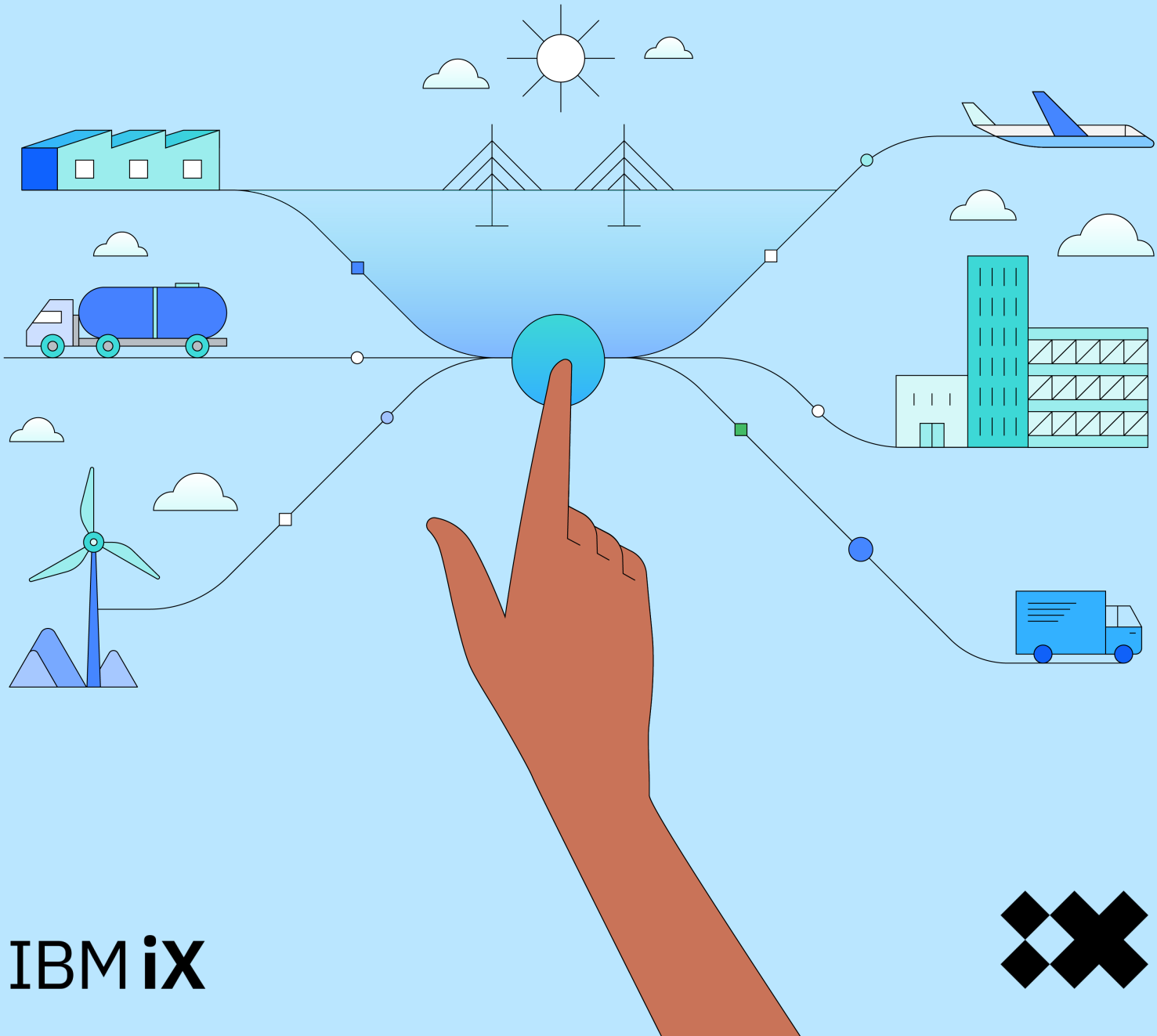
Human-centred design:
Modernising core systems in freight and logistics



IBM iX

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When faced with economic uncertainty, the logistics industry must focus on innovation, customer satisfaction, and User Experience (UX) to survive in the marketplace.

