

ALTERNATIVE MODES OF TRANSPORT (SA GROUP)

3-16 April 2005
Rustenburg
North-West Province
Republic of South Africa

ASK

IMAGINE

RESOLVE

ASK

What is alternative transport?

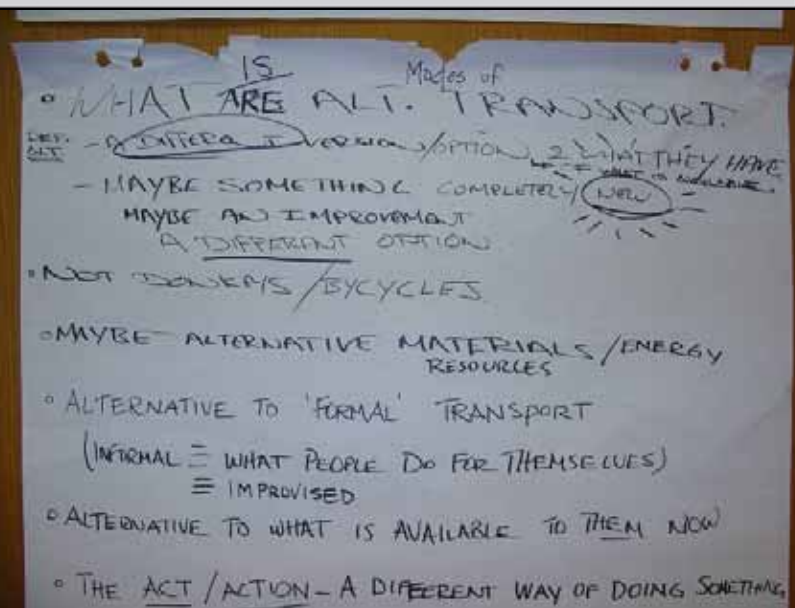
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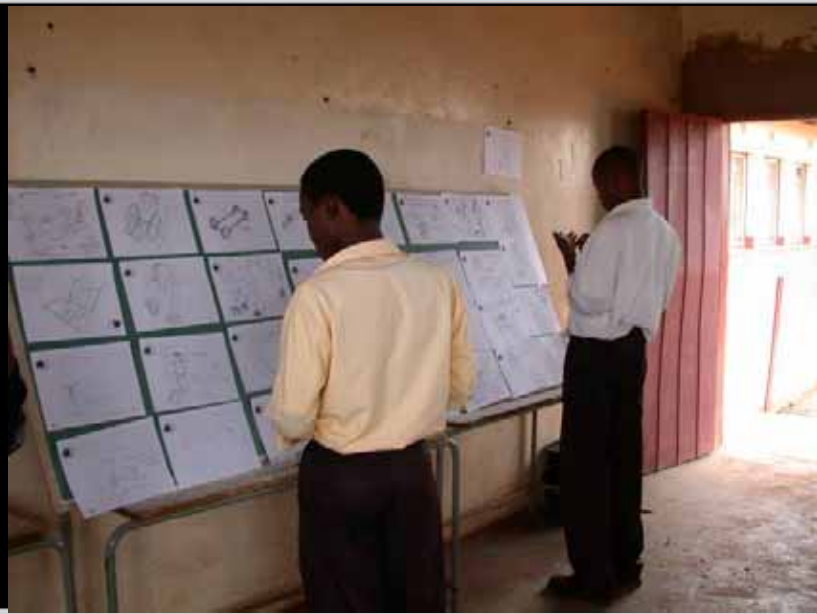
RESOLVE



