To deliver to the new consumer, must your old rivals become your best friends?

**Collaborative Logistics** 

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Building a better working world













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### Foreword

We all know that the digital revolution is causing huge disruption in the consumer goods industry, spawning many new business models and surfacing many fascinating challenges and opportunities. Digital means more data, more information and more insights. But these in turn also allow more physical options to buy, produce, sell and deliver.

The consequences of the digital revolution for physical flows have perhaps not had as much attention as those for data flows but they could be equally far reaching. Supply and delivery networks are likely to become both denser and more varied.

What particularly interested us in the Consumer Goods Forum (CGF) was the scope for new forms of collaboration that this disruption in physical flows unlocks. We wanted to know how the industry could use digital to drive efficiencies across the value network, and how collaboration could help drive these efficiencies to new levels, benefiting both businesses and the consumer. That was the primary motivation behind this report.

To start with, we asked a few simple questions:

- What is driving the changes in physical flows in our industry today?
- How are companies responding to these fresh trends?
- How could your company get the most out of the emerging new portfolio of collaborative solutions?

The report builds on workshops led by EY in London and New York and we believe represents a very practical perspective on an industry in flux. We hope it provides inspiration for any business – big or small – looking to develop more efficient supply chains and value networks. It should help prepare you for the disruption ahead.

The CGF would like to express its gratitude to Matthew Burton and his team at EY, as well all the companies who were willing to share their experiences and best practices. This is a unique report, in the right place at the right time.

Enjoy.



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### About the author

Matthew Burton is a Partner in Ernst & Young's EMEIA Advisory Centre and leads Digital Operations across EMEIA. He is a trusted leader and innovator who specialises in delivering operational transformations underpinned by leading digital technologies and analytics.

Matthew has over 20 years' experience in supply chain and operations across both industry and consulting. He has delivered profitable growth and transformational outcomes on numerous supply chain and logistics projects in retail and consumer goods companies. In addition to retail and consumer goods Matthew has worked with clients in pharmaceuticals, chemicals, industrial products and private equity.

His deep experience includes end-to-end supply chain synchronization, omnichannel enablement, and inventory reduction and optimization.

### About EY

EY works with many of the world's leading consumer products and retail companies. We deploy our proprietary tools, methodologies and data to help them reinvent their supply chain, unlocking its full strategic value. We enable businesses to identify opportunities and implement solutions that will drive competitive advantage and create profitable, sustainable growth.

With more than 2,400 supply chain and operations professionals across 150 countries, EY is a truly global organization. This connectivity, including alliances with businesses such as Procter & Gamble, means we combine deep operational consulting capability with industry-specific leading practices.



Companies across a range of industries are unlocking new sources of growth by collaborating with businesses they might normally think of as rivals. Some in the consumer products sector do this today, but not at significant scale. With new pressures and forces requiring the industry to rethink routes to market, we believe now is the time for companies to form new, collaborative relationships; pooling assets and expertise for joint success. Collaboration is not a new concept for the industry, but it has never really gained traction. Consumer goods manufacturers and retailers have been working together for years – there are many industry examples. But such projects have tended to remain small. Two barriers have hampered wider collaboration: competition rules can make it difficult for competitors to work together; companies have struggled to find the right strategy and/or business model to support successful collaboration at scale.

Today, numerous market trends are converging in ways that create the opportunity – the imperative, even – for companies in the industry to take a fresh look at the possibilities for collaboration, specifically in the area of collaborative logistics. In our report, we've focused on five key trends that are putting growing pressure on retailers and manufacturers – both on their supply chains and on the underlying economics of delivering goods to the consumer:

- 1. Urbanization will exacerbate traffic congestion, making deliveries more challenging and costly. Estimates suggest that 70% of the world's population will move to an urban area by 2050, compared to 54% today. Most of this population shift will occur in emerging markets, which typically lack the infrastructure needed to avoid urban gridlock. Urban areas in mature markets will also experience severe traffic congestion. Estimates suggest the economic cost of congestion will grow 40% to 50% by 2030.
- Environmental regulation will get tougher and more expensive. Regulatory fees and transport tolls are on the rise globally. Some estimates suggest they will account for 15% to 25% of total transportation costs by 2030, compared to 10% today. Local cities will have low or even zero emission regulations, requiring alternative fuel vehicles.
- 3. Transport will become even more inefficient, as truck fill continues to shrink and customers order smaller shipments. Today, an average trucktrailer runs at less than 60% full, according to the U.S. Department of Transportation. In at least one out of every four or five trips the trailer is completely empty. This means that overall efficiency rates are no greater than 50%.