The industry is experiencing rapid change due to technological advancements and a shortage of skilled professionals. As a result, User Experience has become a critical success factor.

As the logistics industry adjusts to the economic downturn, companies need to focus more on positive customer and employee experiences.

By integrating UX strategies and design, companies can reduce errors, increase productivity, and improve efficiency. The use of new technologies such as artificial intelligence, blockchain, and decentralised applications can not only help revolutionise the industry by improving efficiency, reducing costs, and increasing transparency, but also create a better experience in the workflow of customers and employees through these effects.

Innovative start-ups have significantly impacted the global logistics industry by focusing on rapid innovation, design, and delivery models that prioritise user-friendly operating processes and ease of information delivery.

This whitepaper highlights the importance of User Experience in the industry, focusing on core systems that, unlike the many small start-up and niche solutions on the market, still have severe deficiencies in terms of User Experience.

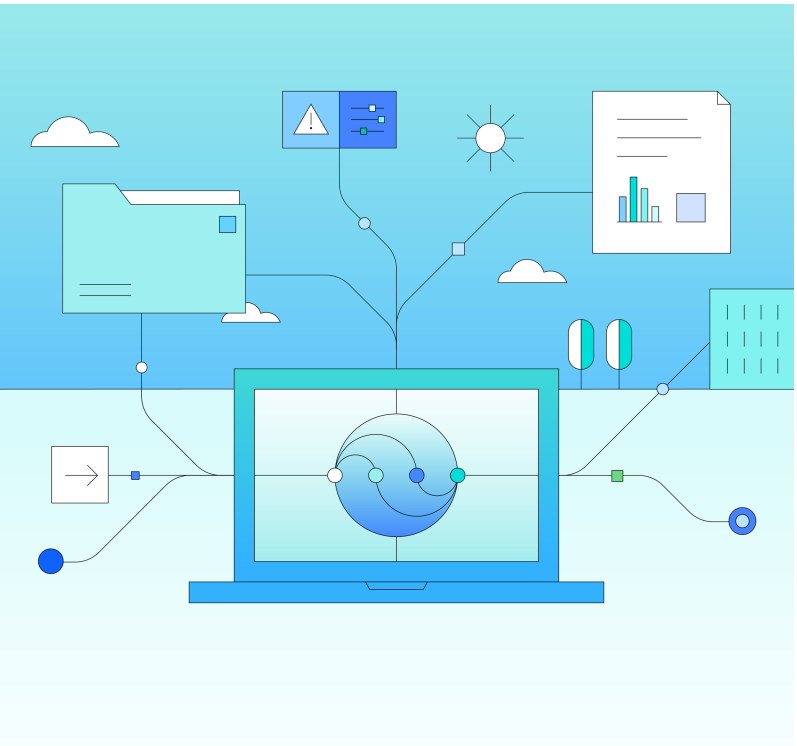
Although application modernisation is seen as essential from a technology perspective, the perspective of the users is often neglected or de-prioritised.

By understanding the needs of different stakeholders and implementing user-centred design principles, large enterprises can improve their overall performance and remain competitive in the marketplace.

Integrating a people-centric view into all business processes can help mitigate risk, increase productivity, and improve efficiency-critical factors for survival in challenging economic conditions. In addition, investing in user-centred design thinking practices can improve customer service, increase customer loyalty, and secure a competitive advantage in a rapidly changing marketplace.

Core applications of the industry

In the logistics and transportation industry, numerous players are involved in planning, executing, and managing the movement of goods and people from one location to another. These players rely on various software solutions to streamline operations, increase efficiency, and improve communication. However, many legacy core systems lack user-friendly interfaces and streamlined processes, leading to problems and inefficiencies.



Let's take a look at some of the industry-specific systems:

1. Transportation Management Systems (TMS):
   TMS software assists in planning, executing, and optimising the movement of goods across various modes of transportation.
   Users include people working at transportation companies, logistics service providers, and shippers, as well as the customers who own the products in the warehouse.

