



HAND-PEDALLED TRICYCLE

DESIGN INNOVATION FOR DISABILITIES - A FRAME TO BE MANUFACTURED LOCALLY IN KASESE, UGANDA



“THE GOAL IS TO IMPROVE UPON THE TRICYCLE DESIGNS CURRENTLY IN USE IN UGANDA, BENEFITTING THE MANUFACTURER, USER AND ECONOMY.”

BACKGROUND

In Uganda, hand-pedalled tricycles are used by people with disabilities as a means of transportation. Some are currently being fabricated by a welder, Kio, in the Kasese district of Uganda. The goal is to improve the tricycle frame, co-designing with Kio and users, using design thinking and manufacturing principles.

CO-DESIGN PROCESS

RESEARCH OF CONTEXT AND UNDERSTANDING THE PROBLEM



COLLABORATE ON INITIAL DESIGN



CO-DESIGN AND TESTING IN KASESE, UGANDA



BENEFITS OF THE IMPROVED TRICYCLE DESIGN

ECONOMICAL

LESS MATERIAL

A more simplified design reduces the material used. The new design eliminates the use of a spring in the braking system.

SIMPLE MANUFACTURING

Reducing the complexity of parts and number of bends results in cheaper manufacturing

USABILITY



MORE CARGO SPACE

Extended bottom rack and more storage under the seat.