- 4. Transport costs will continue to increase. The higher cost of taxes, fuel, equipment and driver wages will push transport operating cost up by an estimated 4% to 6% every year. With fewer people choosing to become truck drivers, the increasing age and decreasing availability of drivers will be a key concern.
- 5. Omni-channel consumers have growing expectations. E-commerce is likely to reach more than 20% of retail sales, driving increased demand for home delivery, which is likely to become more expensive as roads clog with traffic. Studies show that home delivery already costs five times as much as "click and collect" from the store.

Finding the right response to these five trends would be difficult enough, but it's made even harder by one defining feature of supply chains in this industry: the delivery infrastructure was designed to deliver big brown boxes to big-box retail outlets. The shift away from traditional to modern trade, omni-channel click-andcollect and home delivery is fragmenting volume and making the final link in the logistics chain increasingly inefficient.

#### What does collaborative logistics look like?

We are seeing multiple emerging solutions to the logistics challenges facing the industry. Companies are trying to making greater use of data analytics to make their supply chains more agile. Emerging "on-demand" services, inspired by the disruptive examples of Uber and Airbnb, could give companies new ways to manage freight and warehousing. Automation and robotics offer the prospect of more efficient fulfillment. And driverless vehicles and drones suggest new ways to deliver products to their final destination. But many of these innovations are years away from mass adoption and must overcome major obstacles first.

By contrast, greater collaboration offers the prospect of much faster benefits. This is particularly true for rural delivery and urban delivery in developed markets. Based on our research, working sessions and interviews with retailers and manufacturers, we have identified several collaborative solutions that are emerging today. Here are three models that show great promise:

1. City/market retail and logistics consolidation centers.

Here, multiple retailers and manufacturers work together to share distribution, transportation and inventory assets in ways that lead to more effective order fulfilment and better last-mile execution. This model can optimize overheads and inventory while maximizing the frequency of deliveries and the utilization of vehicles. The partners **can cut cost and environmental impact by 25% to 50%.** 

 Manufacturer logistics hubs. Multiple manufacturers share their distribution and transportation assets. There are already many proven case studies and examples of this model in action. The significant benefits include an 8% to 10% cut in miles, 30% less retail inventory, lower carbon emissions and lower network costs.



3. Improved data quality/visibility. In this model, companies across a retail and manufacturing network collaborate to make inventory more visible and to improve the quality of data through the supply chain. This leads to better decision making in multiple areas. It also helps to remove unnecessary handling and transport movements because it reduces the large, wasted inventory buffers that retailers and manufacturers carry.

## Is collaborative logistics the express route to value?

Today, in many big cities, companies make so many deliveries so close together that there is no urgent need to change the last few links in the supply chain. But this will not be the case for much longer. The five trends mentioned prior will lead to fragmented delivery volumes, increased congestion and tougher regulation. Companies will not only need to collaborate with each other – they will need to work closely with regulators, governments and city planners to influence regulations and develop pragmatic solutions. The cost and inefficiency issues will become more acute for rural deliveries too – companies that look for smarter, collaborative solutions for rural delivery can deliver savings now that scale for the future.



# Emerging consumer goods and retail logistics challenges

Urbanization

Urbanization, growth of megacities and resulting congestion are making logistics execution ever more challenging



The rapid population shift to urban areas in emerging markets will only add to current congestion challenges



<sup>1</sup> Source: United Nations, Department of Economic and Social Affairs, Population Division (2014). World Urbanization Prospects: The 2014 Revision.

<sup>2</sup> Source: EY. China: Planning for an Urban Future.

