

# BOX2.78

A solution for flexible bicycle transportation

Rautkoski

Mustikainen

Heikkinen



## The Problem

how to move everyday needs with bicycle in easy and flexible way

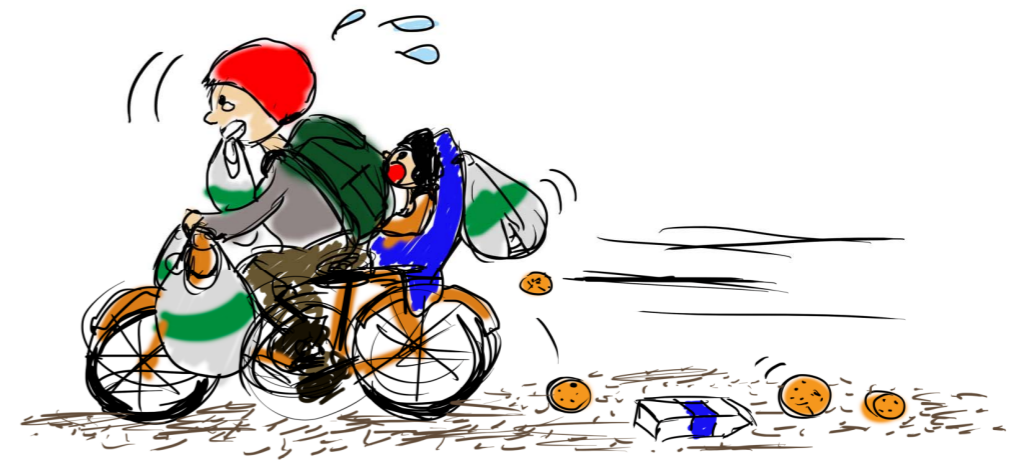
## Background

We checked what previous groups has done.

In year 2011 they made survey what people moves with bike and how they do it. They also studied what what kind of products there is already. The biggest problem is how to move everyday products and children by bike.



**Ongelma: Tavaroiden ja lasten kuljettaminen pyörällä**



In year 2012 there was two design made: Buggy and The Trigo. First one was concentrated moving things in light and easy way. Another one concentrated how to move children by bike easy and safe way.

## Final product



8.10.2012

Hänninen, Järvinen, Raudaskoski ja Venäläinen

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# The Trigo

Simply, take it further...



Ville Hela-Aro  
Jarno Lindberg  
Rochale Yates



# Our Target

We want to focus on how to move everyday products like shopping bags, small household items, hobby items etc. in easy and simple way by bike. We would like that the product can be modified for many uses and can be attached on average bicycle. We would also like that the product can be used by average family or/and community.

# The Outcome

We would like to make a working prototype from our final plan. Also we will make a 3D-model.





# Preliminary Timetable

week	
35	Start / Brief plan
36	Sketching / Excursion / Testmodel / Test drive
37	Materials / Workshop / Frame prototype making
38	Materials / Workshop / Prototype making / Sketching
39	Model making
40	3D-model /
41	Test use - results / Photoshoot /Presentation
42	Finishing presentation

If everything goes well we will have working prototype and good 3D-model in the end of the course.



# Frist week

We begun by sketching out our ideas and we came up with more ideas when we went through them together. Then we decided that it's better to try our ideas in real environment and in real size.

We made a trip to Rajasaari recycle center where we bought old bicycle parts. The next day we made our first test model.







week 36



## One wheel or two-wheel model?

We listed the good and bad features of both. Two-wheel trailer is more stable, will stand up while loading, does not crash and it will take more weight. Things that support one wheel: it allows narrower and lighter construction, is less expensive and it will match better to the bicycles look. Furthermore it allows smoother movement.

We choose to use one wheel, because it is enough for our target group needs.







week 36



# Attachment

We tried different ways to joint the trailer to the bicycle and we noticed that two point joint is more stable than one point joint what we had first thought about.

Another reason to attach the trailer to hub axle is that we wanted to leave the rack free for children safe seat.



