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Overcoming technology challenges, for logistics businesses of all maturity levels

WHITEPAPER

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CIEKS | DATA-DRIVEN SUPPLY CHAIN MODELLING

Rapid changes in the business and social landscape are placing increasing pressure on logistics companies; disrupting traditional operating models and raising new challenges. Today's customer demands a fast, integrated and personalised experience, available through diverse channels. Always on and always connected.

Armed with access to new technologies such as artificial intelligence (AI), blockchain, Internet of Things and Robotics Process Automation (RPA), traditional firms across industries are pursuing digital transformation to reimagine solutions to existing business challenges and create exponential value for their customers and partners. transparent, flexible and agile logistics services has given rise to the 'sharing economy', which continues to gain traction. With that comes a crop of new digital platforms for the transportation (Uber, BlaBlaCar), warehousing (Stockspots), shipping (CargoOne), on-demand staffing and logistics intelligence markets

Some companies, initially operating on retail and outsourcing logistics to external providers, are now using their size and financial power to offer their own shipping services to smaller enterprises. And they're doing it well, using high-tech solutions.

Oliver Wyman



Social, business and technology trends **disrupting the logistics market**

CUSTOMER-CENTRIC AND OMNICHANNEL EXPERIENCES

99 With the B2B online retail market expected to reach double the size of the B2C online market by 2020, businesses will need to intensify efforts to tap into new online channels.

DHL Logistics Trends

Omnichannel services will allow businesses to hugely enhance customer experience and provide greater ease of delivery.

As customer experience continues to drive innovation, companies will focus more and more on technologies like AI for PWC's 2018 CEO Survey suggests that 68% of T&L heads expect changing distribution channels to disrupt their business within the next five years.

personalisation, voice commerce and chatbots for customer support, extended reality for immersive experiences and mobile technologies for billing and payment digitalisation.

THE SHARING ECONOMY

41%

of US consumers have used shared or on-demand services offering same-day and expedited delivery, according to Statista. Technology continues to alter traditional business models and disrupt the way consumers interact with service providers. Since the sharing economy is largely built on crowdsourcing, it allows companies to drive down prices and <u>unlock a wealth of new</u> <u>opportunities</u>.

US-based on-demand shipping firm, Postmates, currently leads the market in this area, while Uber Freight's service allows companies to schedule deliveries via its trusted network of drivers, directly. Saloodo! uses mobile technology to offer real-time data and communication between shippers and carriers, mapping loads on the available capacity on the road.

DISTRIBUTED AND DECENTRALISED PROCESSES

Transparency, greater efficiency, security and immutability — better services at lower costs — are the reasons why the transportation and logistics

99 The global blockchain market size is expected to grow from USD 1.2 billion in 2018 to USD 23.3 billion by

2023. Major forces driving the blockchain market include increasing venture capital funding and investments in blockchain technology — increasing popularity of blockchain in retail and supply chain management — and a growing focus on reducing operational costs.

sector turns to blockchainbased solutions. Uses will include supply chain optimisation via smart contracts and automation, new business models based on crowdsourcing, loyalty programs with immutable records and so on.

MarketsandMarkets

SELF-DRIVING VEHICLES

99 Self-driving vehicles will soon fundamentally transform the way vehicles are assembled, operated, utilised and serviced. From trucks to last-mile robots, self-driving vehicles will transform logistics by unlocking new levels of safety, efficiency and quality. In September 2018, Volvo introduced a new concept in the field of automotives: the entirely **autonomous electric Vera truck**. It was designed to carry out repetitive tasks in logistics centres, factories and ports where several vehicles could form a connected system, monitored from a control tower. **Daimler Trucks**, who began testing autonomous trucks on public roads in the US, provide another leading example of the potential of self-driving vehicles.

DHL Trend Report

AUTOMATION AND RPA

<u>McKinsey</u> estimates that almost half the activities people are paid to do, totalling up to \$16 trillion in wages have the potential to be automated by adapting existing technology. This spans more than 2,000 work activities across 800 occupations.

Ultimately, the outcome of this journey depends on how mature the organisation is. **So how do you know if your logistics business is ready for the digital future?** To remain competitive in today's challenging environment, businesses will be looking for new ways to diversify their value proposition, digitalise processes, automate warehouse operations and adopt new delivery models to drive operational effectiveness.

And while digitalisation will optimise a huge chunk of logistics processes — potentially creating a feeling of unease among human workforces — it will also relieve increasing labour shortages and help boost the performance and retention of existing workers, particularly in mature markets. This shift will, in fact, increase the number of technically skilled jobs in logistics, such as programmers and robotics managers. But to recruit and retain millennial and Gen Z talent it will need a reimagining of ways of working.

