



Enabling last-mile delivery in urban environments with limited mobility access

Introduction

Due to the combination of urbanization, the rising popularity of e-commerce and rising congestion levels in cities, delivery companies are increasingly struggling to transport their goods to the customer. Conventional delivery fleets, consisting of big delivery vans to handle the rising delivery volumes, are not suited to the urban environment anymore as cities are undergoing rising congestion rates and as automobiles are becoming a less prioritized mode of transport. Consequently, delivery workers have to cover larger distances from the van to the front door of the customer by foot. Usually, delivery workers use hand trucks to cover these last meters, but as these distances increase, walking the hand truck becomes a tedious and time consuming job.

Who is Claus?

Claus is proposed as a solution for this last leg of delivery. Claus is an auxiliary module with a built in electric drive train that connects to any regular hand truck. By connecting Claus to a hand truck, a four-wheel vehicle is created that can transport both the users along with their cargo. The hand truck acts as both the cargo carrier as well as the steering device, while Claus acts as a standing deck and a drive train. Thanks to Claus' geometry and volume, Claus can be transported in a conventional delivery van similarly to the hand truck. By bringing both a hand truck and Claus during delivery shifts, delivery workers are enabled to quickly and easily cover areas that are becoming less accessible to delivery vans.



Without Claus

The conventional hand truck is being used in delivery work for short distances. Usually, a delivery worker unloads the hand truck along with the cargo from the van to subsequently walk the hand truck with the cargo to the final destination. Once the parcels are delivered, the delivery worker loads the hand truck back into the van to proceed to the next addresses.

