

# Transferring control software vs transferring automatic design methods

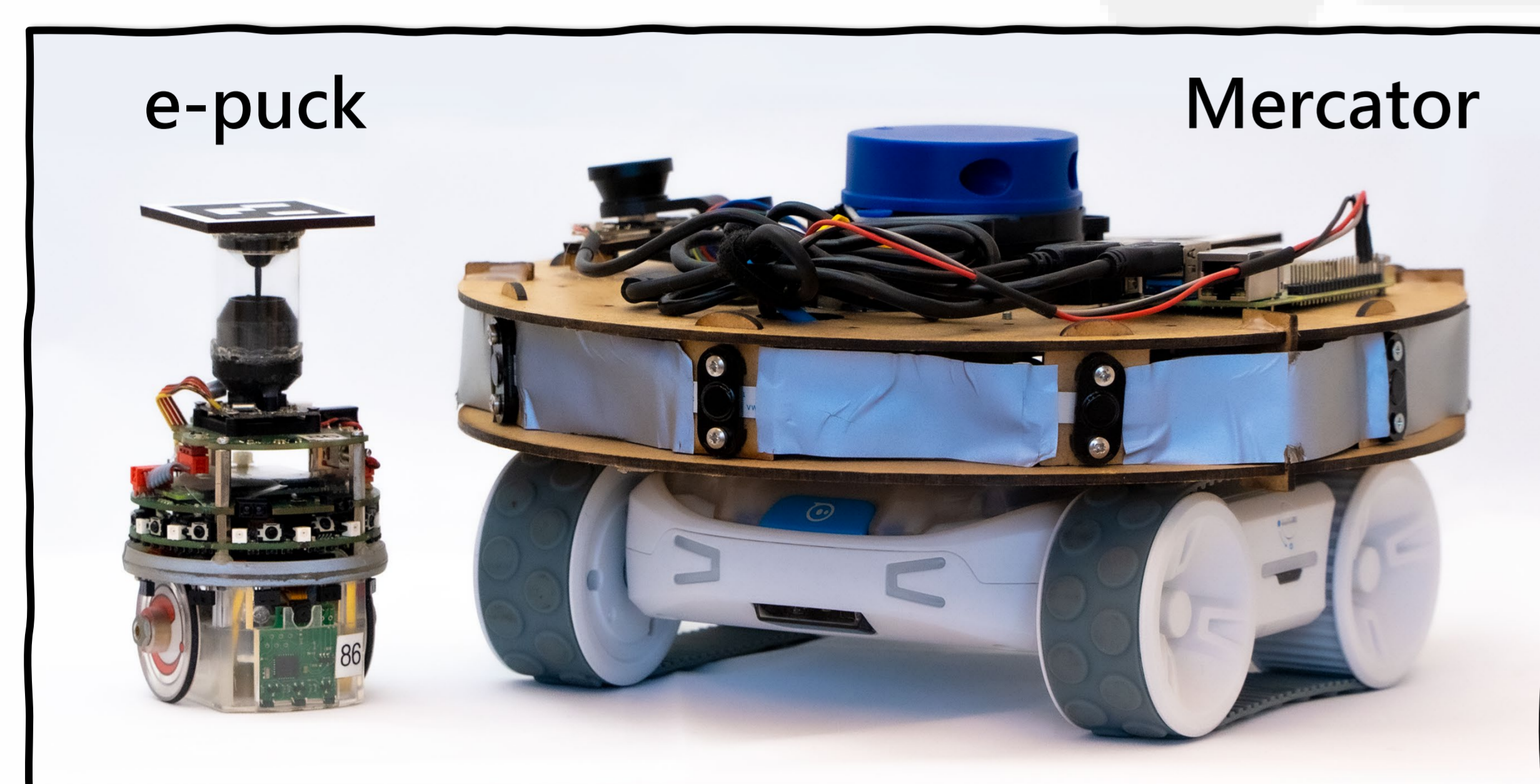
in  
swarm  
robotics



## We investigate:

- whether control software generated via automatic design is transferable across robot platforms
- whether the design methods that generate control software are themselves transferable