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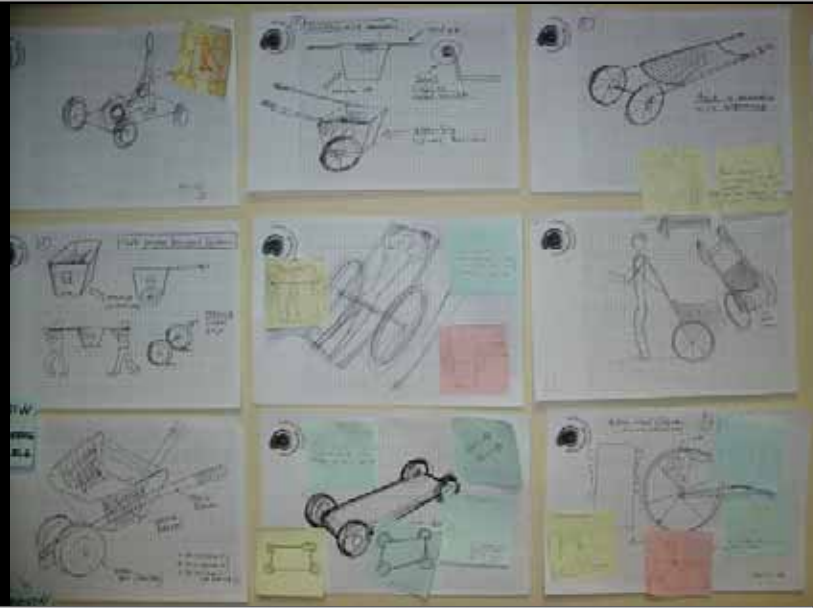
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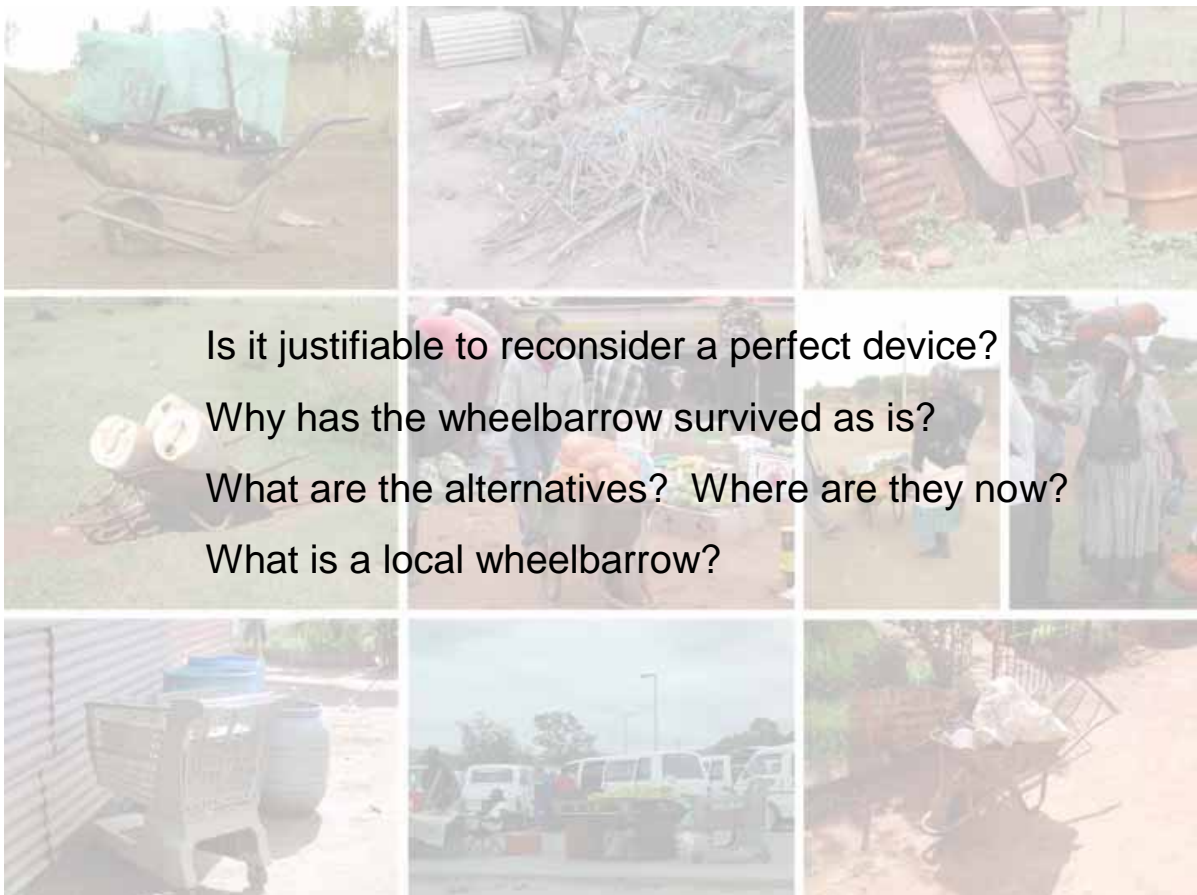
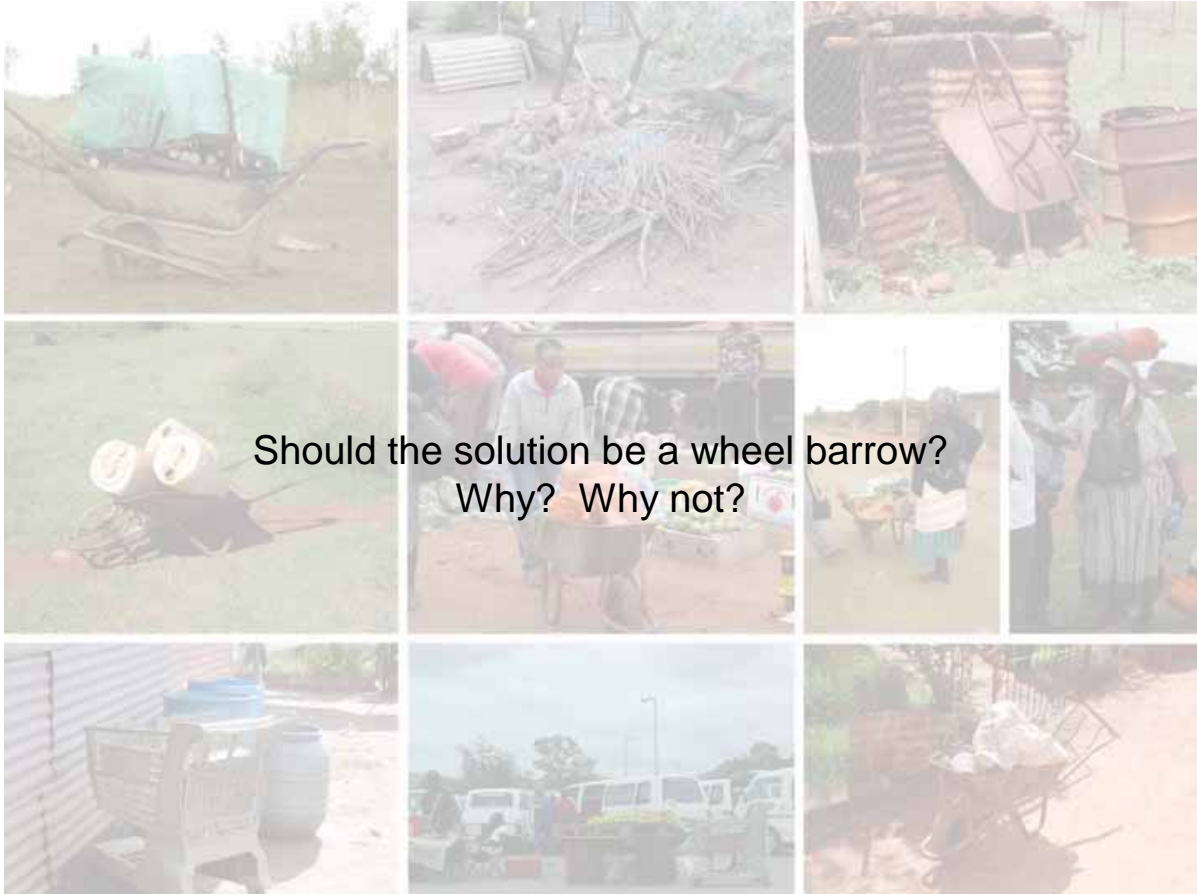
RESOLVE



ASK

IMAGINE

RESOLVE





Is this better? Why?

