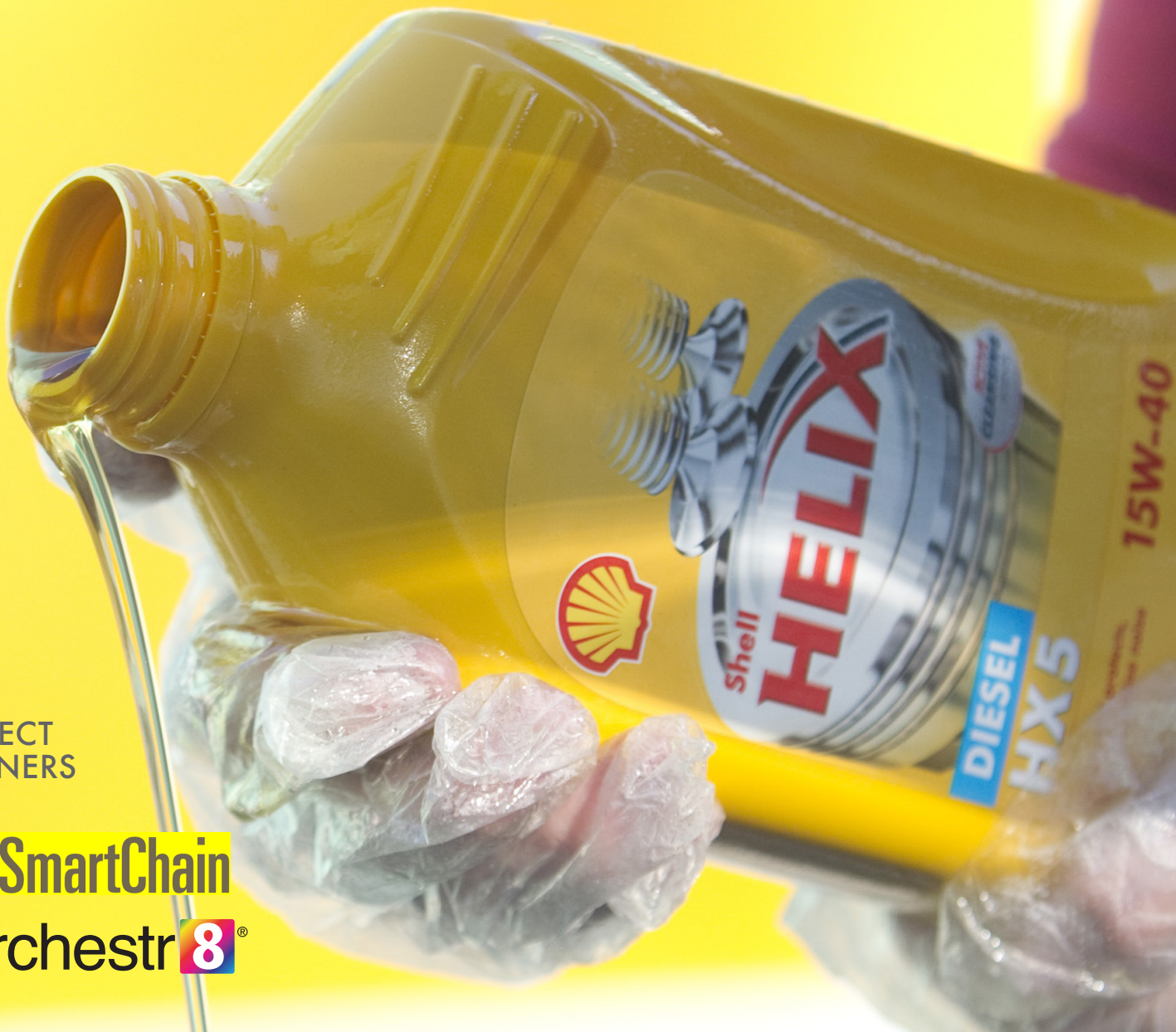
DEEP DIVING INTO DEMAND-DRIVEN PLANNING



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REVOLUTIONISING