2. Warehouse Management Systems (WMS):
   WMS software is used to manage the storage, tracking, and movement of goods in warehouses.
   Users include people working at warehouse operators, logistics service providers, and shippers.

3. Fleet Management Systems:
   These software solutions help monitor and manage vehicle fleets, including locating vehicles, monitoring fuel consumption, and scheduling maintenance.
   Users include people working at transportation companies and logistics service providers.

4. Route optimisation and planning software:
   This type of software assists in planning the most efficient transport routes, taking into account factors such as distance, traffic, and delivery times.
   Users include people working at transportation companies and logistics service providers.

Challenges and opportunities

Legacy applications in the logistics and transportation industry often consist of heterogeneous user interfaces representing complicated processes, resulting in a poor User Experience for customers and employees.

Employees often face numerous challenges in the workplace, such as dealing with various applications, lack of a holistic view of the customer and the process, and difficulty collaborating as a team. These issues can be addressed by modernising systems with a focus on simplifying the User Experience and making processes easier for the user.

Especially with systems that are now over 20 years old, we realise how far their handling has moved away from the expectations of younger users.

In times characterised by a shortage of skilled workers and a workforce that will soon be retiring, it is important not to scare off new, young employees with user patterns that are complicated to operate and not self-explanatory.

Typical problems associated with core and legacy applications:

The software is designed along the business process, not along the user process

Most applications do not have a role-specific view

Too much information is displayed on the individual screens: the cognitive load for the user is high

There is no responsiveness of the user interfaces (i.e. the display does not adapt to the screen size. Display on mobile devices is not possible)

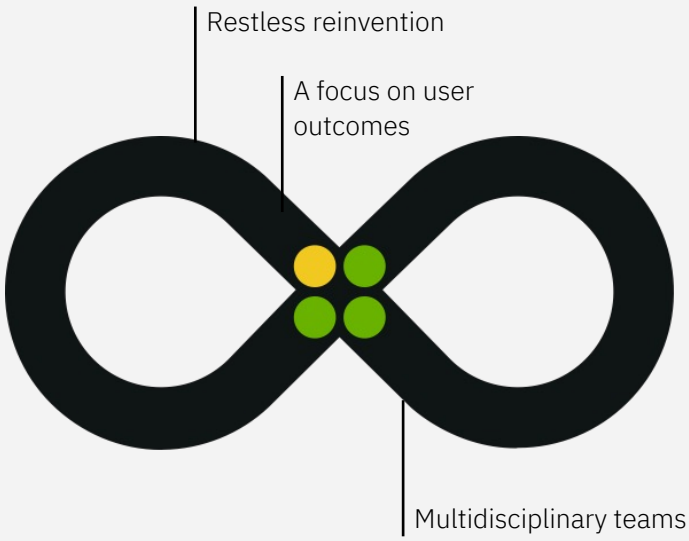
Visually, legacy applications do not meet today's design standards.

Legacy applications are often no longer scalable

High maintenance costs

Old applications cannot be easily moved to the cloud

Modernise your systems with a focus on User Experience



Sponsor Users
align our intent with users' reality

Hills align our intent
across teams

Playbacks align our intent
across time

Observe

Understand your target customers' goals, needs and pain-points

Reflect

Design content and journeys
that align business objectives
with customer insights

Make

Prototype and test the solution to measure success and identify points of improvement

Many legacy systems are currently undergoing technical modernisation because they are being moved to the cloud or because the underlying software is outdated. This is an excellent opportunity to look at the User Experience and the user interface in parallel:

A successful redesign approach includes

- A visual uplift of the user interfaces
- Service and experience design including workflow improvements
- Architectural modernisation and deployment modernisation to take advantage of new opportunities such as IoT, blockchain, artificial intelligence and machine learning.

The system modernisation process should include user research and strategic enterprise design thinking to gain a comprehensive understanding of user needs and develop a target vision for the application. This target vision should be validated through user testing to ensure that users' needs for specific work processes are intuitively met by the system and well accepted by employees.

