOVATOR

Behind the Agility name is a legacy of pioneering work in automotive logistics dating to the early 20th century.

LEP Transport, one of Agility's legacy companies in the UK, was a key player in logistics at the dawn of the automotive age. In the 1920s, LEP handled roughly 75% of all UK vehicle imports and more than half UK vehicle exports. LEP was a considerable innovator, creating methods for packing vehicles in kits

for quick assembly, known in the industry as CKDs or Completely Knocked Down vehicles.

Among the pre-WW1 models handled by LEP was General Motor's Buick two-seater. These were imported in wooden crates, the assembled chassis and running gear in one box, and ancillary parts in another. Basic assembly was done by LEP at the landing point and the cars – minus body shell – were either driven in convoy or barged up the Grand Union canal to LEP's facility in north London. There, the bodies were completed, using panels built in LEP's own workshops, made by outside coachbuilders, or sometimes imported.

By 1923, an eight-acre site on the River Thames was dedicated to LEP's automotive business providing a bonded warehouse, knock-down packing, an assembly workshop and storage for more than 1,000 vehicles.



LEP was a considerable innovator, creating methods for packing vehicles in kits for quick assembly



LEP's automotive logistics business grew to encompass trucks, tractors and other agricultural machinery with products from among others, General Motors, Diamond T, Studebaker and later, Dodge.

The automotive market continues to be an important vertical market focus for Agility in the UK.

Q&A



Thomas Blank
is CEO of Agility GIL
Central Europe

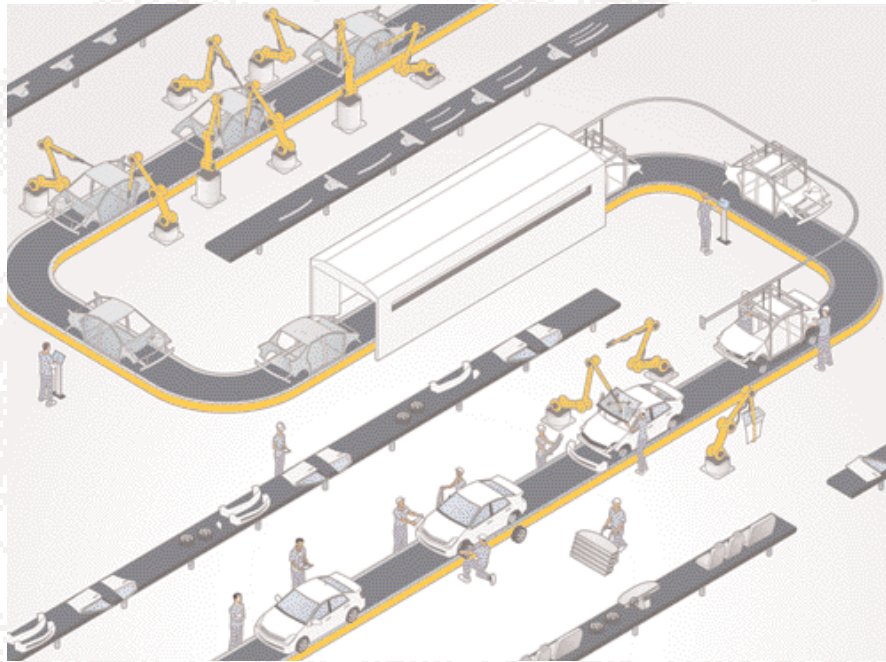
Thomas Blank is CEO of Agility GIL Area Central-Europe. He has worked with auto manufacturers and suppliers throughout his career. He recently spoke to *Tradelanes* about the industry.

What's different about automotive logistics?

With the complexity, I would compare automotive with pharmaceuticals, but automotive logistics are much more driven by need to cut costs. Vehicle makers applied lean principals much earlier than other industries in their supply chains. You need on-time deliveries. Delays cause line shutdowns and that might send thousands of workers home for the day and create a lot of damage. A line shutdown costs \$25,000 to \$50,000 an hour or more. The complexity of building a car is tremendous, much more so than a PC, for instance. We could build a PC in our garage. But think about how much coordination you need to get all the first, second, and third-tier automotive suppliers lined up with their products sequenced properly, not exceeding any buffer stocks or having the wrong parts at the wrong place.

Talk about the complexity for a moment.

