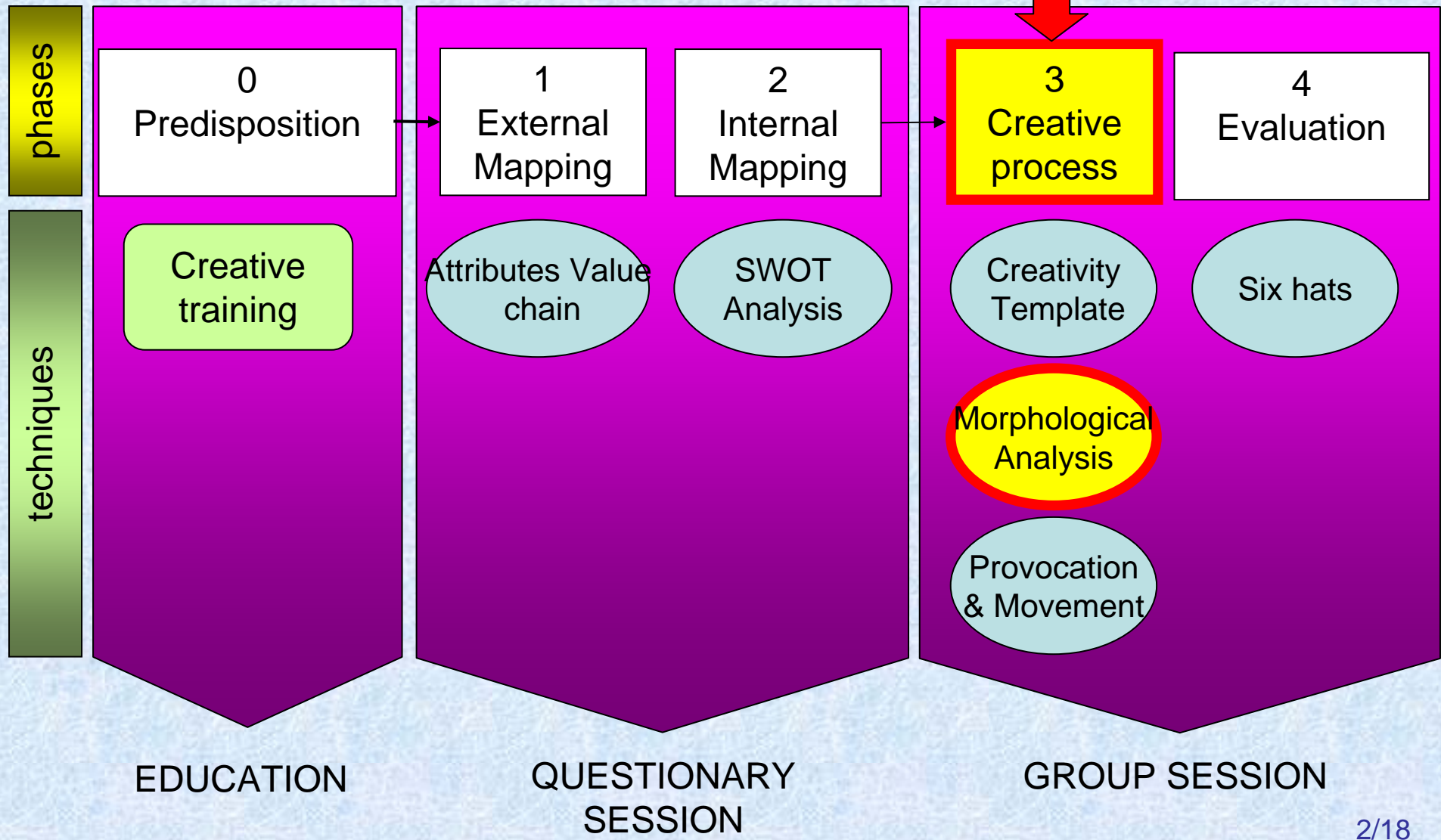


MORPHOLOGICAL ANALYSIS

**AN EASY TECHNIQUE
FOR CREATIVE PROCESS**

Tools

WE ARE HERE!