A design system can be implemented to create reusable design and code components that can be deployed across the enterprise to reduce long-term production costs and ensure a consistent enterprise experience. This is especially important if the enterprise uses its application with customised user interfaces.

All this is covered by the human-centric design method.

This is about understanding the needs, preferences and expectations of users and adapting the design of products and services accordingly. This approach involves conducting qualitative research, creating personas, identifying user pain points, and developing solutions that address those pain points. By implementing user-centred design, organisations can create interfaces and processes that are more intuitive, efficient, and satisfying for users.

User research is core

Observing users is an essential way to gain insights into user needs, preferences, and pain points.

Job shadowing involves observing employees as they perform their tasks, allowing researchers to gain a first-hand understanding of the challenges and inefficiencies faced by users. This method helps identify areas where improvements can be made and provides a basis for developing solutions that address user pain points.

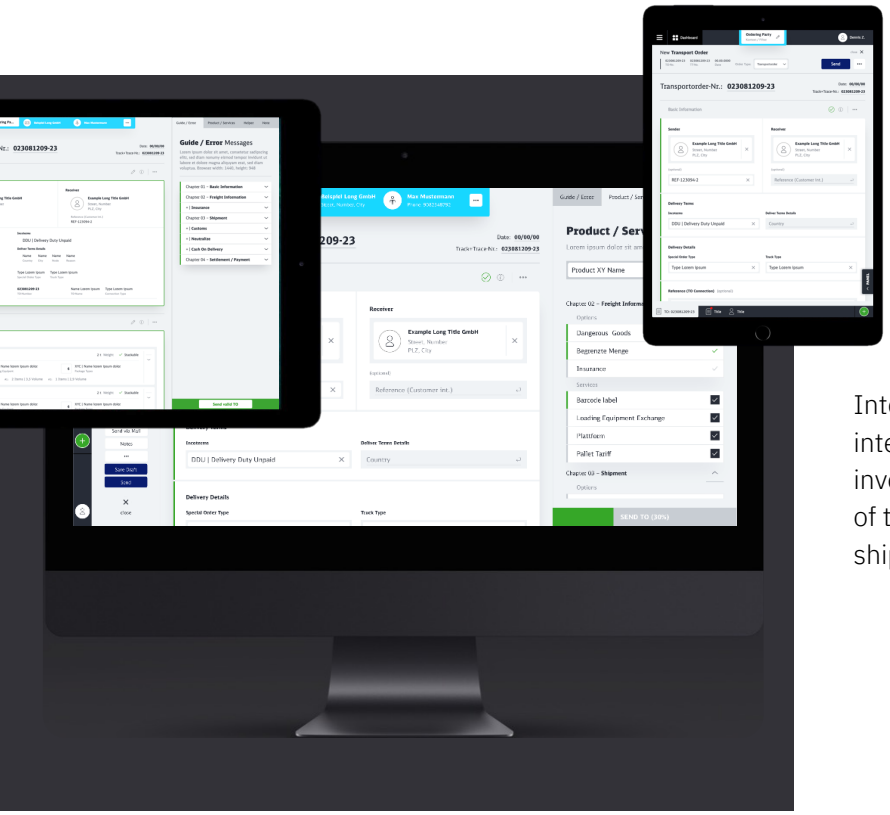
User testing involves having users interact with prototypes or existing systems to evaluate their effectiveness and usability. This method helps organisations identify areas where improvements can be made, validate design decisions, and ensure that the final product meets user needs and expectations.

User research in the form of job shadowing is crucial in the context of core systems. The widespread method in IT of collecting requirements by asking users what they want has so far led to few innovative improvements. In contrast, observing work processes leads to insights that are often not even consciously formulated.

In our research, for example, we often found that users had additional supporting software in use, which they operated in windows next to the application, or that certain tasks were simplified by making notes on pieces of paper. Job shadowing is primarily about understanding the context of use, which would not be apparent if the user had only looked at the application.

In the area of employee applications for blue-collar users, it is also essential to observe the tasks to be supported in the field. What are the lighting conditions? Are both hands available? How quickly and in what context is information needed or does information need to be entered?