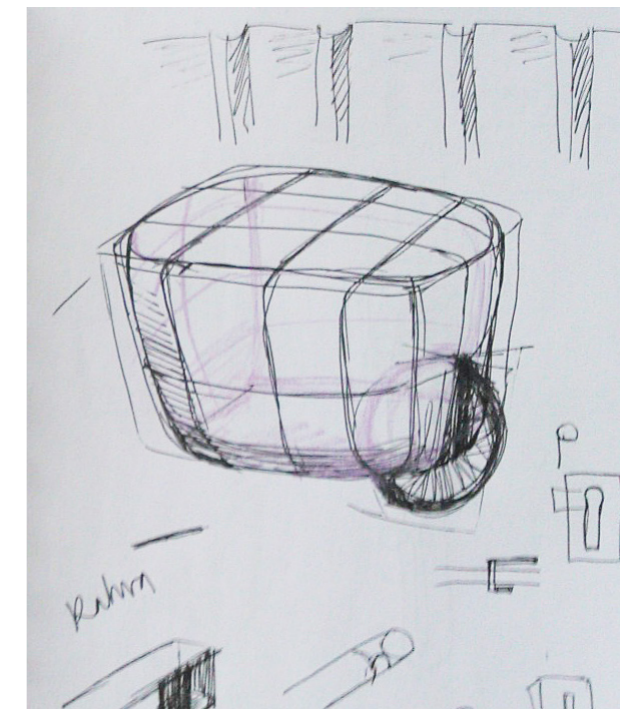


# Use

At the beginning we discussed that should the trailer be modified to different use. After conversation and many sleepless nights the conclusion was that it's better to concentrate the main thing, which is moving shopping bags and hobby items as good as possible.

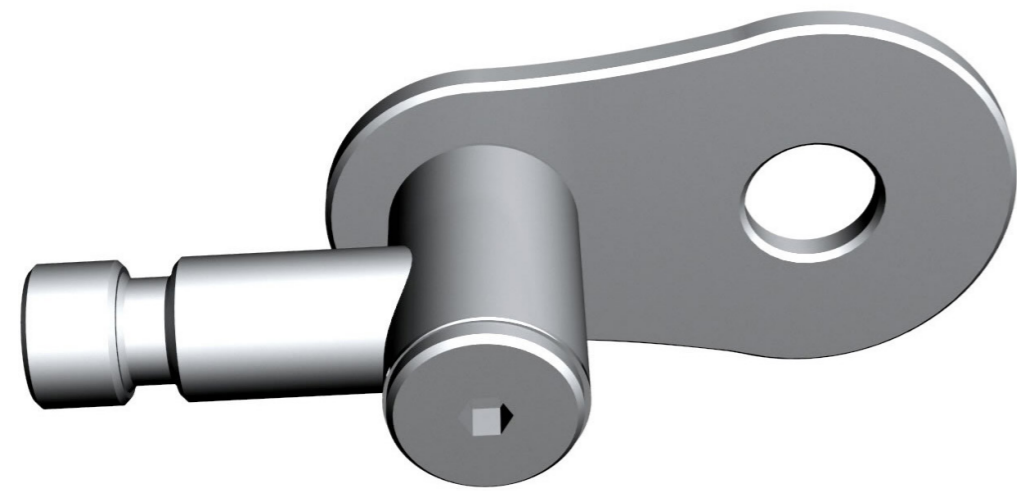


# Changes

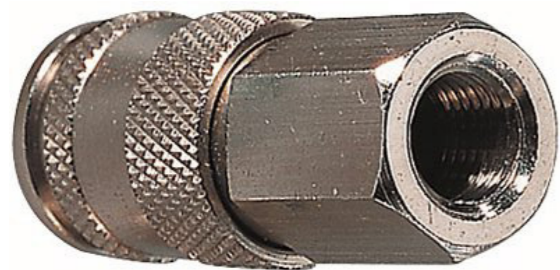


- plastic box, which forms a fender over the wheel
- more stable when weight is mainly on top of the wheel and the frame will be shorter