...LIMITLESS COMBINATIONS

“In the battle there are only the normal and the extraordinary forces, but their combinations are limitless; no one can comprehend them all”

...limitless combinations

造

= to create



SUN TZU

Origin and field of application

- Defined in 1942-43 by Fritz Zwicky, an American astrophysician
- Invented to look for new military means of jet propulsion
- It allows to find possible solutions to complex problems characterized by several parameters
- It can be effectively applied in:
 - new product development
 - services
 - patents

Solving complex problems

Parameters:

X

Y

Z

...



Solutions for each parameter:

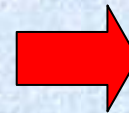
m

n

p

...

Possible answers to the complex challenge:



$m \times n \times p \times \dots$

...limitless combinations



Possible sequence

steps:

1) Specify your challenge



2) Select the corresponding parameters



3) List variations



4) Research all the possible solutions to the problem



5) Try different combinations



6) Increase the examined solutions

Example

1. **Objective:** *“Improving existing models of cars”*

2. Analyze cars and **list** some of their **parameters**:

- **improving elements**
- **optional equipment**
- **internal processes**
- **temporary properties**

3. Generate the **variations** for each parameter:

- Which *improving elements* can be found?
- Which *optional equipment* can be offered to customers?
- Which are the different kinds of *internal processes* in a car?
- Which *temporary properties* can make a car special in its early phases of life?



Variation for each parameter

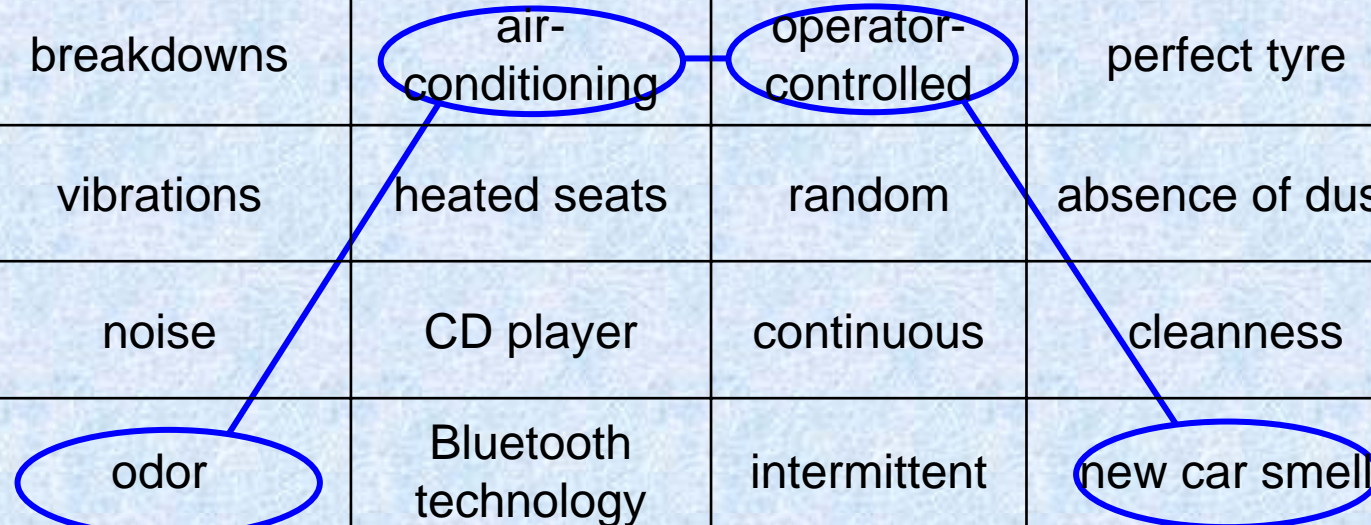
4. Research **all the possible solutions** to the problem:

IMPROVE EXISTING MODELS OF CARS				
	IMPROVING ELEMENTS	OPTIONAL EQUIPMENT	INTERNAL PROCESSES	TEMPORARY PROPERTIES
1	fuel consumption	ABS	automatic	powerful engine
2	breakdowns	air-conditioning	operator-controlled	perfect tyre
3	vibrations	heated seats	random	absence of dust
4	noise	CD player	continuous	cleanness
5	odor	Bluetooth technology	intermittent	new car smell

A combination...