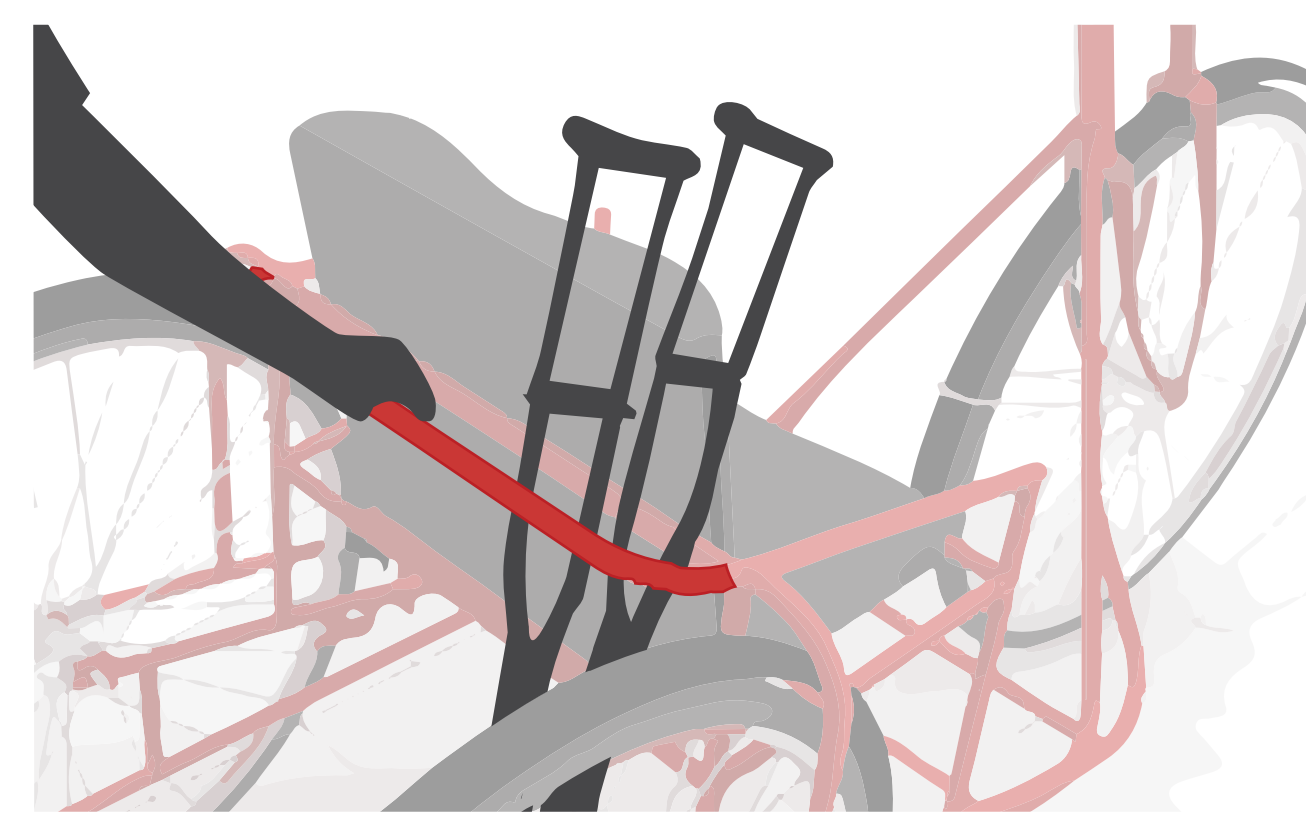
PULL-LEVER BRAKES

Reduces risk of falling forward while braking and sudden stop.

EASIER TO STEER

Increasing the angle of the steering column makes it easier to handle the tricycle.

PUSH BAR



Used to push user. Can also be used to attach bags or to strap in cargo

COMMUNITY

PARTICIPATION

Adapted tricycle allows for mobility. Accessibility to employment and education allows for full community participation

LOCAL MANUFACTURING

Local fabrication employs local workers and supports the local economy.