THE SUPPLY CHAIN THROUGH DEMAND-DRIVEN PLANNING

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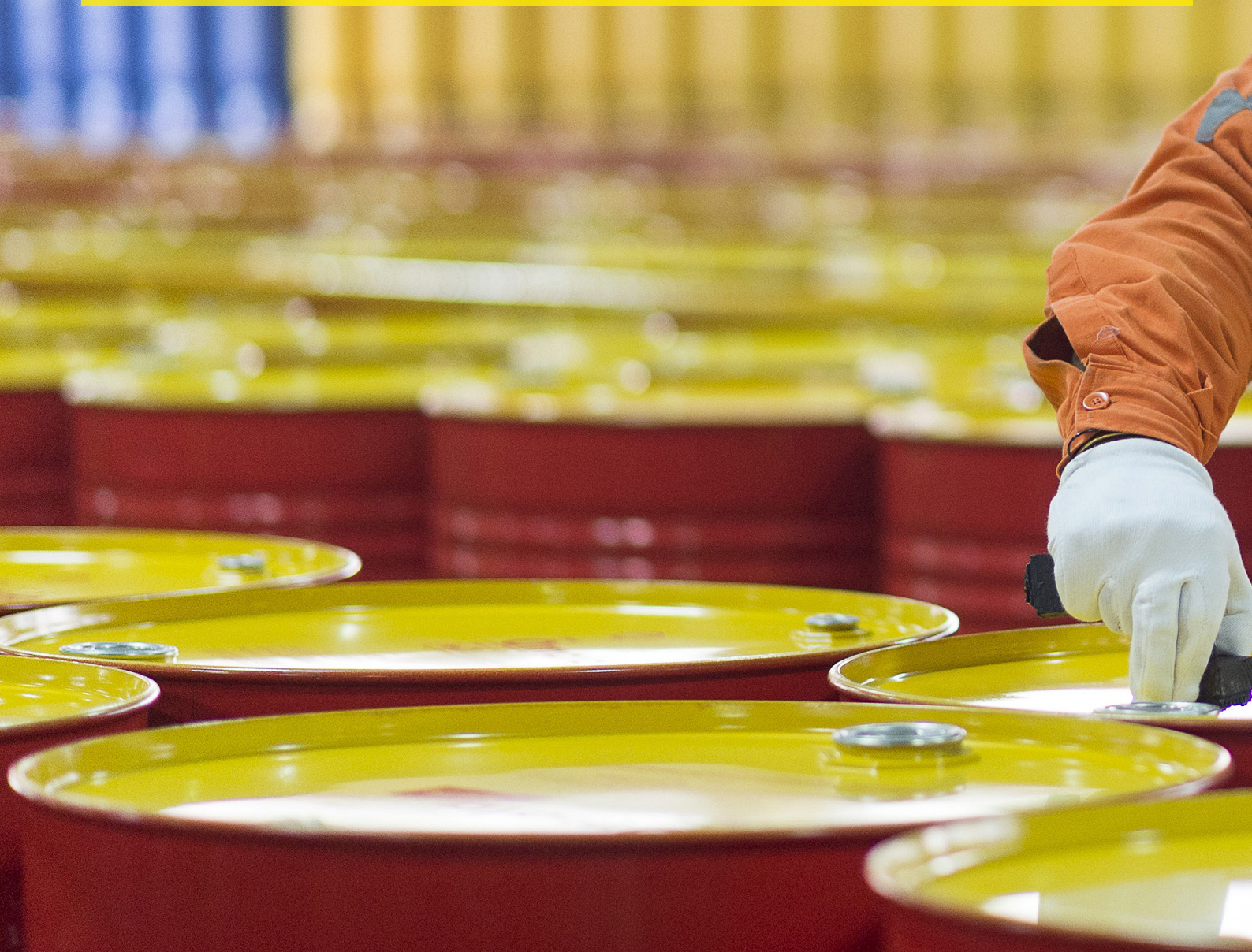