## Robots and missions



Functionally equivalent sensors and actuators

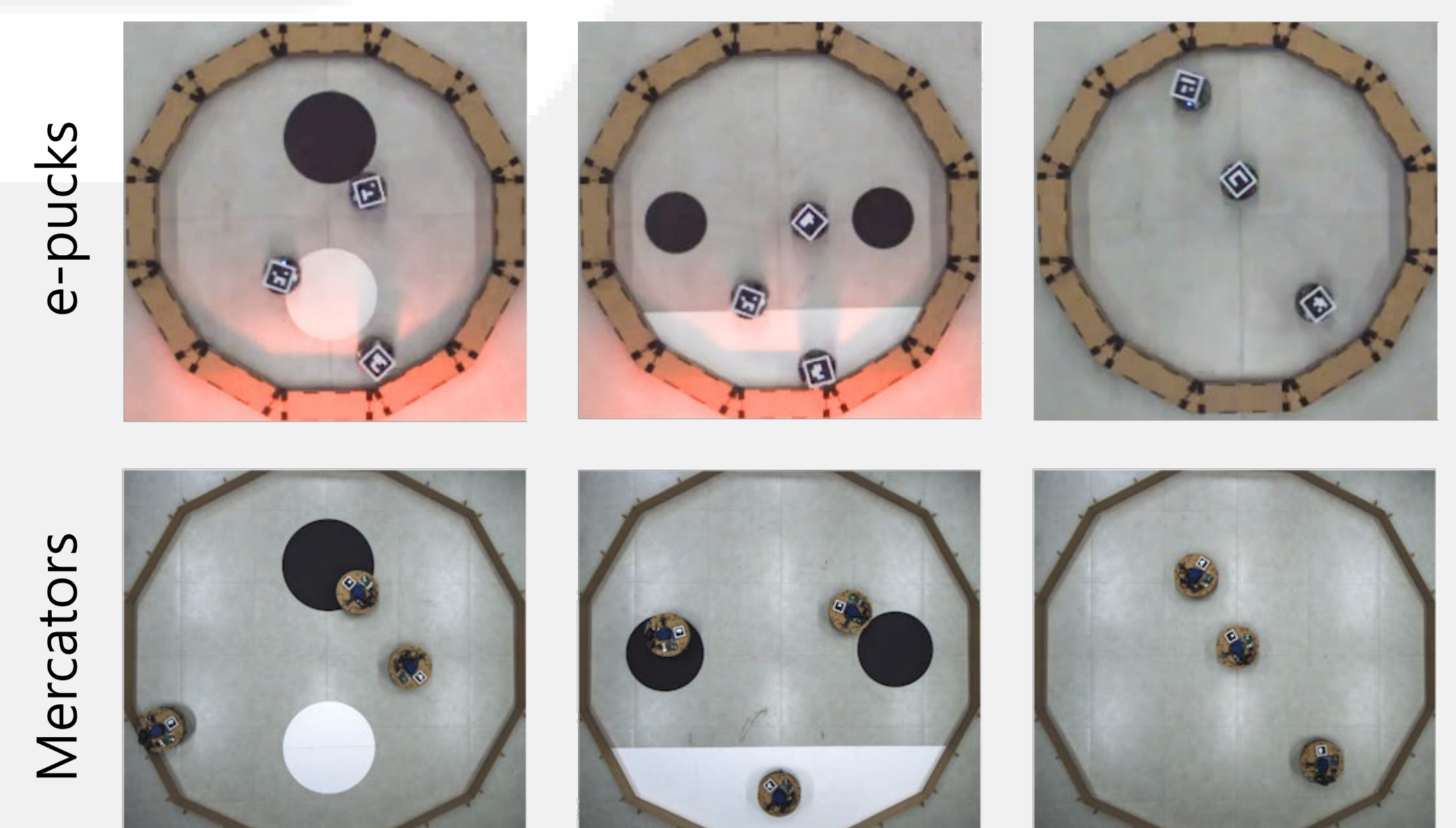
### Control inputs:

- Proximity sensors
- Landmark's direction
- Ground color
- No. Neighbors
- Neighbors' direction

### Control outputs:

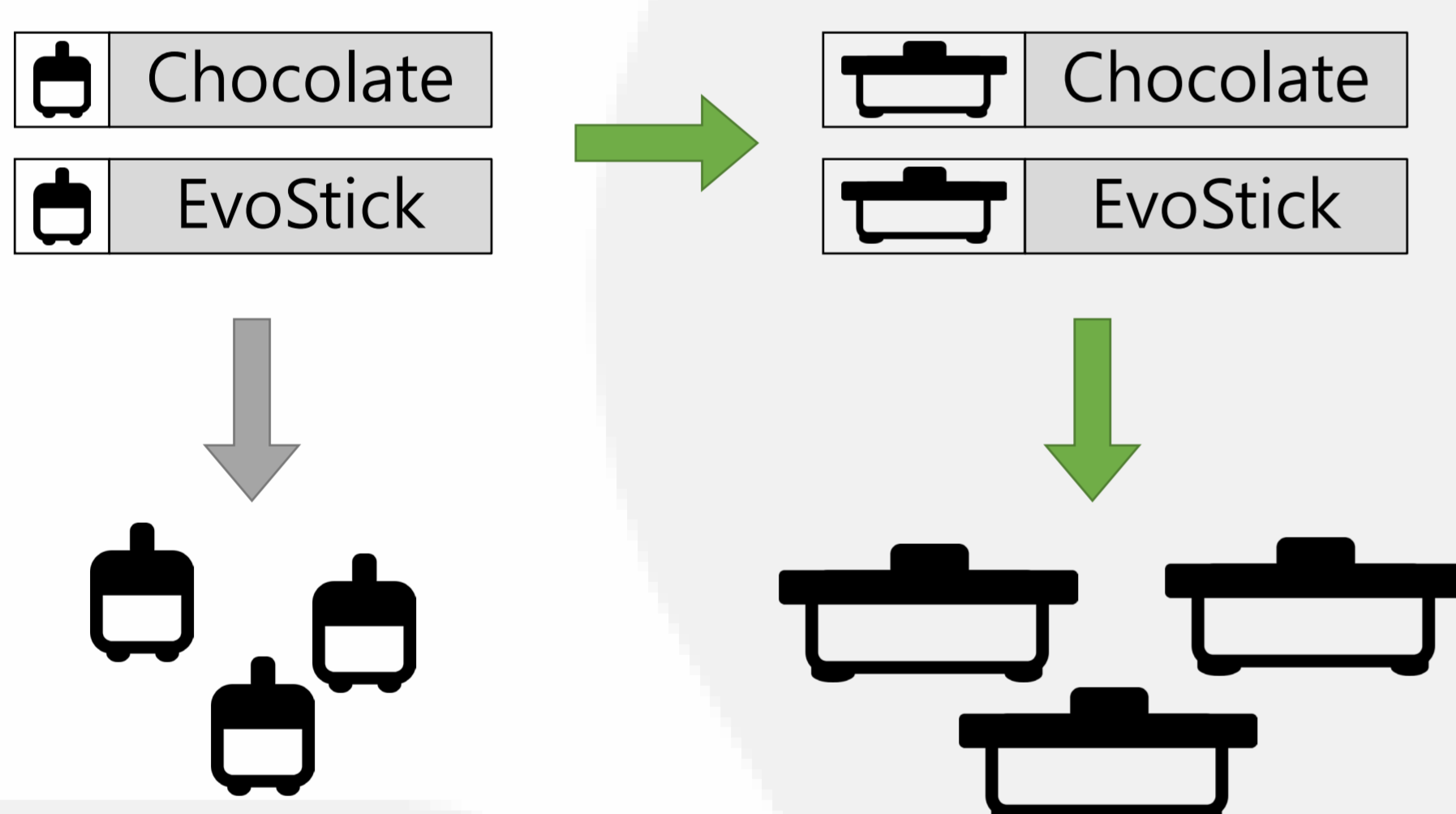