### The bulk of migration to urban areas is expected to occur in emerging markets



Studies have shown that excessive levels of congestion will significantly impact operating costs in urban areas



The annual cost\* of congestion is expected to reach US\$106.6b by 2030, a 42% increase since 2013, for four advanced economies<sup>1</sup>





# Emerging consumer goods and retail logistics challenges

Environmental and regulatory trends

Environmental regulation and guidelines are fragmented, as these are driven by the specific needs of a region or even municipality, adding to the complexity of transportation



effect in several major EU cities, while

others consider the role of access

Cap-and-trade

programs are already

<sup>4</sup> Source: Sustainable Innovation Forum (SIF15)

<sup>5</sup> Source: Roland Berger, Truck Transportation 2030.

Many urban areas are

expected to have zero

emission rules by 2030.<sup>5</sup>

Other

<sup>&</sup>lt;sup>1</sup> Source: EY. Economics of Carbon.

<sup>&</sup>lt;sup>2</sup> Source: Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system.

<sup>&</sup>lt;sup>3</sup> Source: The International Council of Clean Transportation. The State of Clean Transport Policy: A 2014 Synthesis of Vehicle and Fuel Policy Developments.

There is an upward trend in toll systems, congestion charges and road regulation, with charges expected to increase from 10% to 15%–20% of transportation cost by 2030





# Emerging consumer goods and retail logistics challenges

Growing transportation inefficiencies and cost

Truck fill rates continue to fall, averaging less than 60%, driving greater transportation inefficiencies



<sup>&</sup>lt;sup>1</sup> Source: ScienceDaily. "Physical Internet": Shared Transportation System Would Increase Profits, Reduce Carbon Emissions.

On top of the low fill rates, transportation costs are expected to rise by 4%–6% annually for insurance, tax, fuel and driver wages<sup>1</sup>

Fuel and driver costs make up the lion's share of transportation costs, but other factors can also have a dramatic impact on operating costs.

An uncertain future which is likely to increase driven by volatile fuel prices, increasing driver wages and various economic trends mentioned earlier.

- <sup>1</sup> Source: Understanding the threat of rising freight costs (2014 guide by Tranzact) <sup>2</sup> Source: DECC Fossil Fuel Price Projection – September 2014
- <sup>2</sup> Source: DECC Fossil Fuel Price Projection Septe <sup>3</sup> Source: ETA Logistics Depart (2015).
- <sup>3</sup> Source: FTA Logistics Report (2015)
- <sup>4</sup> Source: Logistics Collaboration and Physical Internet Berkeley University of California 2014
- <sup>5</sup> Source: Skills for Logistics and the Chartered Institute for Logistics and Transport <sup>6</sup> Source: http://kff.org/infographic/employer-responsibility-under-the-affordable-
- care-act/
- <sup>7</sup> Source: World Bank Commodity Forecast Price data, October 2015

#### Fuel price is forecasted to rise

Long-term fuel price predictions are notoriously difficult to make due to high volatility (as shown in graph below the volatility from 2006 to 2015), especially as we have seen a collapse in prices by more than 50% over the last year<sup>7</sup>



 Current forecasted projections tell that oil prices will rise by c. 68% from US\$52.5/barrel to US\$88.3 per barrel by 2025<sup>7</sup> (see graph on page 20).

## Shortage of drivers leads to higher wages

- In the UK, the FTA predicts a shortfall of 50,000-60,000 HGV drivers.
- Driver ageing is a key concern; data from FTA Transport Activity Survey 2015 showed over 70% of drivers are aged 45 years or older<sup>3</sup> (see graphs on page 19)
- The shortfall is expected to be around 150,000 drivers by 2020, as the industry is not attracting enough new entrants.<sup>5</sup>
- Therefore, in the UK, average increase in driver's wage is estimated up to 5%.<sup>3</sup>
- In the US, demand for freight is expected to increase as re-shoring of manufacturing picks up and the economy grows.
- ► 100%+ drivers turnover rate.<sup>4</sup>