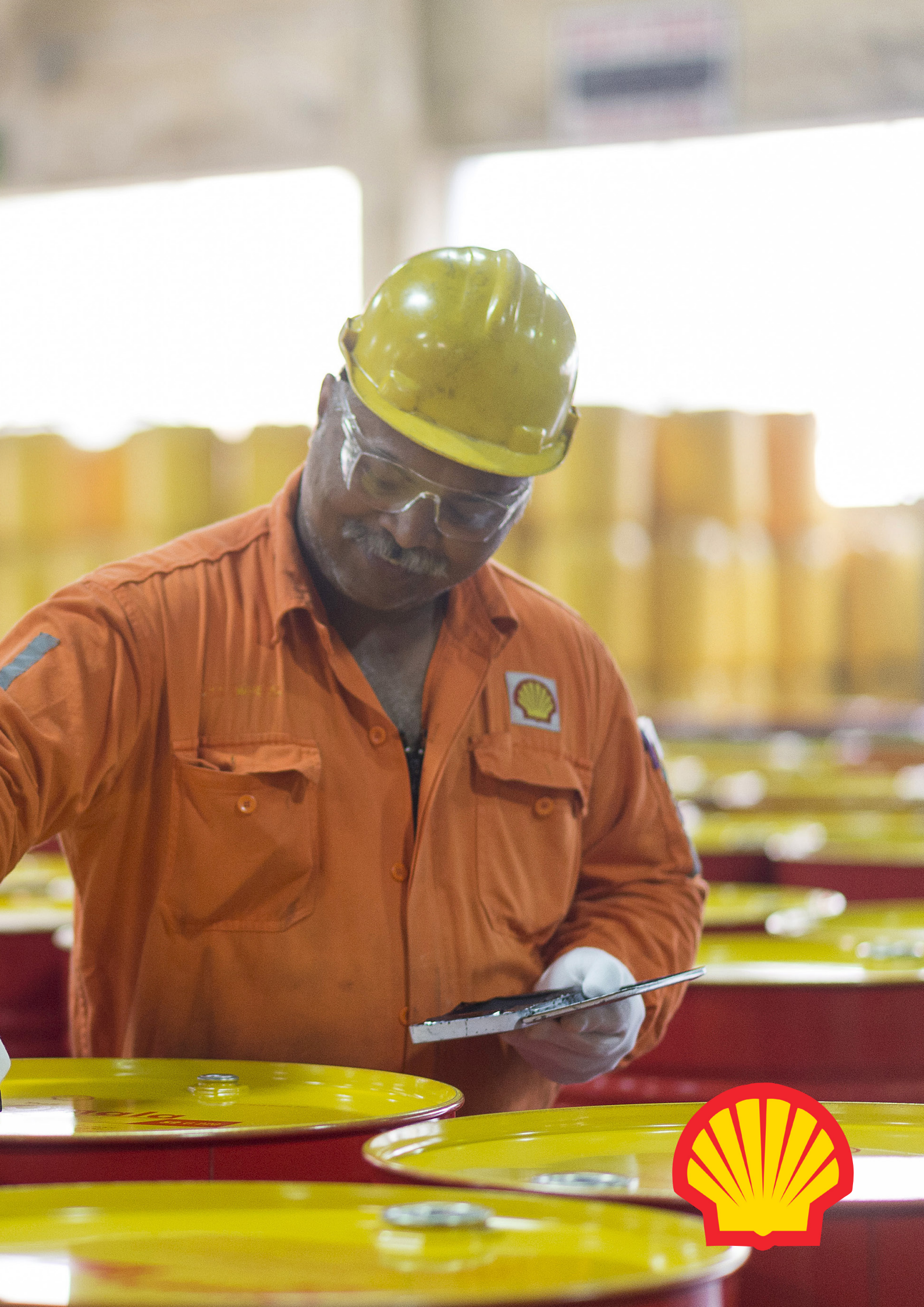

Shell Lubricants has ripped up the rulebook in supply chain management, fully disrupting the industry

Global supply chains are facing increased customer and portfolio complexity. Heightening consumer demands are leading companies to look at ways to transform existing processes to drive efficiencies, lower costs, provide quality customer service, all whilst lowering working capital and inventory.

No business is more invested than Shell Lubricants. The global leader (in terms of market share and branded product) in finished lubricants for the last 11 years, continues to house most of its downstream business on a single instance of SAP, enabling the company to standardise its work practices on a global scale.

However, growing complexities and ambitious business plans have led to amplified pressures across its supply chain operations.

"I think the challenge for supply

chains, especially global supply chains that are heavily networked, is really what to do with this complexity," explains Global Planning Excellence Manager, Nick Lynch.

"In 2013/4 Terra Technology, who are now part of E2open, published an annual cross-industry survey which showed that whilst the number of products sold increases, the total amount sold remains pretty flat in most industries. Therefore, as the volume sold per product goes down we can expect SKU level forecasting to get harder the more spread out a portfolio is. This is a trend we certainly recognise. The future is not likely to be simpler than our business of today.

"In practical terms this means that with our traditional forecast driven MRP planning tools, we purchase raw materials, manufacture products and put inventory into the warehouses based on our forecast that predicts that we'll sell it. In reality, the forecast is sometimes correct; often it is not even with best-in-class forecast performance," he says.

"Products that don't sell to forecast tie up precious working capital and may

DELIVERING SUPPLY CHAINS THAT WORK

SMARTCHAIN IS A COMPANY OF INDUSTRY AND CONSULTING **SUPPLY CHAIN EXPERTS WITH A LONG TRACK RECORD OF DELIVERING SUSTAINABLE CHANGE.**

We strongly believe that the Demand Driven Adaptive Enterprise and the Demand Driven Operating Model are the models for the future. These models are already unlocking the full potential of the Supply Chain for the organisations that are willing to embrace them. Our mission is to support these organisations – like Shell – as they take this transformational journey.

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become excess or obsolete inventory. With more than 10,000 saleable SKU's it is easy to understand the pressure that this may put on operations. Those products will have consumed capacity and materials that could otherwise have been used for other products that we do need at that moment. These may be products that weren't in the forecast which become a firefight and expediting chase. This bullwhip or noise isn't limited just to our internal supply chain. It is clearly visible in our extended supply through to our suppliers.

"A strategy based around simply being "better" at forecasting was simply not going to be viable in the long term. Working harder with our traditional MRP processes and tools would not be enough. We had taken almost all the low hanging fruits already." With 40 lube oil blending, base oil and grease manufacturing plants, Shell Lubricants fills over 2mn bottles a day, and undertakes 30mn deliveries a year to direct customers and distributors.