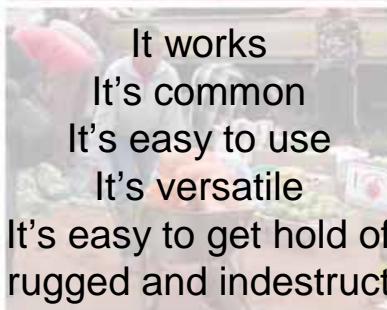


Should the solution be a wheel barrow?
Why? Why not?





Why a wheelbarrow?



It works
It's common
It's easy to use
It's versatile
It's easy to get hold of
It's rugged and indestructible

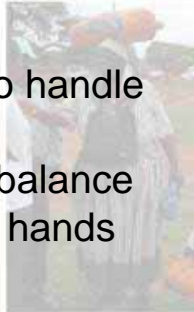
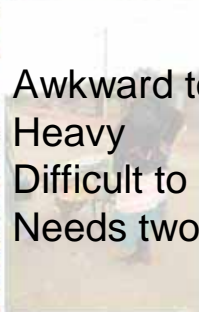




Why not a wheelbarrow?



High load



Awkward to handle
Heavy
Difficult to balance
Needs two hands





It is useless without a wheel



There is nothing fun about it





It has limited adaptability

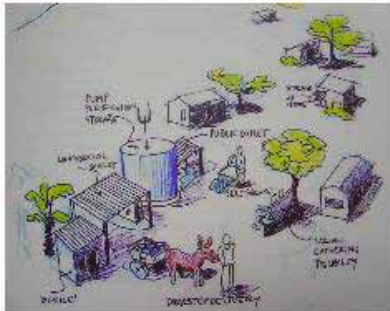


What are the opportunities?



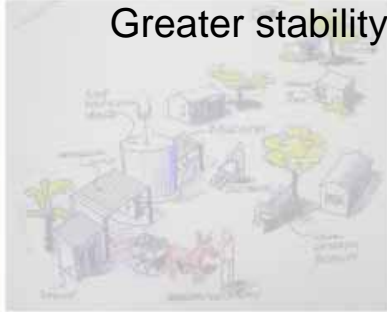
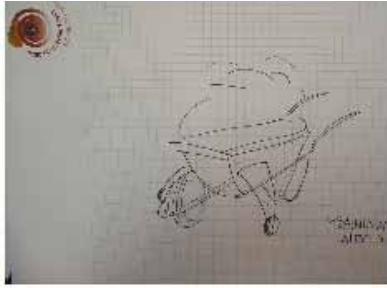


Provide cover and privacy



Interdesign 1999

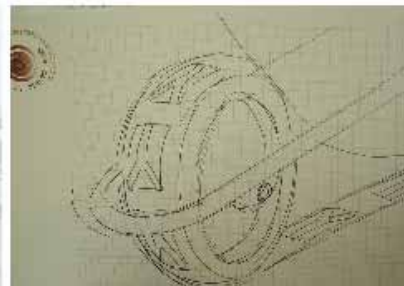


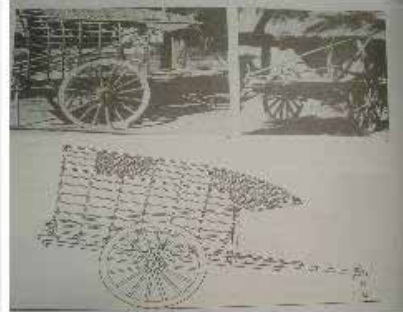
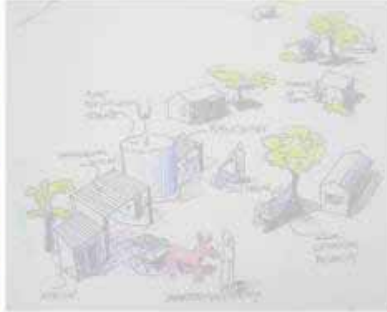
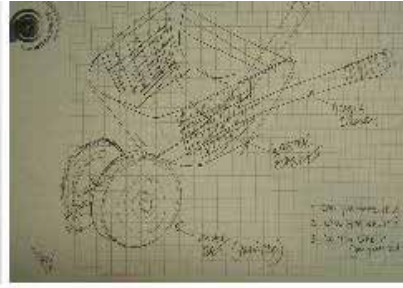


Greater stability

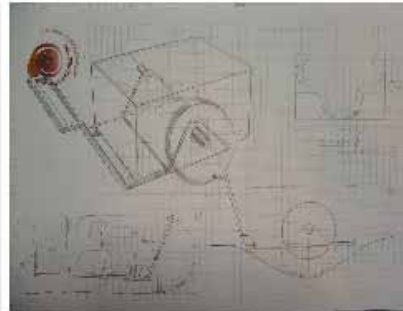
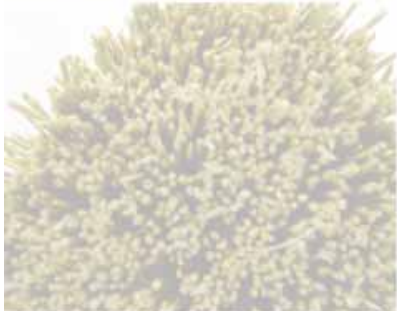


Creating identity

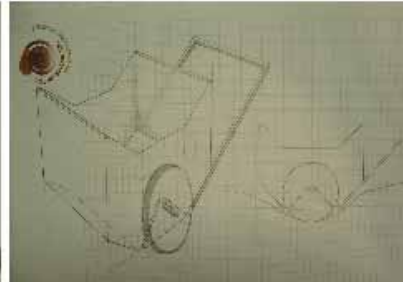
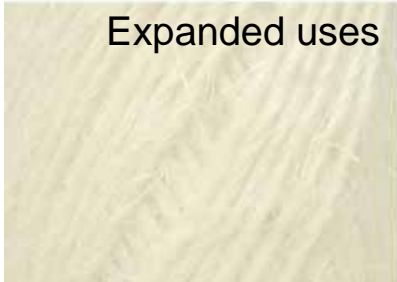