German logistics company



User interface modernisation of a 10+ years-old desktop logistics business solution

International logistics is a complex field with lots of internal stakeholders and cross-border logistics partners involved. The software is designed to handle all aspects of the logistics value chain for all kinds of land transport shipments.

Insight

Conduced qualitative UX research in client offices revealed user feedback in 3 categories:

The tool: Feedback on the user interface, usability and tab views.

The process: Employees follow working processes the tool is dictating that are sometimes not aligned with their daily needs to work efficiently and productively.

Communication: A lot of communication happens outside the tool leading to a multi-tool approach slowing down the process.

Idea

Introducing a user-focused way of working with the ordering party as anchor for dataset handling.

Impact

Within 3 months we used modern off-the-shelf web technologies to deliver for specific use cases a simplified, restructured, smart and guiding user interface with streamlined navigation following evaluated user journeys & flows leading to higher employee satisfaction planning to enhance the employee productivity and leading to more shipments and higher earnings.

The next step is to scale the new interface to handle all 1000+ use cases.

How human behaviour leads to a major limitation in onsite logistics

The role of experience in the logistics industry

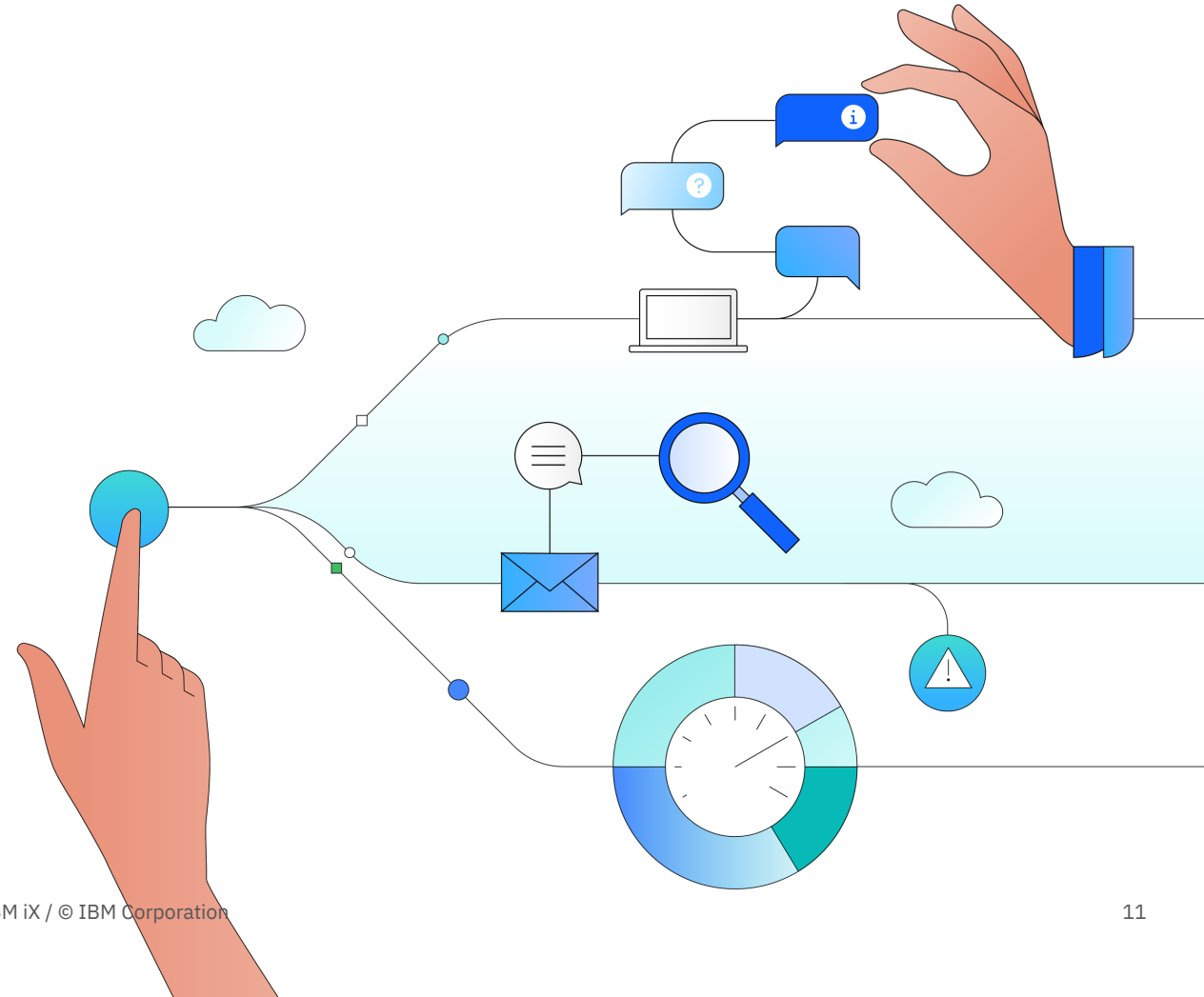
Prioritising customer satisfaction and User Experience is critical for logistics companies to manage economic uncertainty. By integrating UX strategy and design and exploring the use of artificial intelligence, blockchain technology, and decentralised applications, companies can ensure their offerings are user-friendly, accessible, and competitive in today's marketplace.