Lynch's role to drive Shell Lubricants' long-term strategy and subsequent roadmap for its global supply chain planning, spanning business processes, systems and organisation design, is therefore one that cannot be underestimated.

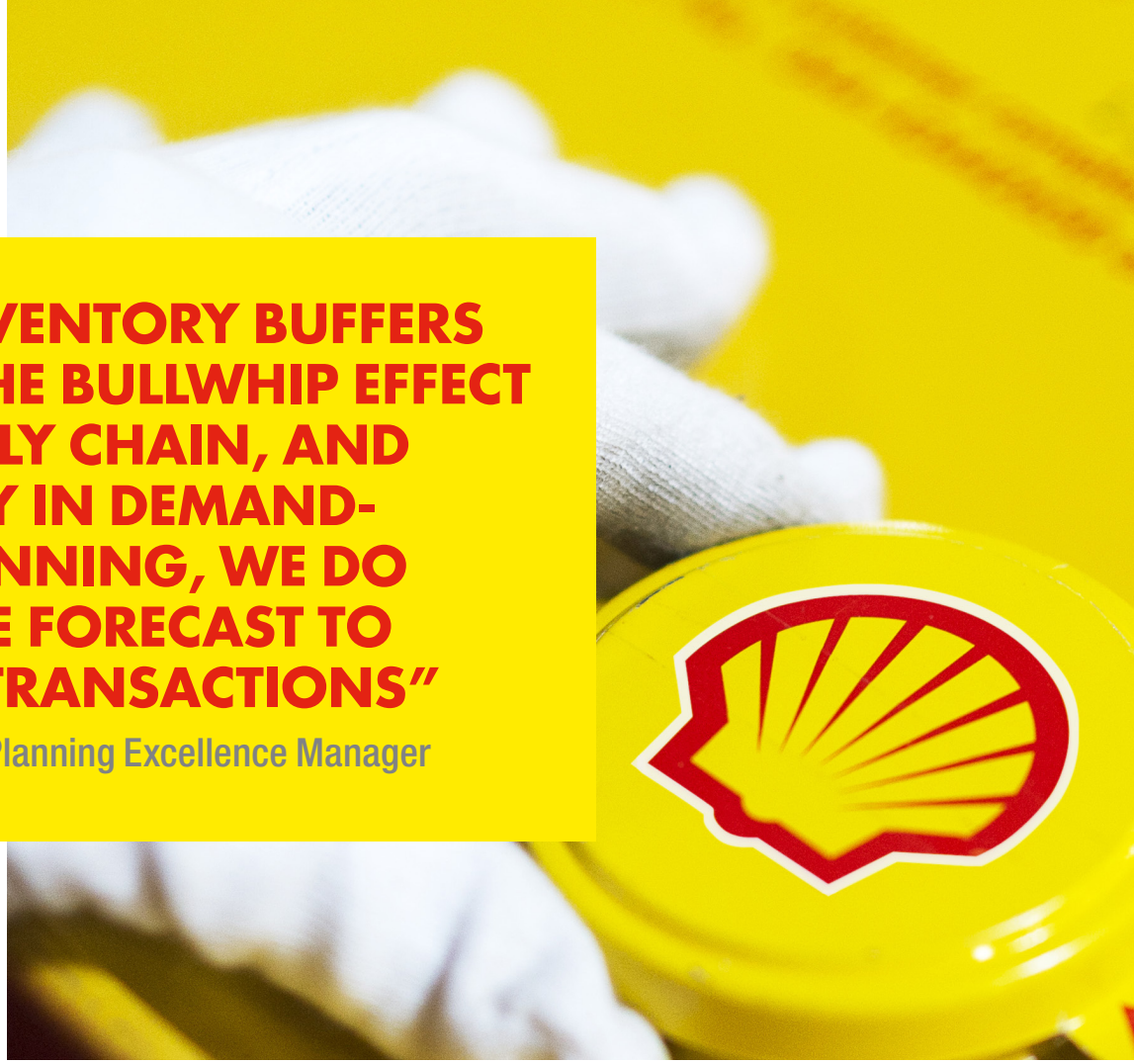
"We're also supporting the marine business, as well as 10,000 ocean-going vessels that carry Shell lubricants at any time. So, just in terms of scaling that, they're just huge numbers," he adds.

30mn

customers are served every day at 43,000 Shell-branded fuel retail stations

DEMAND-DRIVEN PLANNING

In 2015, Lynch sought to look at the advantages of demand-driven planning, which would seek to sidestep such pressures routinely seen within traditional forecast driven methods and enhance Shell Lubricants' supply chain capabilities.



"WE USE INVENTORY BUFFERS TO BREAK THE BULLWHIP EFFECT IN THE SUPPLY CHAIN, AND SPECIFICALLY IN DEMAND-DRIVEN PLANNING, WE DO NOT USE THE FORECAST TO DRIVE OUR TRANSACTIONS"

– Nick Lynch, Global Planning Excellence Manager

By implementing strategic inventory buffers, typically in areas where inventory is already held, demand-driven planning works to decouple the supply chain, breaking down traditional MRP processes which create a bullwhip effect.