It used to be that carmakers made red cars one week, blue the next week. Now every car that comes off the line and out of the paint shop is a different color and is customized in any number of other ways. Some parts are going direct to the OEM's assembly plant. Others from second-tier and third-tier



suppliers might go to the first-tier supplier assembling them in, say, a dashboard. Some OEMs manage their in-house logistics within the plant or at a supplier park, others rely on 3PL companies. Finished vehicles can go by road, rail barge, even air to dealers, and you can have last minute things (final seating configurations, for instance), added after a vehicle arrives in port. At the end of that chain, you can have another 3PL taking delivery and doing pre-delivery inspections and small repairs. Then you've got spare parts streaming out to distribution centers, dealerships and aftermarket wholesalers and retailers. Last, there's even a stream of branded merchandise – key chains, apparel, coffee mugs – going to dealers.

What's going on in Area Central-Europe?

One of our core businesses is outbound consolidation services for several truck makers and their suppliers. We receive parts into our Stuttgart gateway from 300 to 400 suppliers, consolidate them and build special containers. The containers combine parts from different suppliers in the sequence that is required for final assembly so the OEMs don't need to unload everything for one part. The frequency of shipments from different suppliers varies. We maintain a customer-supplier database and make sure the right parts are arriving at the right times for consolidation.

Vehicle makers want predictability. If you tell somebody, transit time is

Q&A

five days, they want to know in how many cases can you guarantee delivery in five days? And if we give you six days, how much can you improve your performance and predictability? They would build up buffer stocks or extend the allowed transit time if you could guarantee shipments 99.99% at the destination at the right time. It works both ways. If you deliver consistently too early, this means they're building up stocks they don't want and can't handle.

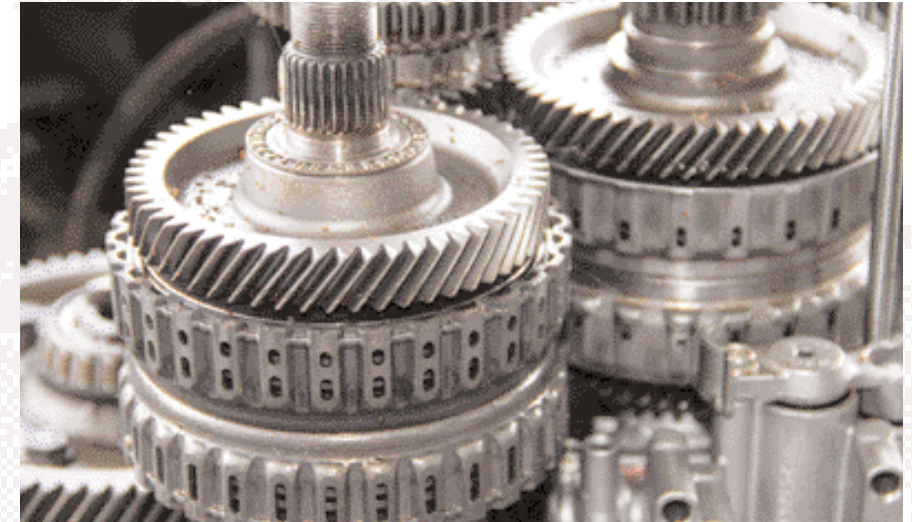
Visibility is a huge challenge in automotive, isn't it?

The biggest issue for customers is to be able to filter for the data they need. They can get any data they want – six months of forecasts for thousands of suppliers and thousands of part numbers. And they can break down orders placed over a period of time, which gives you a feel for the complexity of what they have to manage.

A lot of times they don't want to see what's going right, they want to see what's going wrong. If you look at the problems they have, let's say they've got 500 suppliers, they may not be able to get the right packaging from their suppliers so they can't double-stack at the consolidation hub, which is something that offers real efficiency and savings advantages.

Are OEMs starting to use air freight strategically, as opposed to using it when something goes wrong?

I don't know if anybody will admit to budgeting for air freight. One industry executive told me, "We don't budget for air freight. We believe our processes should be robust enough to not have air freight." Today a lot of things are being planned by air freight, but automotive companies will always try



to avoid it because of its huge cost, particularly on things that aren't high-end parts or a great portion of the value. If you have to fly interior door coverings just because you forgot to order them, that's a problem.