Understanding the impact of good User Experience in complex processes like logistics and supply chains is not easy. This is one of the main reasons why even the large IT service providers in this industry often neglect it.

User Experience (UX) should not be treated as an afterthought in an application development. Instead, it should be integrated as a critical step in the overall design process.

Unfortunately, complex enterprise supply chain applications such as Enterprise Resource Planning (ERP), Order Management Systems (OMS), or Warehouse Management Systems (WMS) are often the least user-friendly.

Therefore, it is critical to develop a UX roadmap that evolves such legacy applications while redesigning their user perspective and focusing everything on the interface.



Experience aspects for core applications

1. Refocusing on the user

Users include transportation companies, logistics service providers, and shippers, as well as the customers who own the products in the warehouse.

Because each entity uses its own – often lengthy and cumbersome – processes and procedures, it is often challenging for companies to create a holistic system that uses new digital technologies to support an efficient process.

Take, for example, an OMS equipped with cutting-edge features such as intelligent coordination between buyers and suppliers, business process visualisation, inventory analysis, etc. It may well fail to realise its true potential because it misses the mark in terms of end-user expectations – particularly in terms of its perspective. This can be overcome by applying simple but powerful design principles to your application before it is launched.

- Only show users the functions that are required for the next step.
- Differentiate between information displays (dashboards) and input screens for specific process steps.
- Personalise the display of the user interface for specific roles.
- Standardise usage patterns so that even complex applications can be used intuitively.
- Simplify the user interface so that warehouse workers can also use it quickly and easily.

Deploying non-user-friendly warehouse management systems often results in lower employee productivity, lower user adoption, higher support calls, and disappointing ROI.

2. Data visualisation

Data visualisation is the presentation of data in a graphical or illustrative form.

It helps to visualise complex information and correlations in a way that is easy to understand. By using visual elements such as diagrams, charts, maps and dashboards, you can quickly recognise patterns, trends and correlations in the data that would otherwise be difficult to identify.

This element can be used, for example, for the

1. Monitoring of supply chains: by visualising data from different sources, such as suppliers, transport companies and warehouses, logistics companies can better monitor the status of their supply chains and identify potential bottlenecks or delays early on.

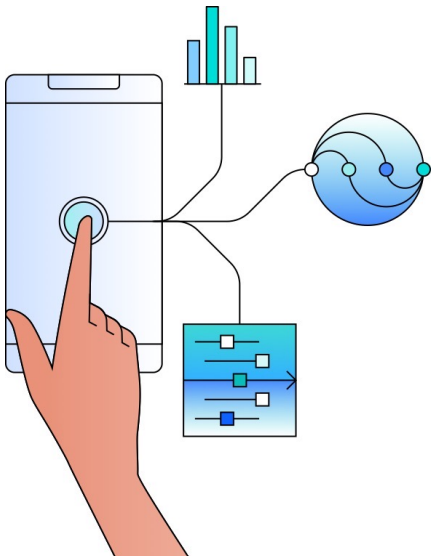
2. Route optimisation: visualisations of traffic data, weather conditions and factors can help to plan optimal routes for the transport of goods, saving time, fuel and costs in the process.