"You see this happening where you have a slight change in demand on one end of the supply chain, and by the time that has been filtered through all of the different replenishment calculations that go all the way along the supply chain, the variation that people at the end of the supply chain feel is significant," explains Lynch.

"We use inventory buffers to therefore break this effect in the supply chain, and specifically in demand-driven planning, we do not use the forecast to drive our transactions. Instead, we set up a buffer, where we wait until we have actual demand, and then make a decision based on this demand."

Deciding to take a very different approach to that of Shell's implementation of SAP in the mid-2000s, Lynch adds that he wanted to see how the business would benefit in the face of ongoing cost pressures

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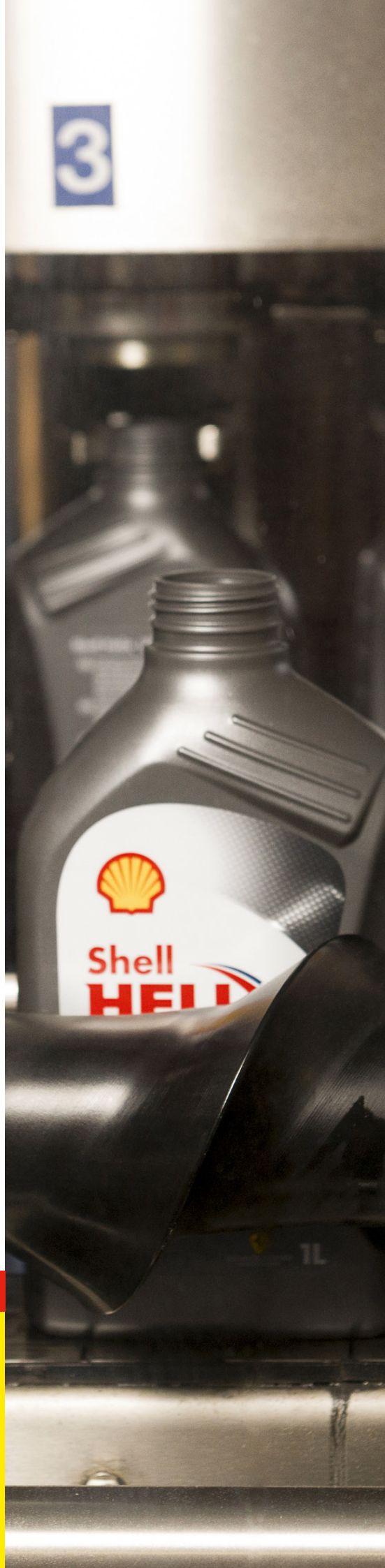
regularly seen in the oil and gas industry.

However, in today's supply chain climate, big changes programmes like this require very solid and credible business cases. Lynch required leadership and financial backing, and strenuously looked at ways to harness available data and support the required results.