Last year one manufacturer we work with had a lot of air freight every day for most of last year, a lot of it. There were production quality problems, and they didn't order enough of a certain stock. Containers were held up in customs at the destination port, and they had some faulty fuel-injection pumps. So several delivered containers had to be sidelined, and they had to fly in parts.

What's going on in emerging markets?

You have OEMs building plants in maturing markets. There are 13 to 15 companies producing in Brazil for local and Latin markets, for instance. Other markets are too small or immature. So you are often supplying CKDs –

Completely Knocked Down cars that come in a kit. That's typical where there are high duties on foreign labor content on assembled cars. So you load containers with the CKD kits, which are assembled at destination so the local content percentage goes up and duties don't price the vehicle out of the market.

Those markets shift. Thailand used to be a CKD market. It had relatively low labor costs but good quality of labor.

Delays cause line shutdowns and that might send thousands of workers home for the day and create a lot of damage

It became a good environment for building factories and getting support from the government. You could re-export from Thailand. Over time CKD production from Nissan, Toyota and Honda became full-fledged production. It made more sense to ship parts there for manufacturing or to do parts manufacturing there, than to do kits.

Swedish hub

GOTHENBURG DRIVES EXCELLENCE

Suppliers look
to Agility for
innovation and
service

19

The manufacturing hub of Gothenburg, the port city on Sweden's southwest coast, is where vehicle makers such as Volvo (trucks and cars) and their tier 1 suppliers use many of the most advanced practices in automotive logistics, including various "postponement" techniques, to shave cost.

Agility's Gothenburg logistics center is at the heart of those efforts. The center's role is to work with suppliers and manufacturers (Original Equipment Manufacturers, or OEMs) to synchronize movements of parts, maximizing efficiency and minimizing risk to all the parties in the supply chain. In recent years, OEMs have moved aggressively to push off – or postpone – supply chain steps that add to their costs.



Today, they:

- **Hold less inventory.** That means they need less space for storage and fewer staff to manage parts and in-house deliveries.
- **Purchase parts at the last possible moment.** That means less working capital tied up in component stocks and less risk that they will be holding obsolete parts if sales fall, models change or assembly shifts to another location.
- **Get key suppliers to locate facilities near assembly plants.** "Milkruns" – the industry term for daily deliveries from nearby supplier warehouses – dramatically cut time and cost.
- **Arrange parts deliveries on a just-in-time and sequence basis.** By carefully synchronizing parts shipments, they operate at maximum efficiency, regardless of their level of production utilization at any given moment. ►



In Gothenburg, Agility manages a bonded warehouse that offers benefits to the OEMs and to their suppliers shipping components from China, India and other distant emerging markets, as well as mature markets outside the EU such as Japan and the United States.

At the warehouse, Agility is able to store parts shipped from non-European Union countries without clearing them through customs or arranging for customs duties to be paid until the components are ordered for delivery by the manufacturer. Goods that are phased out or obsolete can be

scrapped without ever incurring duties; goods re-exported out of the EU need never go through the customs clearance process or face duties. Old restrictions on bonded warehouses requiring strict segregation of cleared and bonded goods have been lifted, so the two can be stored on pallets next to one another with only a scan of labels offering a clue as to which is which. Agility's Warehouse Management System keeps track of the goods and automatically initiates the customs process if bonded goods are to be delivered from the warehouse.

Agility's Gothenburg facilities have provided critical visibility to automotive industry customers.

As OEMs' have procured more parts from far-off emerging markets, the risk of supply chain disruption has grown. The postponement techniques they use push most of that risk onto their suppliers. Agility has developed sophisticated tools to give suppliers better visibility and improved ability to forecast.

Johan Lindahl, product director for Contract Logistics at Agility GIL in Gothenburg, is an expert in lean production and efficiency. He says Agility's tools "help suppliers avoid

DID YOU KNOW?

Henry Ford's apocryphal remark "any color as long as it's black" was the result of bottlenecks in production caused by the time it took for paint to dry. Only 'Japan Black' as it was known, would dry fast enough to maintain Ford's desired output of one car every fifteen minutes. Black was the only factory color available between 1914 and 1926, when new fast-drying paint was developed.



the 'bullwhip effect' by providing early warnings of shortages or accumulation of available stock. Transparency at every step is key to driving a cost-efficient supply chain."

Suppliers have looked to Agility Gothenburg for innovation and service that gives them added flexibility.