5. Try different combinations (randomly):

IMPROVE EXISTING MODELS OF CARS				
	IMPROVING ELEMENTS	OPTIONAL EQUIPMENT	INTERNAL PROCESSES	TEMPORARY PROPERTIES
1	fuel consumption	ABS	automatic	powerful engine
2	breakdowns	air-conditioning	operator-controlled	perfect tyre
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4	noise	CD player	continuous	cleanness
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Morphological analysis

- Random combination:
 - odor
 - air-conditioning
 - operator-controlled
 - new car smell
- Result: Fragrance-control system for cars
- Advantages: **With a touch of button**, drivers can choose from jasmine, mint, a fresh leather smell, or perfume scents, all blowing through the air-conditioning system

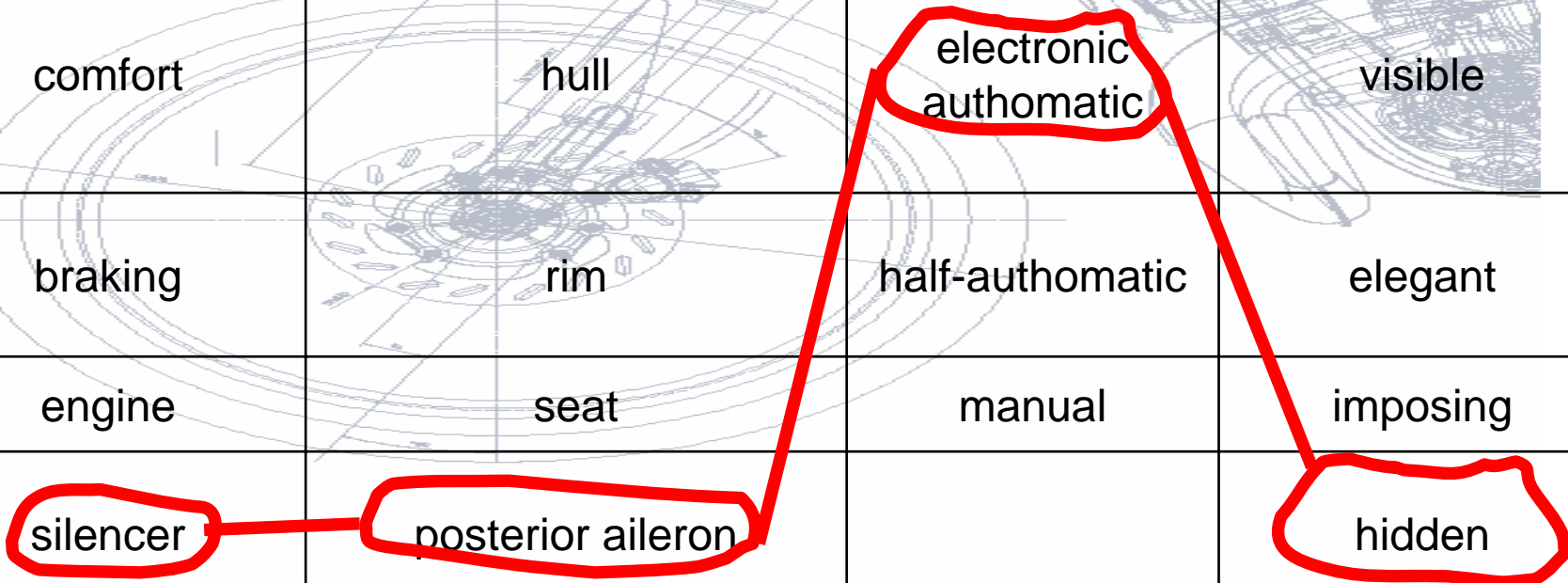


Application to Derbi's products

- The “hidden silencer”: looking for a more winning aesthetics
 - The “top gun undercarriage”: adding an optional to increase passenger's comfort
- 
- A technical wireframe drawing of a motorcycle chassis and engine components, showing the frame, engine, and various mechanical parts in a detailed, schematic style.