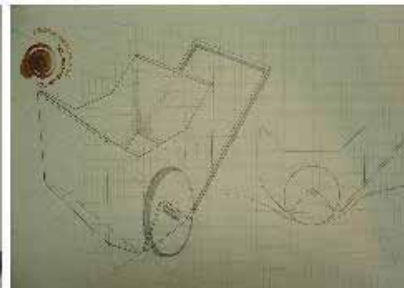
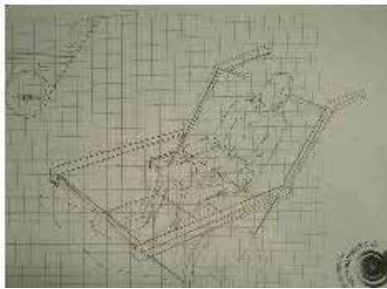
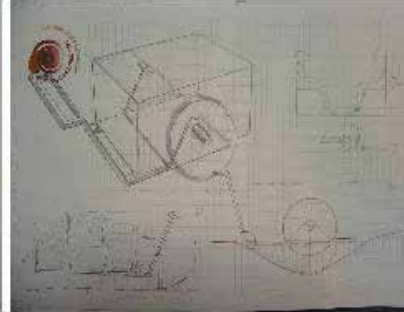
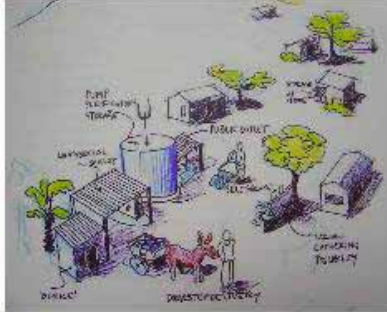
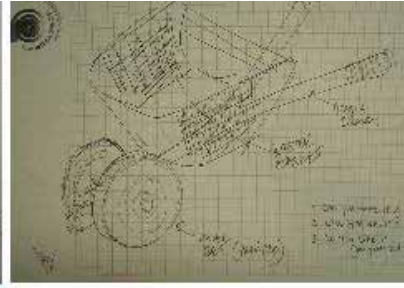
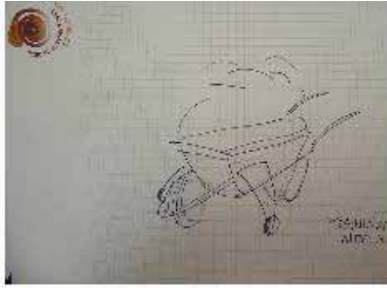


Local resources & manufacturing



Expanded uses





Alternative modes of transport (S.M. JEFY)

Sholto
Fritz
Etienne
Yaniv
Junko
Michael



Transportation
of general goods

Design objective:

Design and implementation of modes
for the transportation of small and medium-sized
goods over short distances in rural villages
and its surroundings.

Target group

Mainly adult women, less frequently men,
children not to be encouraged

Goods to be transported

The goods include everything that needs
to be transported within the village,
including:

- Water
- Wood
- Groceries (e.g. sacks of mealy flour)
- Agricultural produce (e.g. pumpkin, reed, potatoes)
- Building material (e.g. bricks, cement, panels, window frames)





Environment (Terrain)

- Completely off-road
- Narrow paths and tracks
- Muddy to dry ground
- Asphalt
- Sandy
- Thorns, rocks, bushes
- Trees, gates & other obstacles
- Ditches

Possible interfaces for mid- and long-distances

- Bus
- Car
 - Bicycle
- Bicycle with trailer
- Donkey
- Donkey cart
- Cattle

Distances

- Between house and water source (dam, well, woods)
- Between house and shop
- Between house and bus station
- Between settlement and village
- Between bush (fire wood) and house
- Between field and house/bus station

Estimated distance: maximum 10 km for each travel

Implementation / Acceptance

- Involvement of community
- Consideration of existing traditions (means of transport)
- Arising business opportunities

Summarized requirements

- Operational by one person
- Adaptive / versatile to different types of goods
- Operational in extreme terrains
- Applicable in combination with other modes of transport (mid- & long-distance)
- Participation of community members regarding design selection and implementation

Matrix

- Wheel barrow popular and versatile
- Shopping trolley popular and versatile
- Water has few carrying options

	A	B	C	D	E	F
1						
2		Transport Means				
3	Goods	Bike w Carrier	Bike w Cart	Bike w Cannister	Bike w Rucksack	Ruck
6	Bottled Gas	14	1	1		1
7	Bottled Liquid Fuel	16	1	1		1
8	Groceries	15	1	1		1
9	Produce	16	1	1		1
10	Clothes	16	1	1		1
11	Books	16	1	1		1
12	Bricks	8		1		
13	Boards	6				
14	Pipe & Plumbing	10	1	1		
15	Filled Sacks	12	1	1		
16	Window frames	6				
17	Tools	16	1	1		1
18	Live Chicken	16	1	1		1
19	Live Goat/Sheep/Pig	6				
20	Live Cow/Donkey/Horse	1				
21						
22		14	12	1	8	
23						
24						
25						