Agility has developed sophisticated tools to give suppliers better visibility and improved ability to forecast

In one instance, Agility Gothenburg assembled exhaust manifolds made from parts shipped from China. If the manifolds had been assembled in China, transportation costs would have been double because of their awkward, hard-to-pack dimensions.

Agility also used an industrial washing machine to clean powertrain parts shipped from India. The parts were coated

in anti-corrosion grease, which is necessary for shipping but must be removed before assembly.

With equipment to update software and maps in GPS, Agility makes sure that parts being delivered to tier 1 suppliers in Europe are the latest versions. Postponing delivery increases product quality and reduces manufacturing costs.

Agility also has helped OEMs improve production quality and reduce the space they need for storage by implementing sequence delivery that uses racks to mount parts and cluster them in the order they are used in assembly.

"They will be on racks in the same sequence as production so they are synced up. We already put the chassis number on the part when the rack leaves our warehouse. So instead of 10 different part numbers in different quantities on different racks, they get what they need in the quantity and order they need it all at once," Lindahl says. "Long-term storage is really bad business in the auto sector. These guys need quick-moving, high-turn stocks. The suppliers include the logistics cost in the piece price so helping them to turn the stocks rapidly will improve their profitability, and ours, since we are not making money on storage but on activities. Win-win."



DID YOU KNOW?

The motor car has the unique distinction of currently being the most recycled product in the world. Up to 95% of retired automobiles are recycled. Modern technology has made it possible to recycle not only steel and aluminum but everything from the rubber of floor mats to the plastic of instrument panels.

Auto events

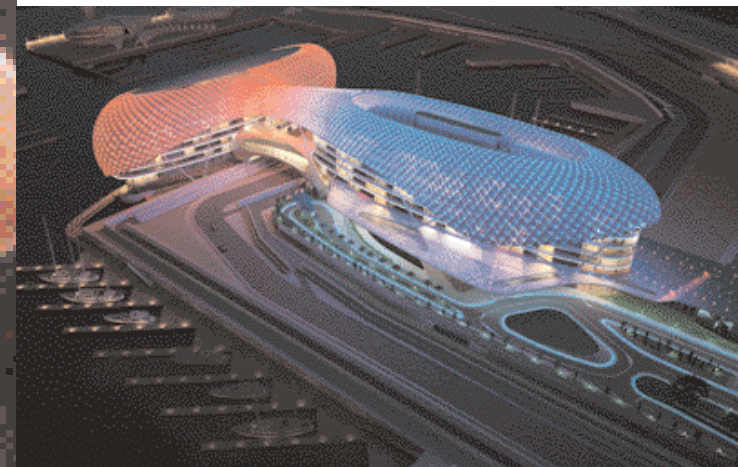
RACES AND MOTOR SHOWS

23

Agility Fairs & Events manages logistics for some of the biggest motor sports events and car shows around the world. Short notice periods, tight deadlines and special handling requirements put a premium on meticulous planning.

Abu Dhabi F1 Grand Prix

Agility is the freight-handling agent for the Etihad Airways Formula One Abu Dhabi Grand Prix and has been since the inception of the race in 2009. The Agility team manages inbound and outbound customs clearance, airside loading, local transportation, coordination with relevant authorities and on-site handling of all the race cars, official and medical cars, ancillary equipment, and hospitality units. It's an intensive 24/7 task driven by the deadlines of moving from one race venue to another.



Auto Shows in China

Auto China in Beijing and Auto Shanghai, China's two largest auto events, run on alternate years. For the past five years, Agility's Fairs & Events operations in the UK and China have supplied turnkey logistics for Ford, Jaguar and Land Rover. Recently this has included Lincoln, and also services to Porsche and Mercedes-Benz.

Agility provides sea, air and road freight, full onsite operations, storage, customs brokerage, movement of cars and equipment, and purchase of containers for outdoor displays at these shows when required.

Most shipments originate from the EU and United States but they can also come from India, Australia, Taiwan, Thailand and other worldwide locations. On average, Agility moves 110 tons of cargo for each Chinese auto show. ▶



Goodwood

The Goodwood Festival of Speed is the UK's most popular car and motorsports event and takes place annually on the grounds of Goodwood House, the seat of the Dukes of Richmond. Agility has been working with the show since 2010, providing logistics services for clients in the UK and EU. That includes the supply of transportation for stand equipment, all-terrain forklift trucks, scissor lifts, cherry pickers, cranes and empty case storage.