Gartner's five stages of logistics maturity

Focusing on solutions designed for a high level of maturity means less mature organisations potentially overspend on things they can't fully leverage now. That's why businesses need a strategic roadmap and long-term digital transformation vision.

Gartner suggests a five-stage model to help supply chain and logistics leaders of all kinds evaluate their organisation's maturity and attach the right transformation approach to it. Each stage is characterised by problems, objectives and requirements, typical at this level of development.

Through our own analysis of the five-stage model and based on almost three decades of custom software development expertise, we designed a best-fit technology solution for each stage. From software architecture and integration methods to real life implementations and use cases, we've developed a strategic approach that allows users to address the very specific needs of their logistics business, based on its maturity level.

Let's take a closer look at the model, to see how those in logistics and transportation can use technology to tackle day-to-day challenges and unlock new efficiencies and growth opportunities.



React: Siloed autonomous operation

THE SITUATION: PROBLEMS AND CHALLENGES

- Decentralised data entry and databases, data conflicts and inconsistencies due to lack of a master data source.
- Inconsistent business processes due to multiple decision-making points and critical dependencies on key stakeholders.
- Limited real-time tracking possibilities.
- High cost of ownership.

- Complex integration of systems (many-to-many) and variety of applications with duplication of functionality.
- Complicated and time consuming financial and management reporting.
- No single point of access for clients, partners and management.

TECHNOLOGY SOLUTION

Complex systems based on Modern CMS can cover multiple business functions, from marketing to customer interactions, while simple integrational APIs connect systems and bring all data together — laying the foundation for future extensions.

Always-on mobile devices can serve as a point-ofsale (point-of-interaction) for company agents. This kind of mobile solution can facilitate multiple tasks and processes including instant package scanning with QR or NFC, quick card reader payments, realtime data collection and agent tracking, real-time payment confirmation and more.



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Mobile POS

Potential use cases for mobile technology can include:

- mobile apps automating the work of drivers, couriers, warehouse managers, etc
- step-by-step business process automation with evidence and control points
- paperless workflow
- bar/QR codes and RFID scanning and identification
- signature capture
- identification by face recognition or fingerprints
- real-time (on delivery) customer feedback
- mobile dashboard reporting

Introducing mobility at the earliest stage, an organisation can increase efficiency and improve control over routine operations, accelerate processing speed, establishing realtime access to operational data, reducing mistakes and increasing accuracy of operations, while improving communication with personnel and clients.

Anticipate: Functional scale and efficiency

THE SITUATION: PROBLEMS AND CHALLENGES

- Centralised data storage isn't currently reaching its full potential, often being used as a 'dump pile' for information that's then forgotten.
- Communication between applications is still complex and hard to manage.
- Business processes aren't standardised and are hard to adapt and maintain.
- Currently, only simple analytics is available; complicated analysis requires advanced tools and methodologies.
- Predictive analysis and modelling has limited capability.
- Clients and management are often unable to obtain all the information they need from a single point of access.

TECHNOLOGY SOLUTION

Communication between multiple applications can be enabled by way of an API layer. Reports can then be generated in a data warehouse, which holds the accumulated data from an entire IT ecosystem.

IoT devices can send/receive messages in real time, with data stored and processed — again, in real time — by means of BigData technologies.

Chatbots and **intelligent automation** like **RPA** can help facilitate communication with customers as a part of an omnichannel solution.



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eleks | data-driven supply chain modelling



approach, a **smartphone can become a customer's centralised wallet**, enabling instant notifications, payment card aggregations and personal information storage (KYC), as well as providing access to loyalty program

Thanks to a modern UX

To handle financial data and enable effective reporting, logistics organisations can adopt a set of tools shown in the schema.

cards, order history and

tracking information.

This approach can help automate and facilitate several essential processes and operations, including:

- Multiple data collection from: external sources, analytic algorithms, transactions and finance, ERP and CRM systems
- Finance decision automation based on collected inputs
- Use of geo-tracking and consumer analytics
- Data visualisation on real-time dashboards
- Notifications and fraud prevention
- Integrating user interaction, consumption and payment
- Linking with merchant platforms to provide pre-order facilities for ease of purchase and payment
- Improved interface customisation to enable users and merchants to see spend amounts, categories and options for better planning, implement ceilings, alerts etc.

Data Science can help influence decision making and provide advanced predictions in areas such as discounting, appetency, churn risk, upselling etc. This allows businesses to identify the most/least profitable customers, reduce churn and gain better focus on their marketing efforts. To enable greater customer insight at this stage, an organisation can adopt Data Science and algorithms, for datadriven capacity planning as well as customer segmentation and behaviour prediction.