Head loading

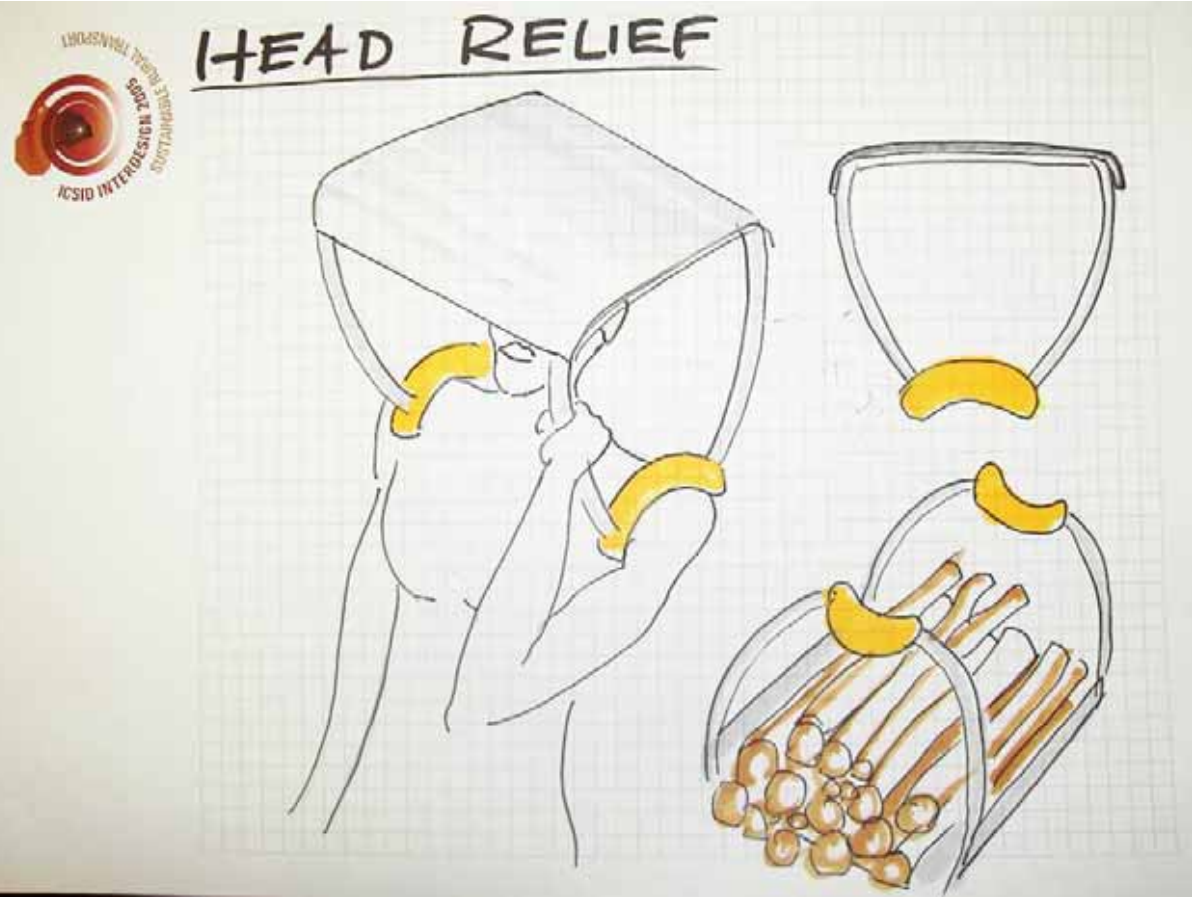
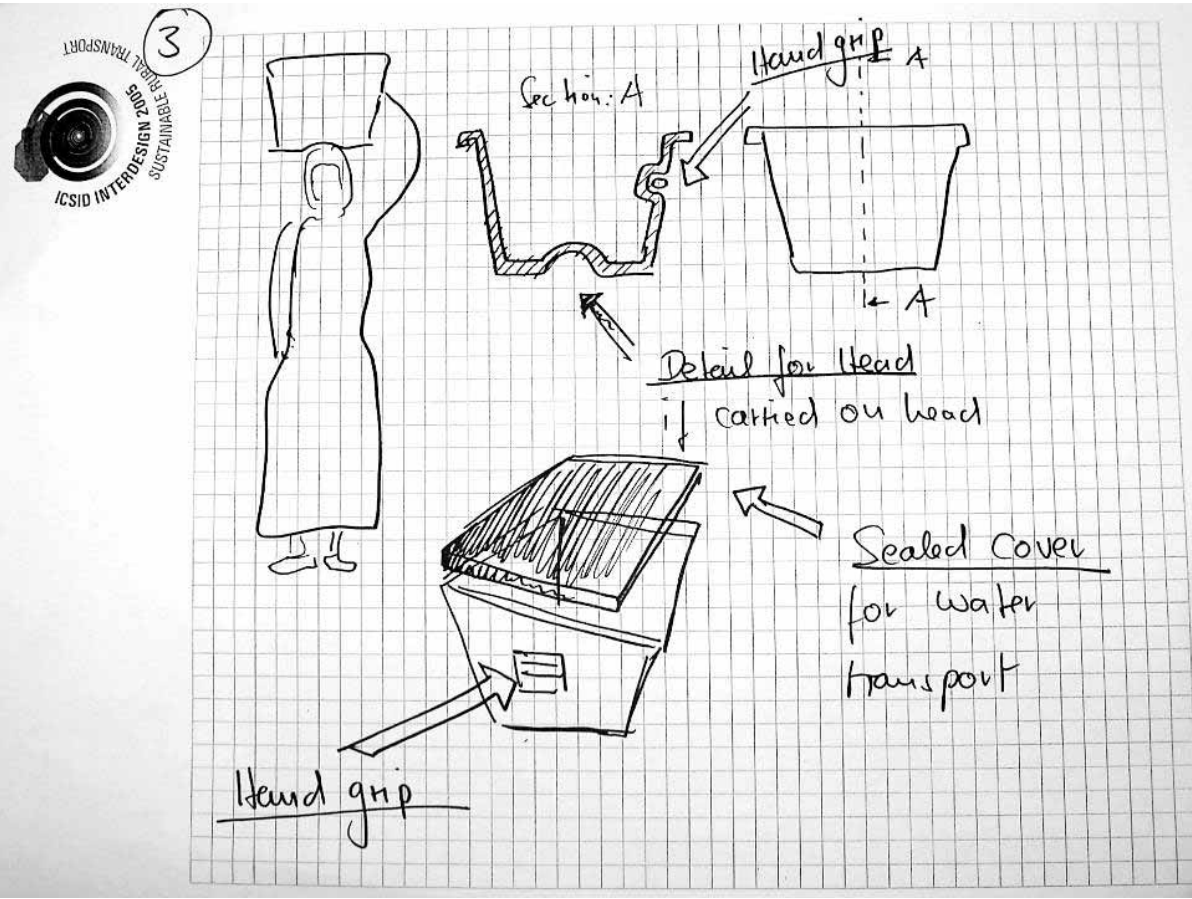
- Cervical spinal chord injuries recorded
- Poor vision due to restricted head movement and therefore risk of road accidents



Concept A:

- Transferral of load from head to shoulders
- Additional support from arms
- Free head movement
- Multi usage of device