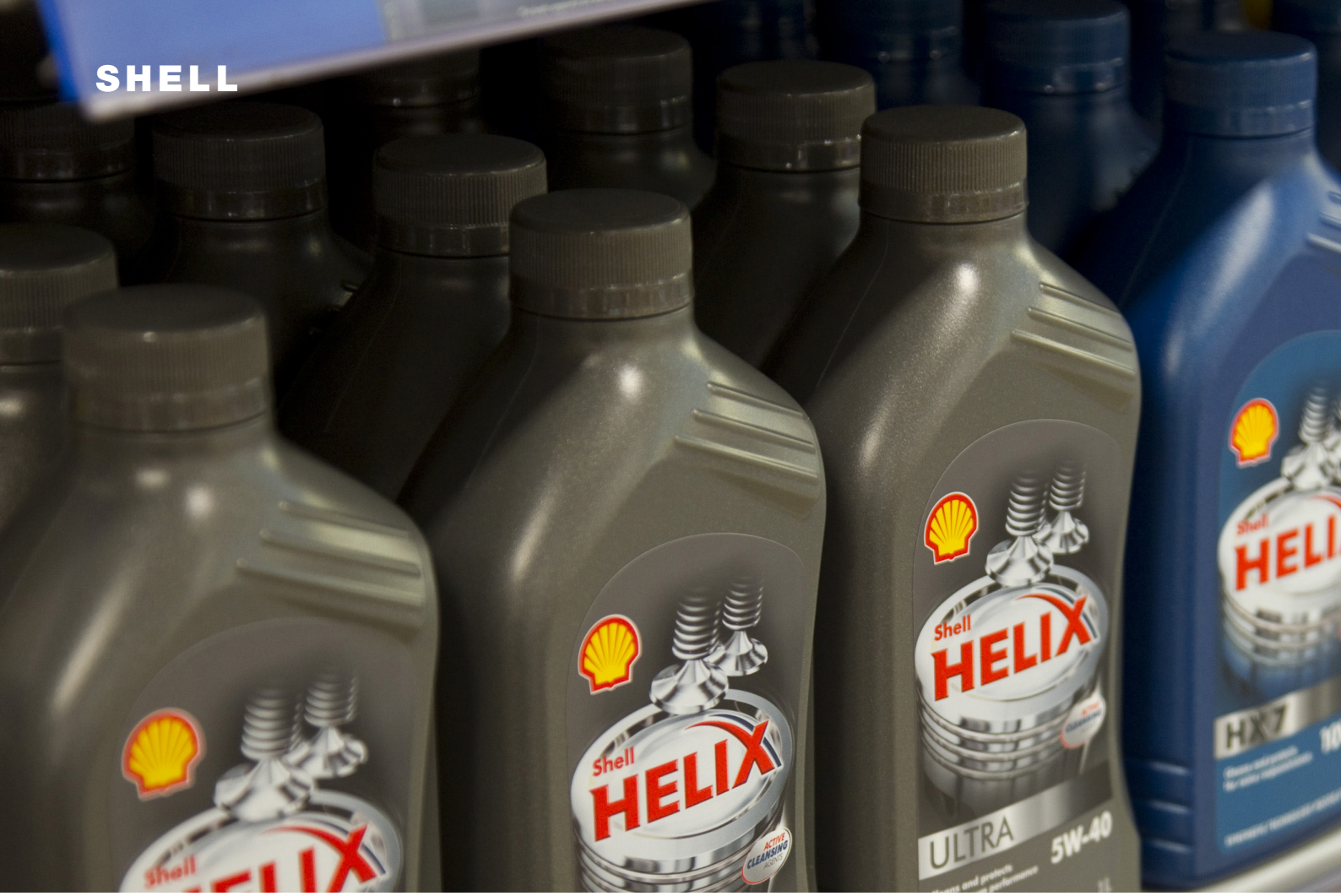
"We had to be absolutely clear on the business case and ran simulations around how demand-driven planning would work in a lubricant supply chain. There are very few industries doing this. Nobody's tackled it globally yet, so I think Shell Lubricants is the first global supply chain to adopt this methodology in its entirety," he says.

"We're talking about 30-plus key manufacturing plants around the world and several hundred stocking points, distribution centres, regional distribution centres, warehouses etc. These supply both local and networked markets, so accurate data was absolutely crucial. It's a multi-year project of significant change management scale, which required significant commitment to drive this transformation."



NICK LYNCH

GLOBAL PLANNING EXCELLENCE MANAGER



DEVELOPING EXPERTISE

In order to gain further support to implement demand-driven planning, Lynch liaised with Shell Lubricants' regional planning managers in the Americas, Europe, Africa and Asia Pacific (APAC) to discuss the business's ongoing supply chain roadmap. "There was enough interest at that first meeting to warrant their support for doing the first of the detailed simulations, which was completed in the North American business," he says.

By partnering with consulting firm, SmartChain LLP, the business then worked to simulate 12 months of real business data to look at how things ran during this period of time. With this data, Shell was able to simulate what would happen with a demand-driven methodology, with exceptional results.

Noting that SmartChain LLP has been vital in transforming Shell's supply chain capabilities, the firm has also been instrumental in delivering essential expertise across its entire design, build and implementation.

"I reached out to SmartChain back in 2014 to take a first look and educate myself on this topic,"

"WE HAD TO BE ABSOLUTELY CLEAR ON THE BUSINESS CASE AND RAN SIMULATIONS AROUND HOW DEMAND-DRIVEN PLANNING WOULD WORK IN A LUBRICANT SUPPLY CHAIN. THERE ARE VERY FEW INDUSTRIES DOING THIS"

– Nick Lynch, Global Planning Excellence Manager

acknowledges Lynch. "I introduced demand-driven planning to the Shell business with SmartChain in April 2015, which is essentially when we formally started, and they have been, effectively, our consulting partner on this for the duration. "It's a small team of very high-calibre, specialised individuals who have implemented demand driven planning before in various businesses, who could give us the benefit of a proven methodology of how to design, build and implement this. This was critical, because the size of the prize at Shell could be anything between 20% to 30% reduction in working capital, garnered from what we simulated. With a lubricant business of 5bn litres, this is huge but we must also get it right.

"SmartChain bring a wealth of experience and is actively supporting our global rollout. We're live in Egypt, Spain, Italy, Turkey and our European Material Scheduling

centre in Krakow. We're currently working with Russia, North America, Malaysia and the Philippines."

TECHNOLOGICAL DRIVE

Nonetheless, although the results from the North America simulation looked positive, Lynch explains that both the European and Asia Pacific management teams required the simulation to also be undertaken in these areas for further assurance. Tests were therefore undertaken at plants in Ghent, Belgium, as well as Shell's Hong Kong plant and network.