## Other factors add to costs

- Standards and regulation, such as below from the US, increase the costs of running trucks:<sup>1</sup>
- EPA requirements to meet engine efficiency and reduce harmful emissions
- Electronic on board recorder rules which increase costs and monitoring effort
- With vehicles becoming more fuel efficient, governments may introduce new toll roads to offset the reduction in fuel tax revenues.
- "We believe that this is an area where the states have to make their own decisions," said Transportation Secretary Anthony Foxx. "We want to open the aperture, if you will, to allow more states to choose to make broader use of tolling, to have that option available." – Washington Post May 2014
- Driver expenses will increase to cover the health insurance required by the Affordable Care Act.<sup>6</sup>

## Recognition that driver recruitment within the industry is a problem due to lack of work attractiveness



Although we have seen a collapse in oil prices, it is forecasted to increase from US\$52.5 per barrel to US\$88.3 per barrel by 2025 (c. 68% increase)



<sup>&</sup>lt;sup>1</sup> Source: World Bank Commodity Forecast Price data, October 2015



# Emerging consumer goods and retail logistics challenges

Omni-channel and e-commerce growth

As omni-channel deliveries continue to grow, the last mile cost will increase disproportionately



<sup>&</sup>lt;sup>2</sup> Launch Global E-Tailing 2025 DHL Workshop 2 – May 2014

Given the challenges experienced in the market, transportation costs increase 30%–70% by 2030



There are many emerging innovations that are threatening and helping logistics challenges; however, some of these may be many years away





# Potential consumer goods and retail collaboration models

## Example consumer goods company freight utilization data shows 20%–50% saving opportunities could be achieved

While most organizations "optimize" for freight movements, our study shows that there is still room for load fill improvement, which would lead to higher cost and greater empty miles.

Average vehicle utilization rate varies from c. 30%-90% in consumer goods companies, depending upon the company products, maturity, collaboration model and overall logistics strategy.

Where high vehicle utilization is realized, this often happens through running lengthy multi-drop delivery route.



Our general observations demonstrate that if company maximizes or doubles the vehicle load, it can save between c.20%-50% of cost per pallet or case.

Although it seems common sense, it is the most crucial and difficult outcome to achieve (providing supply chain complexity, customer expectations, competitiveness, environmental and regulatory changes).

○ Shows indicative cost per pallet saving percentage from half truck to full truck load

To further test the collaboration benefits, we have short-listed three key collaboration opportunities



## We have developed hypothesis-led scenarios to simulate the benefits of selected collaboration opportunities



### Collaboration scenario benefits vs. challenges summary



\* All benefits are indicated based on hypothesis-led scenarios. Cost per pallet is used as standard to demonstrate reductions. However, for consumer delivery, please read this as cost per case or box.

Manufacturer-to-retailer DC delivery through a manufacturer logistics hub can save about 30% of cost per pallet



#### Comments

- With actual client data, we have found that collaboration of two drinks manufacturers by merging ship "From" and "To" locations for delivery to shared customers could save up to c. 25% on cost per pallet.
- Manufacturer logistics hub operational savings are excluded, which is additional saving opportunity (in terms of OPEX and CAPEX sharing expenditure).
- This model could also be applied with just manufacturer logistics hub for slow movers in a low-cost location.

Manufacturer-to-store deliveries through manufacturer logistics hub can save about 23% of cost per pallet



#### Comments

- Keeping the same individual retailer DC-to-store delivery model have decreased the saving estimated up until manufacturer logistics hub by 7% (from 30% to 23%).
- However, if retailer DCs are consolidated in the market retail consolidation center, then significant savings could be made.

Just with market retail consolidation center, saving from manufacture-to-store deliveries increases to 39% (by 16%)



#### Comments

- Market retail consolidation center maximized the milkround opportunity for multiple retailer stores delivery.
- Cost may vary depending on the number of suppliers and retailer consolidating, and the number of stores in proximity of the milkround radius.