Wheel barrow

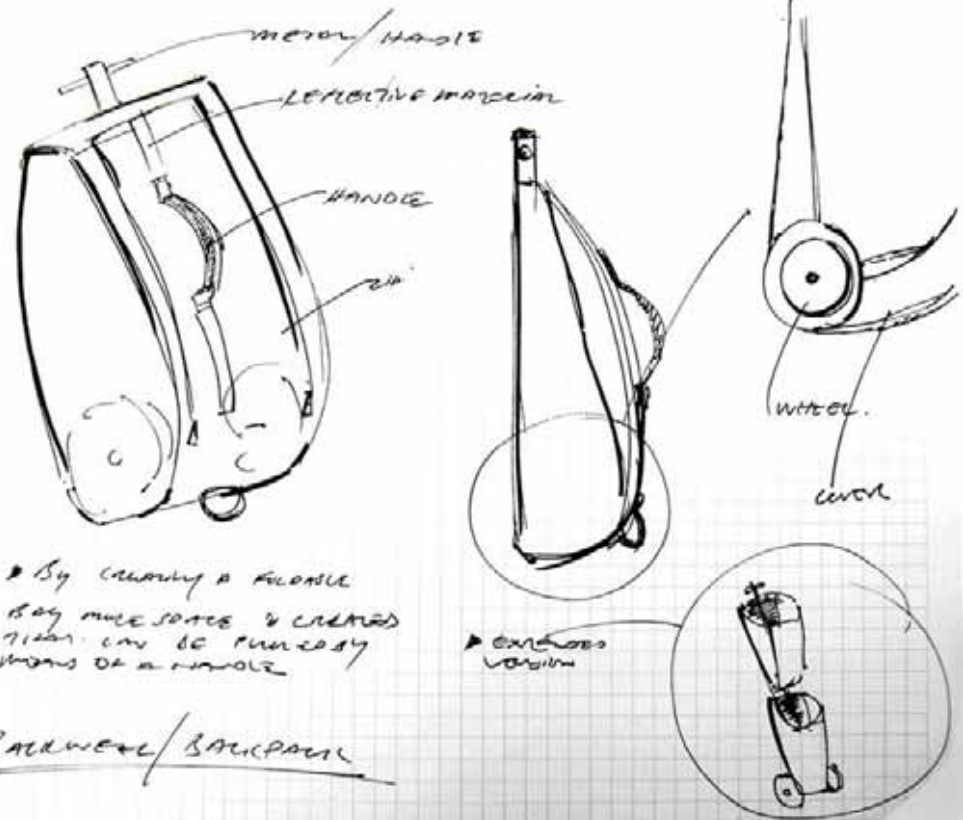
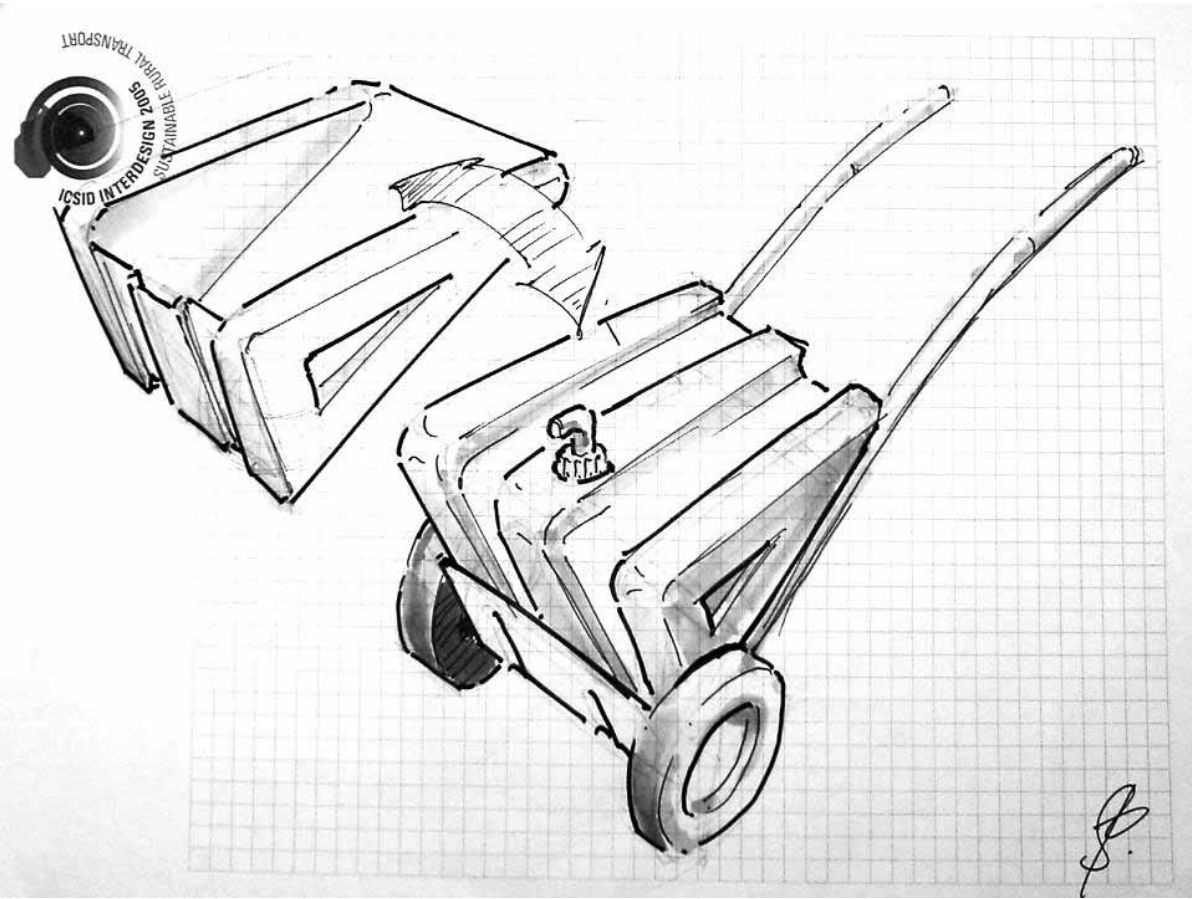
Problems of existing wheel barrow