For the 2014 show, Agility provided logistics services for Audi, Honda, Michelin, Seat, Infiniti, Skoda, Ford, Nissan, Jaguar and Mercedes-Benz, and also set up 12 of the main stands, each measuring 400 square meters.

UEFA Champions League

Supplying transportation services for the automotive sponsor of the UEFA Champions League is something Agility

has been doing for seven years. At the 2013 event in London's Olympic Park, 56 truckloads of equipment, forklifts, scissor lifts and cherry pickers were moved on to the site. As with other special events, deadlines are critical and on one occasion Agility's Fairs & Events specialists had just 48 hours to dismantle a display originally scheduled to be taken down over a five-day period.

ABOVE: Agility delivers and unpacks exhibits at Auto Shanghai 2013 as part of a comprehensive service for manufacturers such as Ford Land Rover and Jaguar.

RIGHT: Koenigsegg One: 1, seen here being positioned on the Michelin stand at the 2014 Goodwood Festival of Speed, is considered the world's first "mega-car" with 1 Megawatt of power. Agility also worked with prototype cars for Honda and Jaguar.

BELOW: Exhibition cars are lifted into position for the automotive sponsor of the UEFA Champions league, the European championship of national football club champions.



Houston, we have a solution

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When Space Center Houston wanted to move the iconic NASA Shuttle Carrier Aircraft (SCA) from Ellington Field Airport to the space center, Agility Project Logistics offered its services for free.

Now retired, the SCA had a long and colorful history and was being moved to Space Center Houston to be part of a new, permanent exhibit. For 30 years, NASA deployed the SCA at landing sites to ferry space shuttle orbiters that had returned from their space missions back to the Kennedy Space Center in Florida.

Meticulous planning

Agility Project Logistics planned and managed the complex complex SCA move by selecting and working with a team comprised of a transport vendor, rigging company, and mobile crane provider. To prepare for the journey from Ellington to the space center, Agility conducted a series of road tests before pre-selecting a route that would take the SCA along nearly eight miles (approximately 13 km) of roads over a two-night period.

The next stage involved disassembling the aircraft by removing the wings and tail section, leaving 318,000 pounds of aircraft parts to be transported, the largest of which was the fuselage measuring 25 feet wide and 35 feet tall.

Slow and steady

A 1,000-foot-long convoy comprised of seven different trailers then traveled at walking speed along the pre-selected road that had been temporarily blocked off. Street lamps, traffic lights, and utility and power lines were moved or lifted out of the convoy's path.

The convoy reached Space Center Houston as scheduled on the second night. After the SCA was reassembled, Agility proceeded to the final stage of the project by using a 440-ton crane to lift and mount a full-scale replica of the *Independence* orbiter on top of the aircraft in the ferry configuration. Scheduled to open in March 2015, the new exhibit will provide visitors access to the flight-deck, mid-deck, and cargo bay of the orbiter replica.

- The Boeing carrier is dismantled, removing wings and tail section.
- Fuselage is moved on multi-wheel low loader
- The space shuttle replica is mounted onto the reassembled Boeing carrier



Final home for
Space Shuttle
carrier

On the front lines

HUMANITARIAN LOGISTICS

Training speeds
delivery of
essential supplies

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Agility's Markus Lampe, an expert in humanitarian logistics, worked in Brčko, Bosnia & Herzegovina in May following the heaviest flooding there in 120 years. He served as logistics officer for a German water purification team and had a chance encounter with relief workers he had trained only a month earlier.

Lampe, an Agility road freight manager based in Hamburg, serves as a volunteer logistics manager for Germany's Federal Agency for Technical Relief. He has deployed to Haiti, Pakistan and Jordan in the aftermath of natural disasters and humanitarian emergencies. A month before the floods, Agility sent Lampe to Split, Croatia to provide logistics training to staff of the International Medical Corps (IMC), a global, humanitarian, non-governmental organization and first responder that has partnered with Agility in Indonesia, Haiti, DR Congo and South Sudan. In Split, Markus worked closely with Marin Tomas, International Medical Corps' global logistics manager.



For five days last spring, Markus Lampe took International Medical Corps staff through the basics of disaster-response logistics.