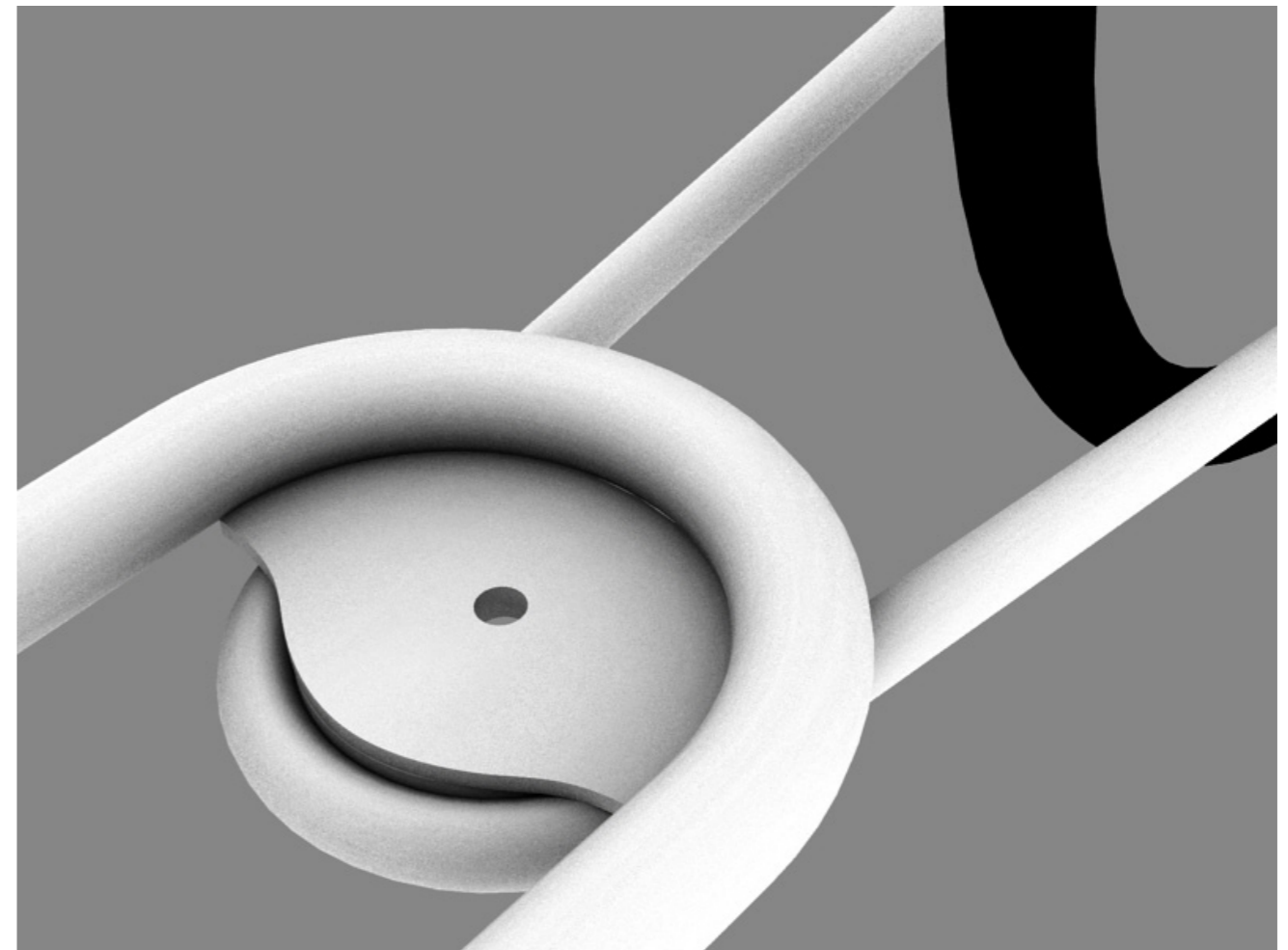


Sketch of the part which become attached to bicycle hub axle.