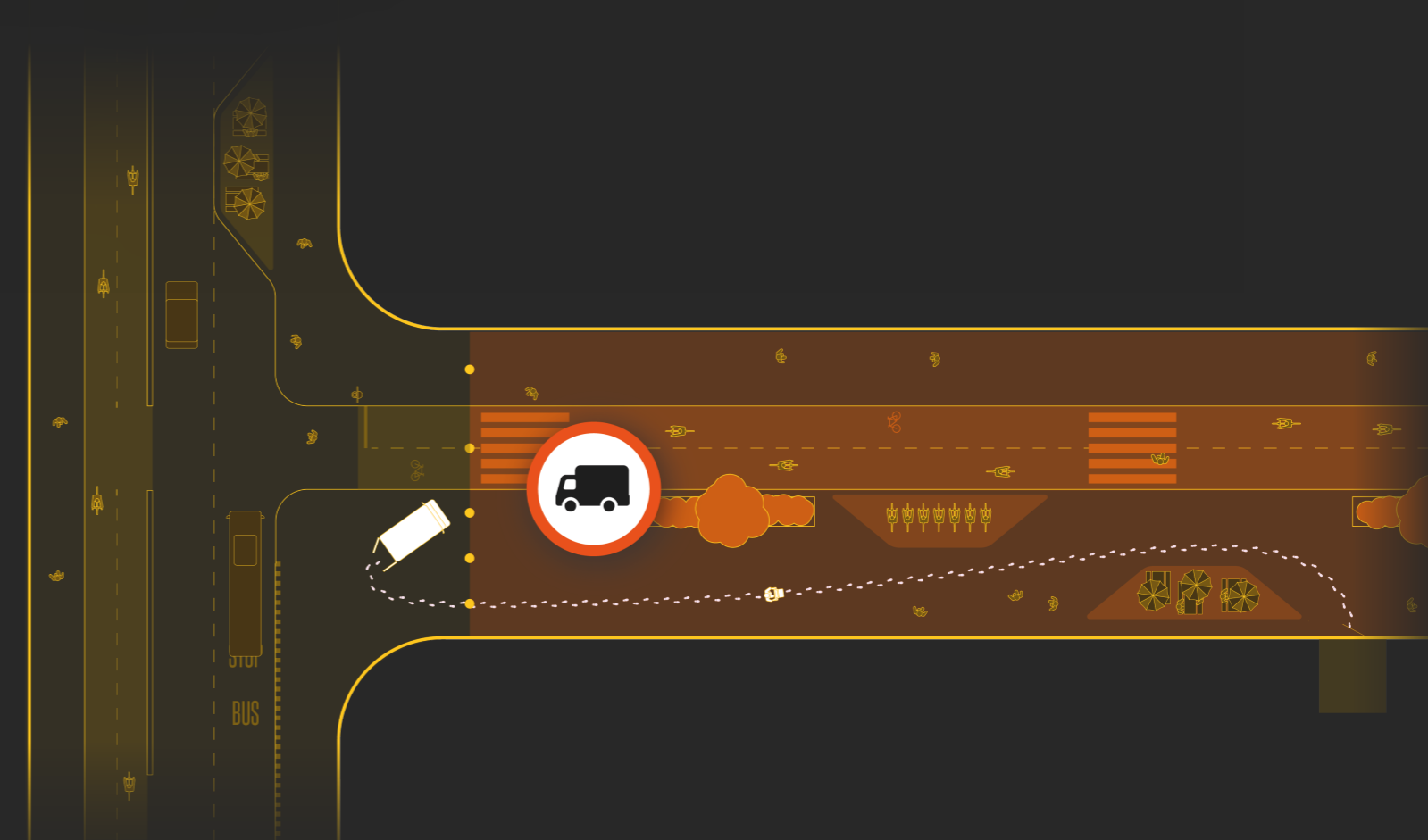
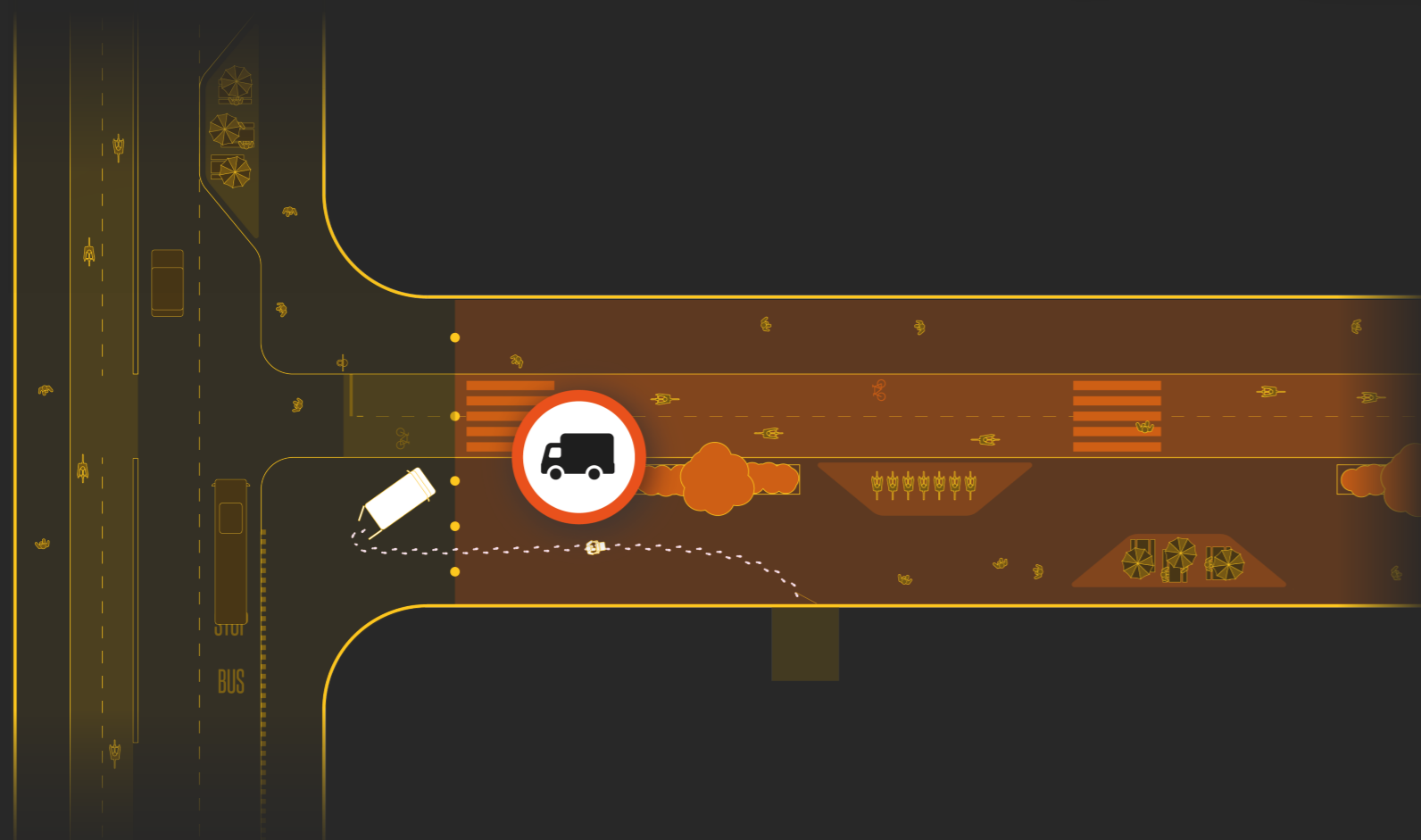
In contrast to carrying parcels by hand, the hand truck enables the delivery worker to transport a multitude of packages. In addition, it ensures that the delivery workers do not have to carry the weight of the cargo themselves.



With Claus

Claus broadens the potential of the hand truck by extending the range and by minimizing the physical effort for the user.

By extending the range of the hand truck, the delivery worker is able to cover larger distances. This allows the delivery workers reach addresses that are hard to reach due to congestion or car free zones. Once delivery workers place their van on the edge of a car free or congestion zone, they can attach Claus to their hand trucks and reach further in a shorter timespan compared to delivery with an individual hand truck.



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Claus - development of an auxiliary drive train module for last-mile delivery hand trucks.
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Integrated Product Design

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