Integrate: Integration with the supply chain

THE SITUATION: PROBLEMS AND CHALLENGES

- Informational flows, though described and managed, are decentralised and suboptimal.
- Existing reporting covers different domains but doesn't provide a holistic view of the supply chain.
- Each domain's business processes are managed separately, often creating problems with process integration of different business flows.
- Predictive analysis is confined to a limited number of factors.

TECHNOLOGY SOLUTION

Experience tells us that, by and large, it's too expensive and time consuming to develop modern solutions (Big Data or integrated mobile apps) based on an old architecture. There are several reasons for this. First, the cost of maintenance is often high. Also, 'many-to-many' data flows are too hard to manage and maintain.

Moving away from legacy architecture also allows for fixes to issues such as lack of a single data source for key informational entities (e.g. customer), conflicting data across sources, no master data source, difficulties with support of outdated technologies, poor scalability and low speed. The problem can be solved with the service-oriented approach.



The Middleware Integration Solution syncs all systems in real-time mode. Data (events) flow through the system, making it easy to respond to changing conditions and scenarios. Integration points provide "sockets" for connections with other business applications, including external ones. An integrated data lake allows you to work with your data, visualise it and make intelligent data-driven decisions.

Collaborate: Collaborating with the value chain network

THE SITUATION: PROBLEMS AND CHALLENGES

- Integration across supply chain players provides information and transparency but isn't enough to create real efficiency, as capacity planning is still autonomous—if not siloed.
- Loss of market position as a result of failure to accurately capture predicted demand growth, where rivals have succeeded.
- Business scale hindering process change and creating negative "habits" around operational efficiency.
- Business processes which include partners are inefficient and sometimes unpredictable.

TECHNOLOGY SOLUTION

At this stage of maturity, logistics organisations can really benefit from Data Science. An advanced analytics platform can become a comprehensive tool for internal/cross-chain analytics, enabling in-depth insight and prediction.

Companies at this stage also benefit from the full potential of cloud-based solutions. With data backups & replication, load balancing, high availability, autoscaling and serverless approach, the modern solution becomes far more efficient and global, leading to much broader logistics coverage.



Orchestrate: Network orchestrator of profitable customer value

THE SITUATION: PROBLEMS AND CHALLENGES

- Combining transparency and open data sharing across the supply chain with the cybersecurity readiness and protection of business-critical data.
- Relying on external institutions/businesses in end-to-end optimisation modelling and supply chain management.

TECHNOLOGY SOLUTION

At this stage of maturity, logistics and transportation businesses should consider adopting orchestration platforms. A platform-based approach with bigger interconnected solutions allows for future expansion and helps facilitate changes from the inside.

It's also worth taking a closer look at what blockchain technology can offer. **Distributed and decentralised processes provide full traceability, transparency and the ability to work in a semi-trusted environment.**



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Among the use cases for blockchain in logistics, those with the **highest business potential** include:

- Supply chain optimisation with the help of smart contracts and automation
- Payment automation through peer-to-peer network capabilities and smart contracts
- New models of insurance, built on crowdsourcing
- Secure transactions and loyalty programs with immutable records

The below schema gives more detail on how blockchain integration works for a logistics organisation.



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Designing the right transformation strategy for your needs

Start by asking yourself where you are on your digital transformation journey. Why is it important to evaluate your organisation's maturity level and take steps towards the next stage?

There are fundamental reasons why **being clear about your current "state of being" is so essential for future development and evolution.** Firstly, implementing complex IT solutions requires a corresponding level of IT maturity to support the initiative. Secondly, attempts to build sophisticated tools based on legacy infrastructure, outdated technologies and inconsistent data are high risk and almost always doomed.

By contrast, a well-developed innovation strategy allows you to follow the ideal evolution model for your business, transforming its IT systems in line with growth and expansion plans.

Companies that know where they currently stand and understand what they want to achieve with digital transformation can plan and implement technology upgrades in an organised way, balancing investment and smoothing IT expansion without unpredicted peaks and troughs for the different functions.

<u>Contact us</u> now, to find out how we can help you enable faster, smarter, more customercentric logistics. What's more, proper maturity evaluation and planning guarantees you have all the resources and expertise in place to facilitate and support your digital journey.

ELEKS has almost three decades of expertise in developing complex software solutions for businesses in various sectors, including logistics and transportation. Our team of software experts, with in-depth engineering knowledge and a background in the sciences, will work with you to define gaps in your existing operational processes, then build a robust development roadmap that unifies your supply chain, fleets and warehousing. So you can streamline your operations and save money.

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