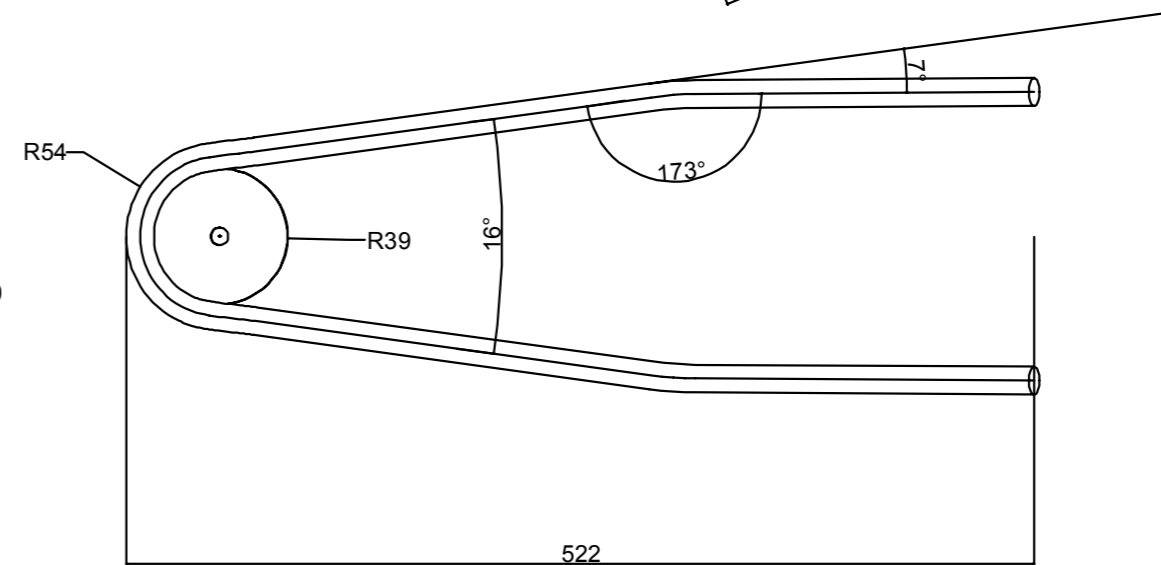
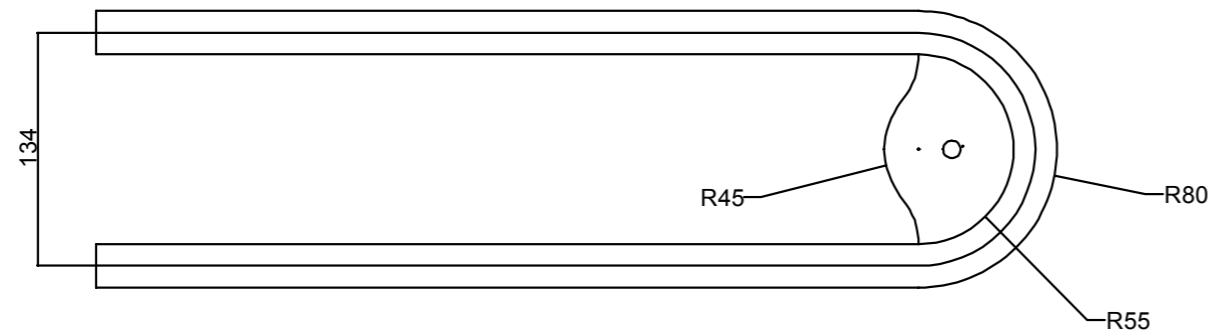
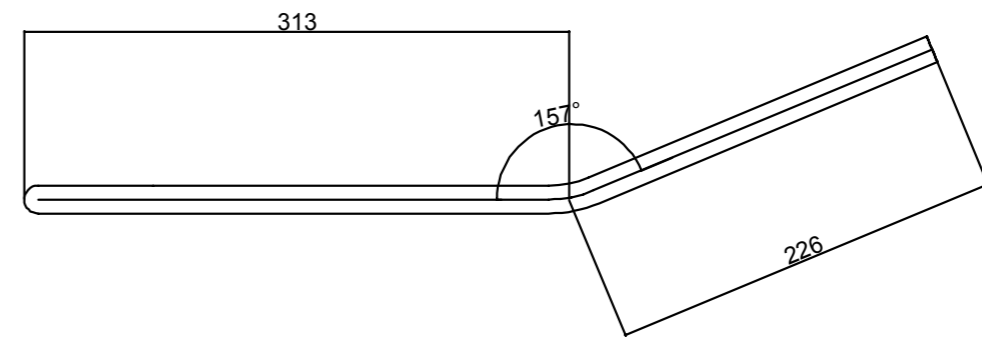
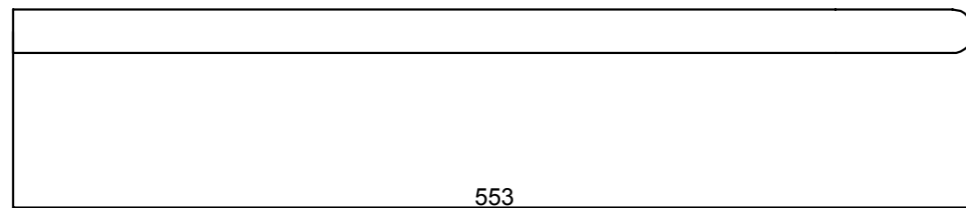
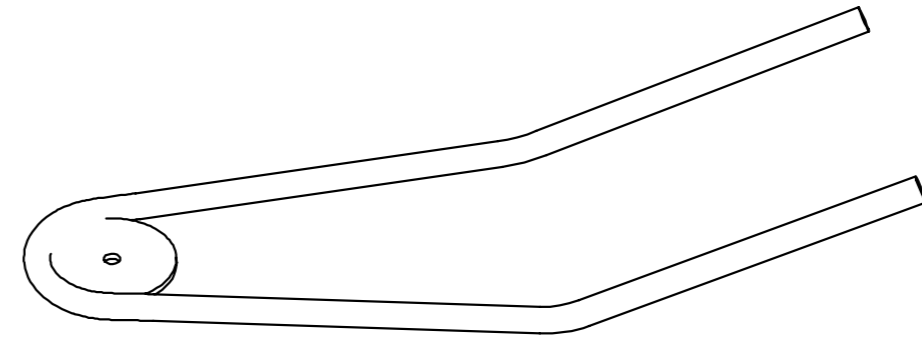
Bayonet catch. This part allows quick catch and release.