- Inefficient wheel position
- Wheel diameter too small
- Wheel footprint too small
- Two hands needed for operation
- Material degradation

Concept B

Improved wheel barrow

- 2 wheels
- Axis centred - better balance of load
- Bigger wheels - easier pushing/pulling
- Adapted for local manufacture



Versatility



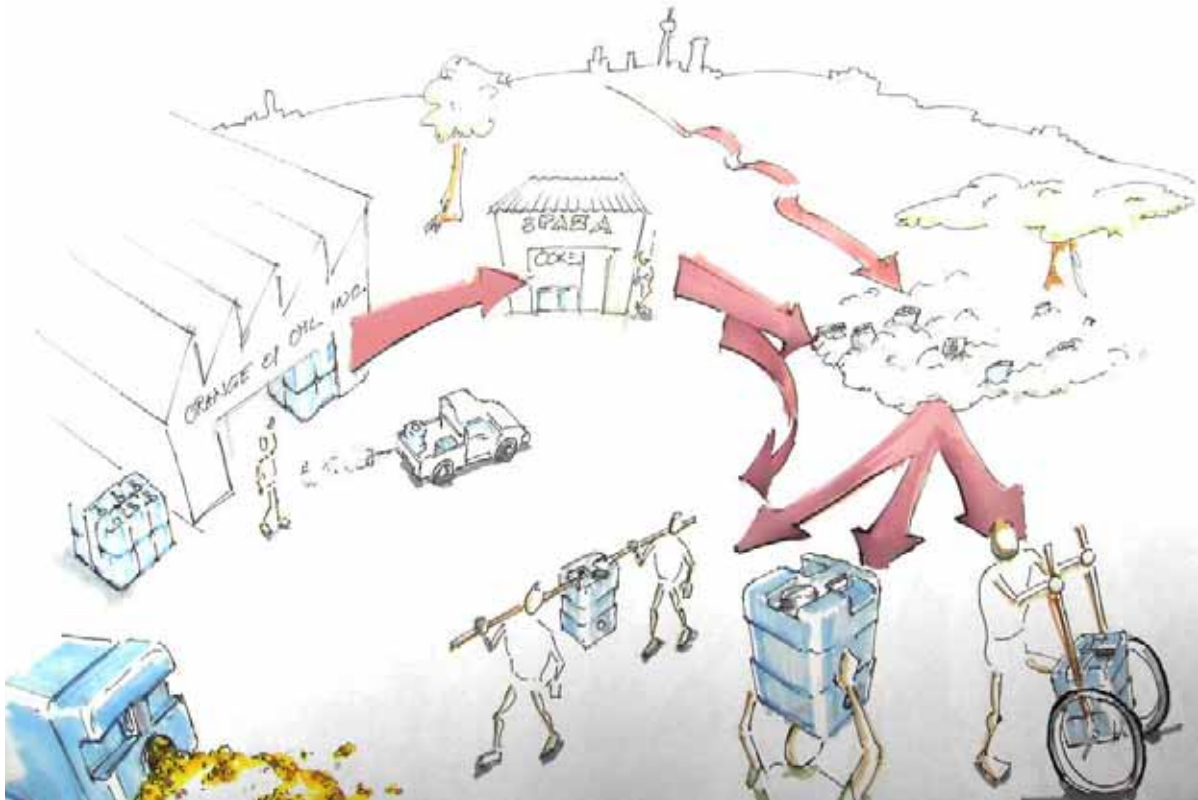
Concept C:

A modular system :

- An axis becomes a wheel barrow,
- becomes a cart
- becomes a stretcher...

