AUTONOMOUS BIKE-SHARING SYSTEM

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DESIGNED AS PART OF A MULTI-MODAL URBAN MOBILITY NETWORK. IT LEVERAGES AUTONOMOUS VEHICLE TECHNOLOGY TO CREATE A MORE FLEXIBLE, EFFICIENT AND ACCESSIBLE SYSTEM. IT CONSISTS OF A SELF-DRIVING STATION THAT ENABLES INSTANT REBALANCING AND SCALING AND A BICYCLE THAT IS DESIGNED WITH SIMPLICITY AND DURABILITY IN MIND.

Bike-sharing is growing in popularity as many cities realize the benefits of offering a last kilometer extension to conventional public transit. It is a system of bicycles docked at stations all over the city for the citizens to access with their public transit cards.

Apart from getting you from the bus or train the last stretch to work or school, people use it to get to a meeting during the day, to get home from the bar or explore a new city. This combined with the socioeconomic and environmental benefits of cycling and an increased public transit use, motivates greater investment in these systems, raising it's status in the mobility of the future.

As current bike-sharing systems are used over the day an imbalance in the location of bikes is created, something that is dealt with through greatly oversized systems and a fleet of trucks that drive around bicycles to rebalance the system. An expensive and inefficient task. This combined with sporadic maintenance lead to systems not reaching their full potential.

Cities change over the day, week and year, but bike-sharing systems don't. The stations and their docks are permanently installed into the ground at locations that some times prove underused, or at some times are overused. Also a very expensive and resource demanding task. In this project I tried to address these issues, its impact on the cityscape and the impacts of future technology on the design of inner city vehicles.

The bike-sharing bicycle needs to be largely proprietary in design, durable and at the same time a practical city bike. It is designed to be compact in size, easy to adjust and with the check-out & lock located on the stem of the bicycle for quick access by several people at a time. The bike is lockable to allow you to use it for errands in the city, you unlock it with the same NFC equipped smart device or RFID card used for check-out.

The station itself is a self-driving low speed electric inner city vehicle that's charged at a depot and its own solar power. It is designed to fit within the context of the parking space for a car and other designated locations, and enables instant rebalancing of the system and a continuous flow of stations and bikes trough maintenance depots. The system adapts intelligently to how it actually is used, so stations can for instance pop up outside popular summer destinations, adapt to temporary events & festivals, function on-demand while also scaling the permanent locations according to the need at the given moment. Optimizing use of the inventory while providing an as seamless and fluent mobility experience as possible to the user.

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