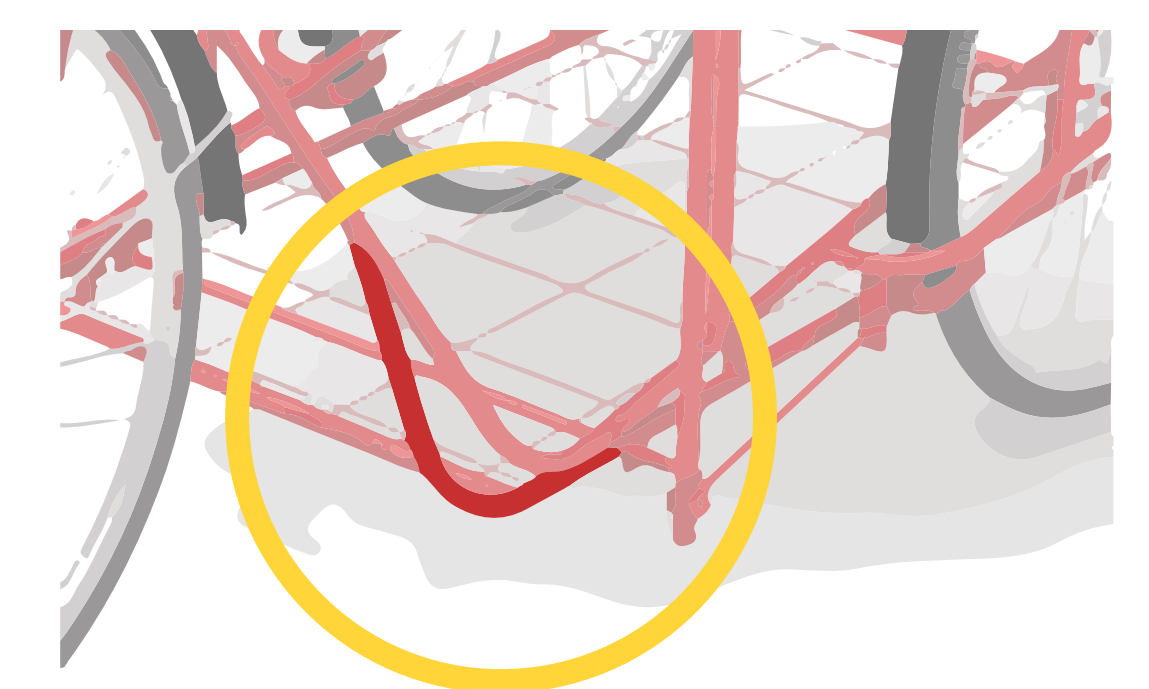
STRUCTURAL

SEAT DESIGN

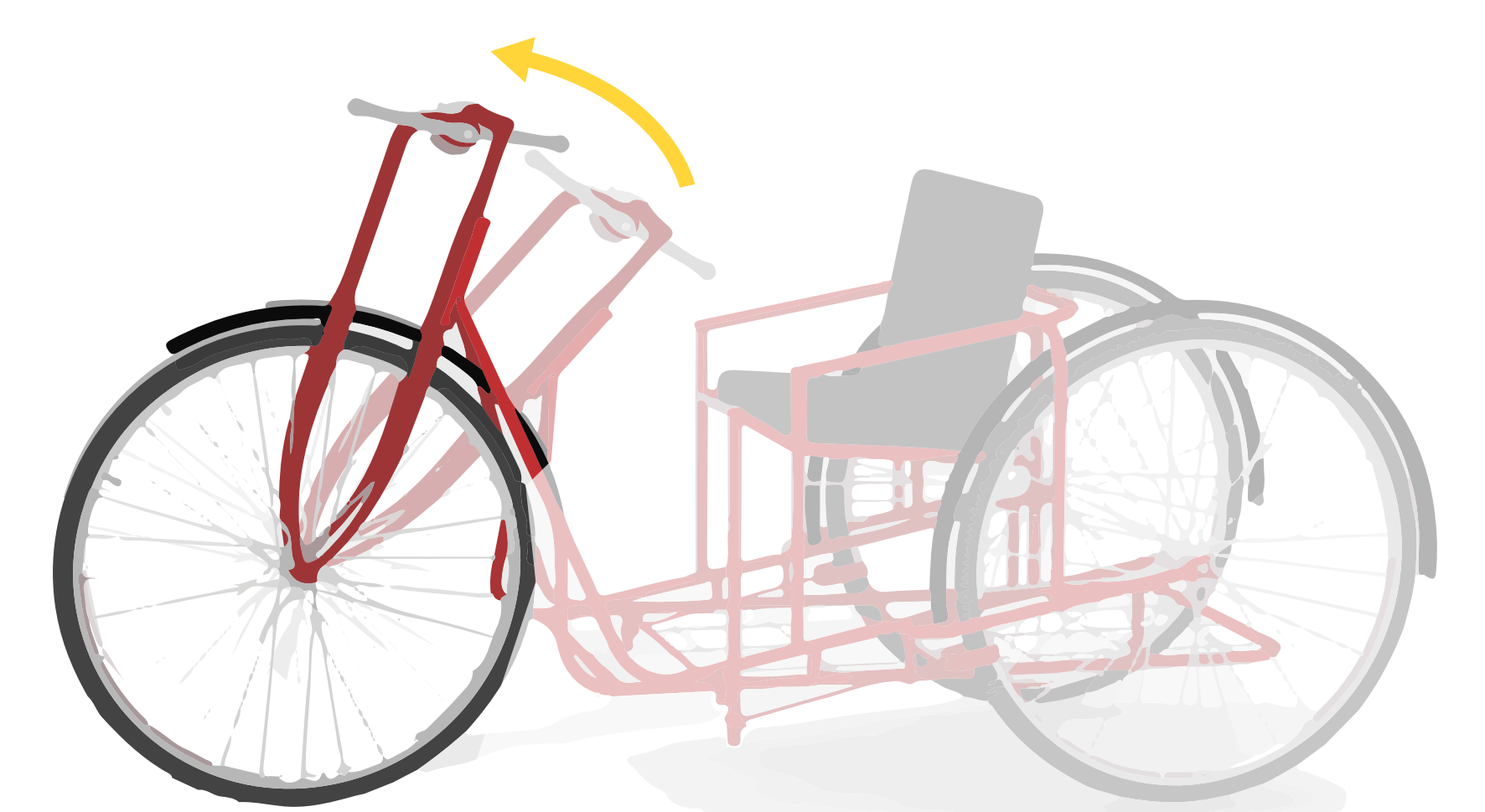
Incorporating the seat into the structure of the tricycle reduces the stress on other key areas of the frame.

REINFORCEMENT

Reinforcing the front tubes will reduce the repairs needed.



STEERING COLUMN



Increasing the angle of the steering column will reduce the risk of the load of the tricycle deforming the wheel.



FINAL MODIFICATIONS AND PROTOTYPE