"They are all very different, with very different supply chains in terms of the customers they serve, the geography, the product portfolio, the networking, etc., but all simulations produced very positive results," Lynch adds. With such positive test results, senior leaders tasked Lynch to source essential software to further transform the company's supply chain. "There was no way we could support this with a planner's favourite tool…MS Excel," Lynch adds with a smile.

Whilst material requirement planning (MRP) capabilities in traditional enterprise resource planning systems such as SAP and Oracle remain forecast-driven, Shell looked at industry software endorsed by the Demand Driven Institute, which could not only remain compliant with Shell's IT standards, but conform to the demand-driven way of doing planning across its entire business portfolio.

"The Demand Driven Institute is run by Carol Ptak and Chad Smith, who are the authors of the bible of MRP in its current form. They have introduced demand-driven MRP as a new chapter, where they have codified the structure for how demand-driven planning should be implemented," explains Lynch.

"The software had to be globally scalable, match the strict Shell IT strategy of how to buy software, and had to be cloud-based."

Narrowing its options down in late 2016, the company undertook extensive demos and tests, bringing demand-driven planning to fruition in under two years.

Partnering with Orchestr8, Lynch gained leadership support and submitted the group investment proposal required to proceed

with such revolutionary changes, in order to enable Shell IT and the software company to build the required infrastructure.

"With Shell being on a single instance of SAP, it meant that with Orchestr8, Shell IT only had to build the interfaces from our host SAP system into Orchestr8 just the one time. Every country around the world is on the same system," reflects Lynch.

"We went live with our pilot in October 2017. So, March to October we completed the design, build and first implementation. That was a terrific effort by all the folks involved."

UNLEARNING OLD HABITS

Introducing such a change from traditional processes; however, it remains clear that demand-driven planning will only remain successful if it is embraced by those at the helm. This is a challenge where Lynch remains confident the business will overcome.

"We've put nearly 200 people in planning through certified demand-driven planner training and are taking them through a sensible change journey throughout

FACTS & FIGURES

SHELL MAKES SELLS A WIDE VARIETY OF LUBRICANTS FOR THE AUTOMOTIVE, HEAVY-DUTY TRANSPORT, MINING, POWER GENERATION, CONSTRUCTION AND GENERAL MANUFACTURING SECTORS

LEADING BRANDS INCLUDE SHELL HELIX, SHELL RIMULA, PENNZOIL, QUAKER STATE AND SHELL TELLUS

SHELL LUBRICANTS FILLS OVER 2MN BOTTLES A DAY AND UNDERTAKES 30 MILLION DELIVERIES A YEAR TO DIRECT CUSTOMERS AND DISTRIBUTORS.

SHELL HAS 40 LUBE OIL BLENDING PLANTS, FIVE BASE OIL MANUFACTURING PLANTS, AS WELL AS 10 GREASE MANUFACTURING PLANTS

PARTNERING WITH CONSULTING FIRM, SMARTCHAIN LLP, ENABLED SHELL TO SIMULATE 12 MONTHS OF REAL DATA TO LOOK AT HOW THINGS RAN DURING THIS PERIOD, AND THEN SIMULATE WHAT WOULD HAPPEN WITH A DEMAND DRIVEN METHODOLOGY

the implementation," he says.

"If you can take out the firefighting, and the noise within the business – the expediting, changing schedules, etc. – then the day in the life of the supply chain individual will feel quite different when this is fully implemented."

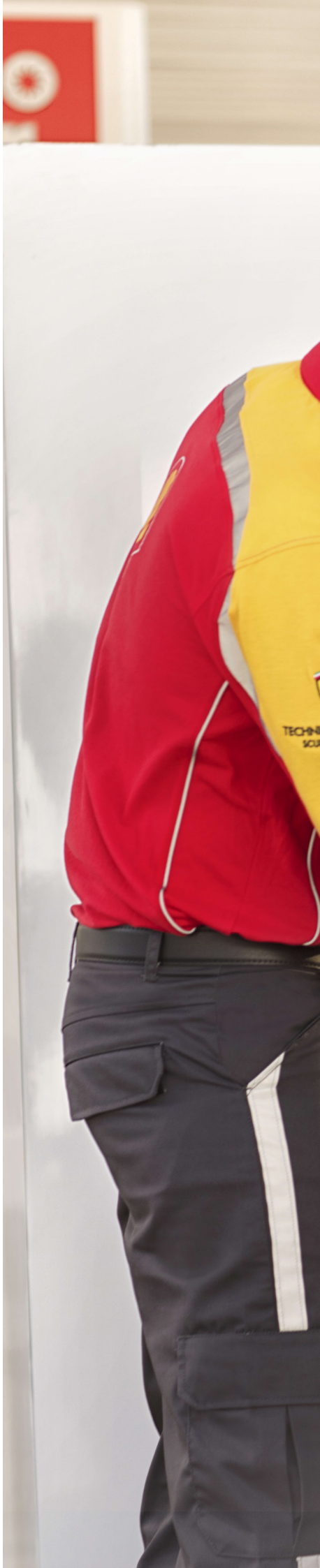
Demand-driven planning will be a distinct game changer for Shell Lubricants, and enable the business to better serve its customers, with a higher stock availability and a lower working capital commitment.