Only market retail consolidation center to store deliveries through milkround can save cost per pallet around 54%



#### Comments

Market retail consolidation center operational savings are excluded, which is additional saving opportunity (in terms of OPEX and CAPEX sharing expenditure). Manufacturer-to-consumer (end-to-end) collaboration including collection points can save about 40% of costs per pallet



#### Comments

Manufacturer logistics hub and market retail consolidation center operational savings are excluded, which is additional saving opportunity (in terms of OPEX and CAPEX sharing expenditure). Collection point model at the last leg from store to consumer delivery can save about 37% of cost per case or box



#### Comments

Collection point investment is excluded, there are multiple opportunities attached to it, e.g., shared collection point, outsource collection (which can include lockers pickup or Uber-type deliveries), use existing local shops or post office. Anticipated transportation cost could be offset by exploiting various collaboration models to get saving around 20%-50%





## Assumptions, footnotes and references

### Hypothesis-led approach and assumptions

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#### Approach

- Two simulations of each scenario are created to demonstrate current and future state (i.e., before and after collaboration, respectively).
- Scenarios are modeled end-to-end from manufacturer to consumer, to directionally demonstrate the potential of collaboration and related benefits.

#### Assumptions

- For simulation, number of logisticsoriented variables are assumed to give logical sense in terms of distance, time, speed, load, percentage utilization, drops, and driver and vehicle costs (includes congestion factor as well).
- Twenty-six pallets assumed for a full vehicle capacity and remain constant throughout the scenarios. Product and vehicle configurations are also considered constant in all scenarios.
- Assumptions made for average driver's income per hour (c.£14) and vehicle cost per mile – including fuel, maintenance, repair, insurance (c. 60 pence). Both remain constant before and after collaboration in all scenarios.
- For simplicity, all facilities and physical distributions are assumed in one country or geography, and road as mode of transportation.
- Given the lack of robust

infrastructure, integrated technology, uncertain economic profile and fragmented supply chain, emerging markets assumptions are excluded from each scenario.

- Therefore, assumptions are made on the basis of developed markets for urban areas to leverage opportunities due to high maturity. However, same assumptions should be applicable to emerging markets, if the core infrastructure, IT and supply chainrelated complexity is sorted, which should be the first priority.
- Delivery frequencies are not considered by assuming each delivery in any given time for both before and after collaboration scenarios.
  Less-than-full truck load delivery has more frequency to fulfill demand than full truck load; however, after collaboration, same delivery frequency can be achieved with full mixed truck but fewer runs.

## 3

#### Notes

- The cost of serving an individual pallet depends on the size of the delivery, number of drops, vehicle utilization, distance, and time the delivery is from its depot and from other deliveries.
- Cost per pallet is used as a standard to demonstrate savings; however, for consumer delivery, please read this as cost per case or box.
- Rural trend should be similar with c.10%-20% incremental cost versus urban area, mainly due to long distance transportation and low availability of skilled drivers.

## References

Page number	Reference number	Source
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6	2	EY. China: Planning for an Urban Future.
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11	1	EY. Economics of Carbon.
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11	3	The International Council of Clean Transportation. The State of Clean Transport Policy: A 2014 Synthesis of Vehicle and Fuel Policy Developments.
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11	5	Roland Berger. Truck Transportation 2030.
12	1	Melinda Jászberényi (Corvinus University of Budapest) and András Munkácsy (Institute of Transport Sciences, Budapest). The Introduction of the Congestion Charge.
12	2	San Francisco Chronicle. S.F. May Hit Drivers with Variety of Tolls.
12	3	BBC News. Beijing 'Plans Congestion Charge' to Ease Traffic Woes.
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15	1	Understanding the threat of rising freight costs (2014 guide by Tranzact).
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15	4	Logistics Collaboration and Physical Internet. Berkeley University of California. 2014.
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19	1	EY analysis of UK retailer.
19	2	Launch Global E-Tailing 2025 DHL Workshop 2. May 2014.

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#### About EY

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#### About The Consumer Goods Forum

The Consumer Goods Forum ("CGF") is a global, parity-based industry network that is driven by its members to encourage the global adoption of practices and standards that serves the consumer goods industry worldwide. It brings together the CEOs and senior management of some 400 retailers, manufacturers, service providers, and other stakeholders across 70 countries, and it reflects the diversity of the industry in geography, size, product category and format. Its member companies have combined sales of EUR 2.5 trillion and directly employ nearly 10 million people, with a further 90 million related jobs estimated along the value chain. It is governed by its Board of Directors, which comprises 50 manufacturer and retailer CEOs.

For more information, please visit: the consumer goods for um.com.

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