3. Warehouse management: the visualisation of warehouse stocks and capacities can help to identify bottlenecks and make the storage of goods more efficient.

3. Mobile UX applications and field service applications

Overall, the design of logistics applications for mobile devices enables a more efficient, flexible and customer-focused way of working in the transport and logistics industry. Not every use case makes sense to operate on a smartphone, but there are scenarios in which users want to be flexible to be able to access data and react at any time. This is especially true for personnel who do not have a desktop computer or terminal in their work environment. In addition to the core system, there is also the option of integrating personalised sub-processes into specific apps for individual job roles and work processes.

In its partnership with Apple, IBM has been very successful in this regard in the context of employee and field service apps and has meanwhile developed entire industry suites of customised mobile applications.



Mobile apps have the following impact on User Experience:

1. Accessibility and flexibility: the use of mobile devices enables the employees and logistics partners to access applications anytime, anywhere. This increases flexibility and enables more efficient communication and collaboration.

2. Real-time information: mobile applications provide access to real-time information such as location data, delivery status, and inventory levels. This improves decision-making and helps identify potential delays or problems early on and resolve them at an early stage.

3. Streamlining workflows: by accessing logistics applications on mobile devices, employees can complete their tasks directly onsite without having to rely on a desktop computer. This speeds up workflows and reduces errors that can occur due to manual data entry or loss of information.

4. Improvement of customer service: mobile applications enable employees to handle customer enquiries quickly and efficiently by providing information about deliveries, inventories and other logistics aspects directly on their mobile devices. This leads to better customer satisfaction and improves the company's image.

5. Scalability: adapting logistics applications for mobile devices enables companies to easily adapt their applications to meet growing business requirements and integrate new technologies and features without having to completely overhaul their existing infrastructure.

4. Simplicity

No matter how complex the process, make sure the resulting steps are easy for employees to understand and follow. Even if the flow of information is automatic and not manual.

In this context, it is important to mention that even when using and customising standard software, care should be taken not to overload the user interface with unnecessary information and/or empty input and table fields. Simplicity is the top priority. Here, the industry can learn from developments in the financial sector, where a great deal of emphasis has been placed on the simple operation of complex systems.

5. Better decision making through self-learning AI

Artificial intelligence (AI) is already playing an important role in the logistics and supply chain industry. Mobile robots, smart trucks, and drones are helping companies increase efficiency and outperform the competition. And this is where UX comes into play.

Transparency and trust are important when dealing with AI. Here, it must be evident to the user what data AI has generated and from which sources this data has been obtained. For interaction with the AI, the same rules apply as before: simple operation and user guidance make it easier to deal with and reduce fears.

In conclusion

Human-centred design and User Experience (UX) are crucial factors for the success of companies in the logistics and transportation industry. The integration of UX strategies and design into existing systems can increase productivity, reduce errors and improve efficiency. Leveraging new technologies such as artificial intelligence and blockchain can not only revolutionise the industry – it will also lead to a better experience for customers and employees.

Modernising core systems with a focus on usability and the implementation of user-centred design principles is crucial to remaining competitive in the market. Investing in user-centred design thinking practices can improve customer service, increase customer loyalty, and create a competitive advantage in a rapidly changing marketplace. One possible start is a User Experience assessment to identify optimisation potential that the product owners may not even be aware of. The findings form the basis for a redesign of the first part of the application. This prototype is used to measure previously defined KPIs again, learn from them, and, if successful, apply them to scale the new concept and design to the entire application.

Overall, it is clear that the integration of human-centred design and UX in the logistics and transportation industry is an important game changer that will help improve customer satisfaction and employee experience, and help companies compete in a competitive marketplace.

Get in touch!

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