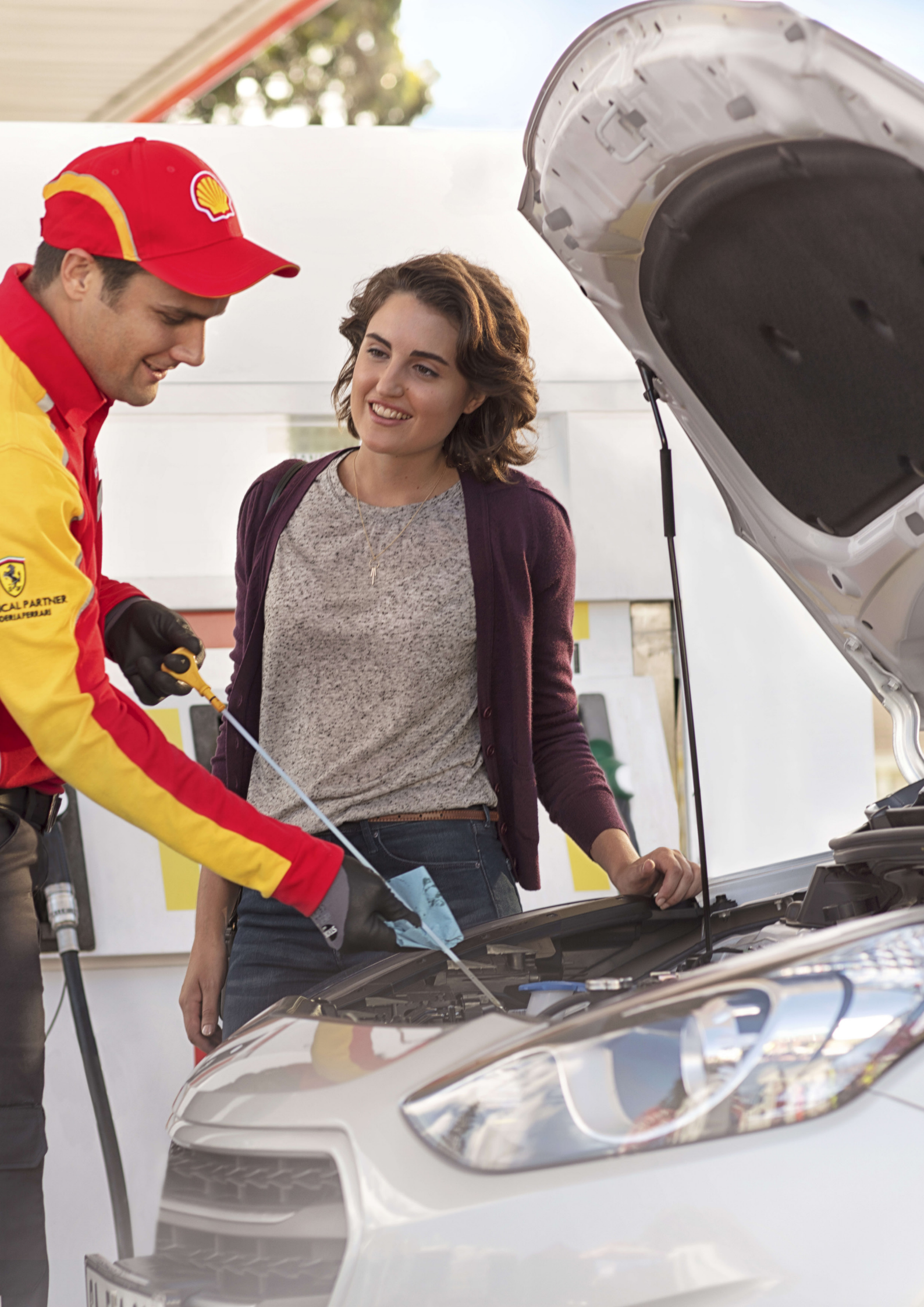
"If you think about a change programme, this is changing the planning in 15 time zones around the world, as well as the different depots and planning locations. With the first implementation in October 2017, we will be finishing the bulk of the implementation in 2019 with just a couple spanning over into 2020.

"Shell Lubricants is an enormous supply chain, and I think this will provide a huge competitive advantage for Shell," concludes Lynch.

"Once one major player has moved over to this, more and more companies will be forced to take a good look at their planning processes and consider whether to move away from 20+ years of forecast driven MRP and the industry that exists around that.

"It's a significant investment and a bold move, but the returns are very attractive for all." ■

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