# Attachments



Sketch how the forks join together

# FRAME blueprints





## The Weber Monoporter

“Designed for cycling tours in the nature especially for cycling travel.”

One wheel, joins into the hub axle from both side

Quick assembly

Folding

Price 430€

Max weight: 22kg

Trailers weight: 5,75kg

Overall length: about 150cm



## Extrawheel

“Is very practical set for both short trips and long journeys”

The luggage is on the both side of the wheel in bike packers

Quick assembly to the hub axle from both side

Price: 360€

Max weight: 35kg

Trailers weight: 4,75kg

Overall length: about 70cm



## The Heavy Duty Trailer

“A large trailer or trailer frame designed to haul your heavier supplies. Shopping for the family, camping supplies, business supplies, gardening stuff”

Two wheels, joins into the hub axle from one side

Price 260€

Max weight: 68kg

Trailers weight: 8kg

Overall length: about 152cm





TEST FRAME







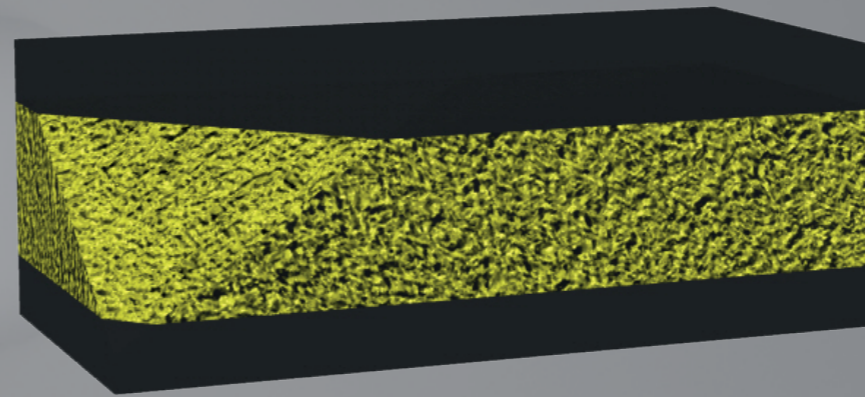
First demonstrations of the box, dimensions and the possible shape.



## Rotationally Molded box

High-density polyethylene (HDPE)

Polyurethane (PU)



The box is rotationally molded piece, which is filled with insulation.