At the International Medical Corps office in Split, Croatia, he taught them how to evaluate transportation options, calculate costs, clear goods through customs, organize warehousing, complete bills of lading, release cargo without the original bill of lading and secure cargo in a truck or an airplane. Afterward, he ran through scenarios intended to get the staff to solve tough problems – conducting a road assessment after an earthquake, operating a warehouse in a remote area.

Weeks later, Markus was surprised to come across International Medical Corps' Marin Tomas and other International Medical Corps staffers in the midst of a real



ABOVE: Markus helps to dispense purified water after the disastrous earthquake in Haiti.

BELOW: International Medical Corps' Marin Tomas and Markus during the Bosnia flood relief.

disaster, this one brought on by catastrophic flooding and landslides in Bosnia that were triggered by some of the heaviest rains in more than a century.

Markus and Marin met up in the small town of Brčko. While they were not working together formally, Markus shared information that helped the International Medical Corps understand where to devote its resources.

Marin says: "Although the visit with Markus was a social one, we received good insight from him on what had been done in the water and sanitation sector where he was deployed. From what he told us, it was clear that there was no need for the



International Medical Corps to get involved there because the area was well covered by his and other international teams. When you have scarce resources and need to know how best to utilize them, this kind of information is very useful because it determines how you can allocate your funding by meeting basic needs of the affected population, without overlaps with other humanitarian actors and government efforts."

Instead, the International Medical Corps worked to bring in relief supplies. They helped deliver food for children, cleaning supplies, medical equipment, furniture, ambulances and other vital goods well worth over one million euros.

Three of the deployed International Medical Corps staff had received logistics training from Markus in Split. Of those, Marin and a colleague operated in Bosnia.



WAR-TORN, IMPOVERISHED, FLOODED. ONCE AGAIN BOSNIA FACES REBUILD.

The floods that struck the Balkans in May were the worst in 120 years, damaging and destroying as much property and infrastructure as the 1992-1995 Bosnian war. Three months' of rain fell in a matter of days, wiping out bridges and roads, and triggering landslides that shifted uncleared wartime minefields. The social costs and the cost to rebuild are massive.

The final bill for the floods that hit Bosnia, Serbia and Croatia is expected to

be billions of euros. It is a disaster that Bosnia – one of the poorest countries in Europe – cannot afford. Here the average net wage is just 420 euros a month. Unlike Croatia, an EU member state, and Serbia, a candidate for EU membership, Bosnia does not have access to the EU's Solidarity Fund and receives EU funding of only around 100m euros a year.

To compound Bosnia's misfortune, heavy rains returned in August, washing



away many of the temporary structures erected to shelter those displaced in the first round of flooding. International donors have pledged nearly 2 million euros to aid recovery and rebuilding in Bosnia and Serbia.

Another colleague was deployed initially to Serbia and then joined them in Bosnia.

Marin says the training helped them work more smoothly with the Red Cross and other relief partners when it came to accurately preparing documentation for customs clearance.

Furthermore, he says goods coming by road arrived more quickly because the team understood the European trade union regulations requiring mandatory breaks for drivers. By factoring break time into delivery schedules, the team was able to account for accurate delivery time and plan optimal distribution accordingly each time there was a convoy with relief goods coming into the country.

Training helped them work more smoothly with the Red Cross and other relief partners, particularly when it came to accurately preparing documentation for customs clearance

"We were lucky to have had the logistics training delivered by Markus," he says.

Markus completed his tour in Bosnia and Herzegovina and returned to work at Agility Hamburg. He says he is grateful to his supervisors and colleagues for allowing him the time away to assist in humanitarian emergencies.

"Volunteering during times of need is my way of contributing and making a difference," he says.



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Agility brings efficiency to supply chains in some of the globe's most challenging environments, offering unmatched personal service, a global footprint and customized capabilities in developed and developing economies alike. Agility is one of the world's leading providers of integrated logistics. It is a publicly traded company with \$5 billion in revenue and more than 22,000 employees in 500 offices across 100 countries.

Agility's core commercial business, Global Integrated Logistics (GIL), provides supply chain solutions to meet traditional and complex customer needs. GIL offers air, ocean and road freight forwarding, warehousing, distribution, and specialized services in project logistics, fairs and events, and chemicals. Agility's Infrastructure group of companies manages industrial real estate and offers logistics-related services, including e-government customs optimization and consulting, waste management and recycling, aviation and ground-handling services, support to governments and ministries of defense, remote infrastructure and life support.