“Hidden silencer”

Improving elements	Equipment	Internal systems	Design attributes
comfort	hull	electronic automatic	visible
braking	rim	half-automatic	elegant
engine	seat	manual	imposing
silencer	posterior aileron		hidden

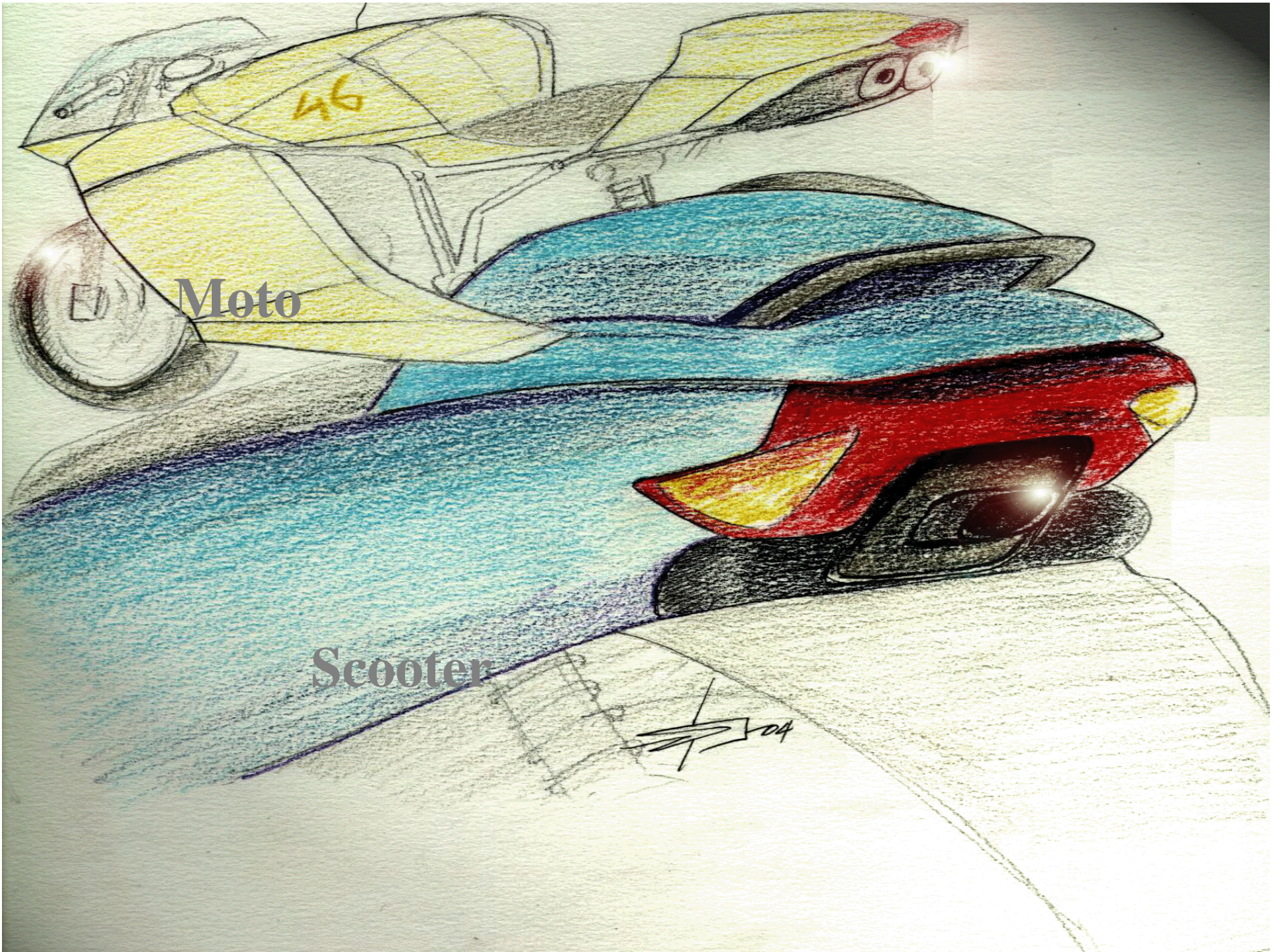


Result



IDEA:

Hidding scooter silencer by inserting the wastepipe in the tail



Moto

Scooter

04

“Top Gun undercarriage”

Improving elements	Equipment	Internal systems	Design attributes
comfort	hull	electronic automatic	visible
braking	rim	half-automatic	elegant
engine	footrest	manual	imposing
silencer	posterior aileron		hidden

“Result”



IDEA:

Automatic undercarriage with little wheels to maintain the scooter into balance when it stops

PUO' ESSERE
DISATTIVATO
TRAMITE UN PULSANTE



A RIPOSO
E' NASCOSTO

A DISCESA
AUTOMATICA
SOTTO I 5 km/h

- + STABILITA'
- + SICUREZZA
- + FACILITA' NEL PORTARE LO SCOOTER

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