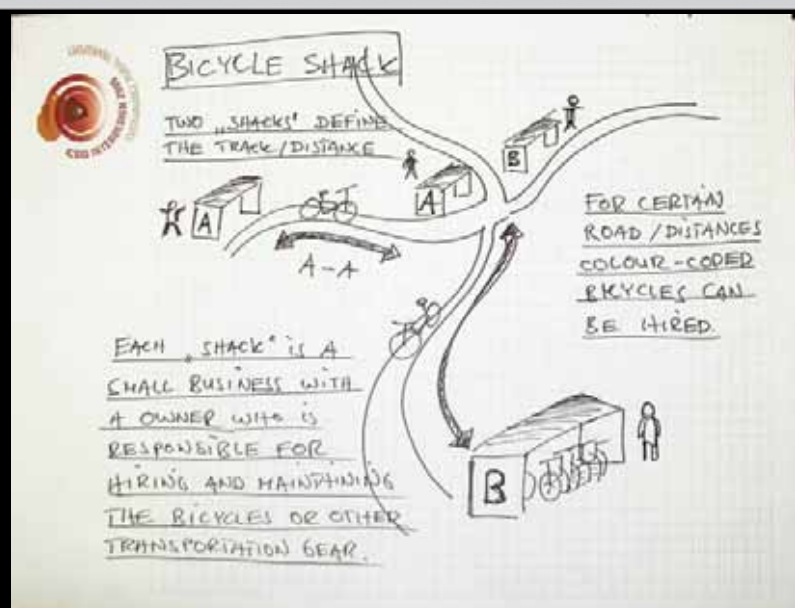


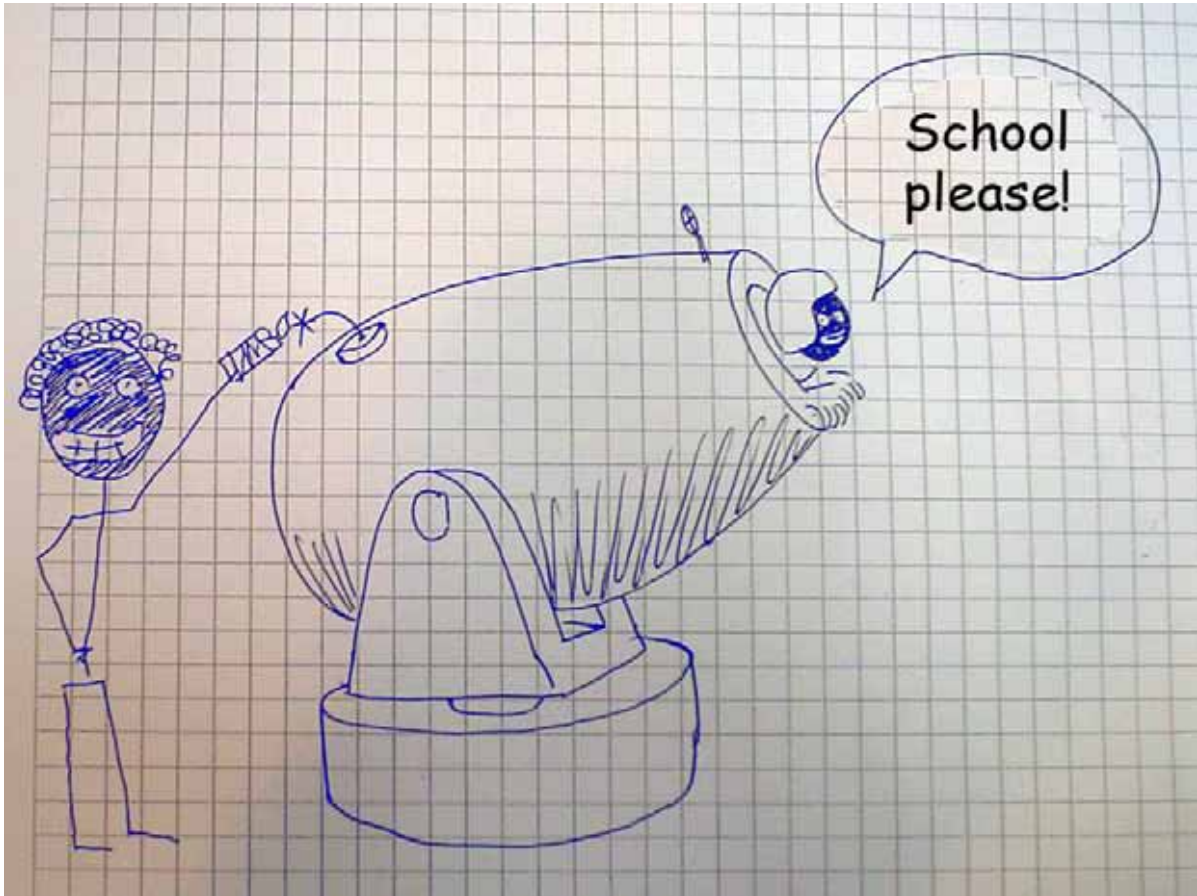
Concept C:



Business models

- Distribution of transportation devices in hire shops
- Local manufacture of transportation devices





Concepts:
Fun, Educational
Alternative Transport

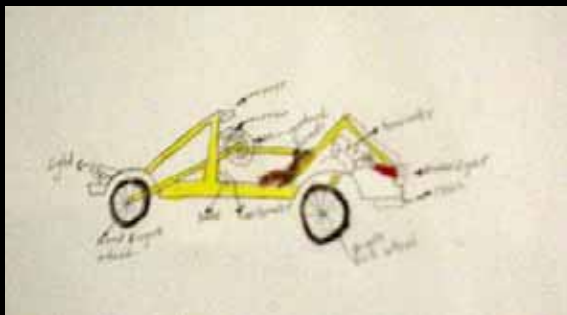


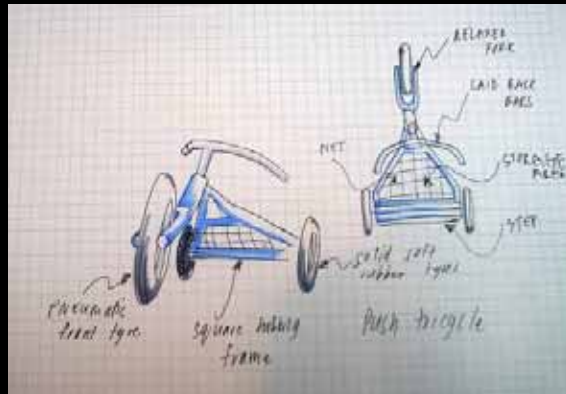
Setting

- Common Problem
- Guidance
 - Chief
 - Communication Group
- School Children
- Distance
- Low Attendance



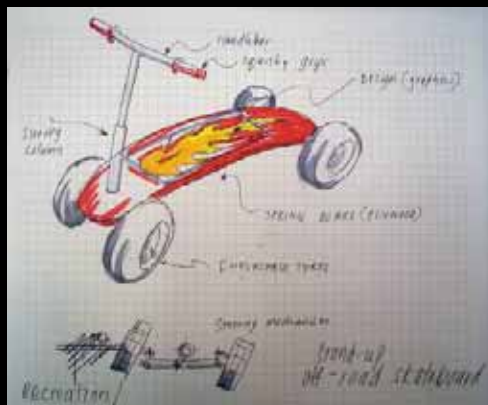
Schoolchildren's wants:





Push tri-bike

- Varied load options
- Push propulsion
- Simplicity



4 Wheeled Scooter

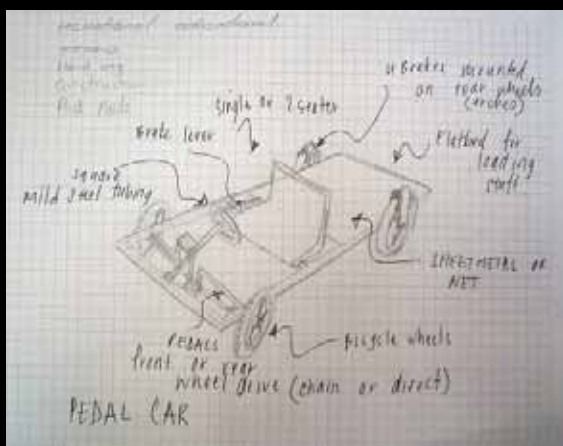
- Personalised Transport
- Wide Standing Surface
- Pneumatic wheels





Roto-Moulded Pedal Car

- Shelter from elements
- Rugged
- Aesthetics vs Price



Pedal Car Concept

- Kit Form
- Educational
- Social Upliftment

Recreational educational