- Wheels' velocity

Aggregation Foraging Grid Exploration

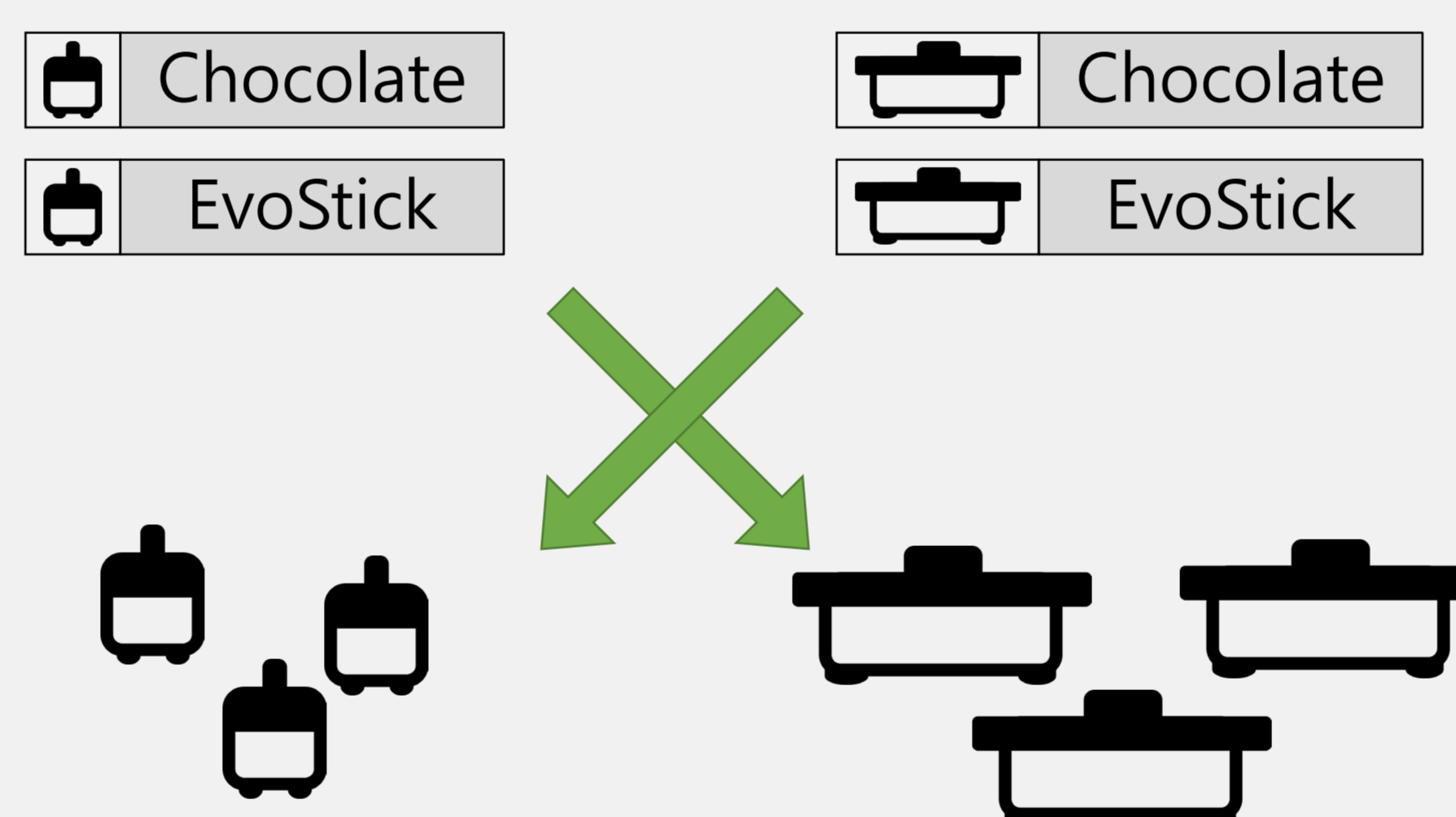


## The approach and results

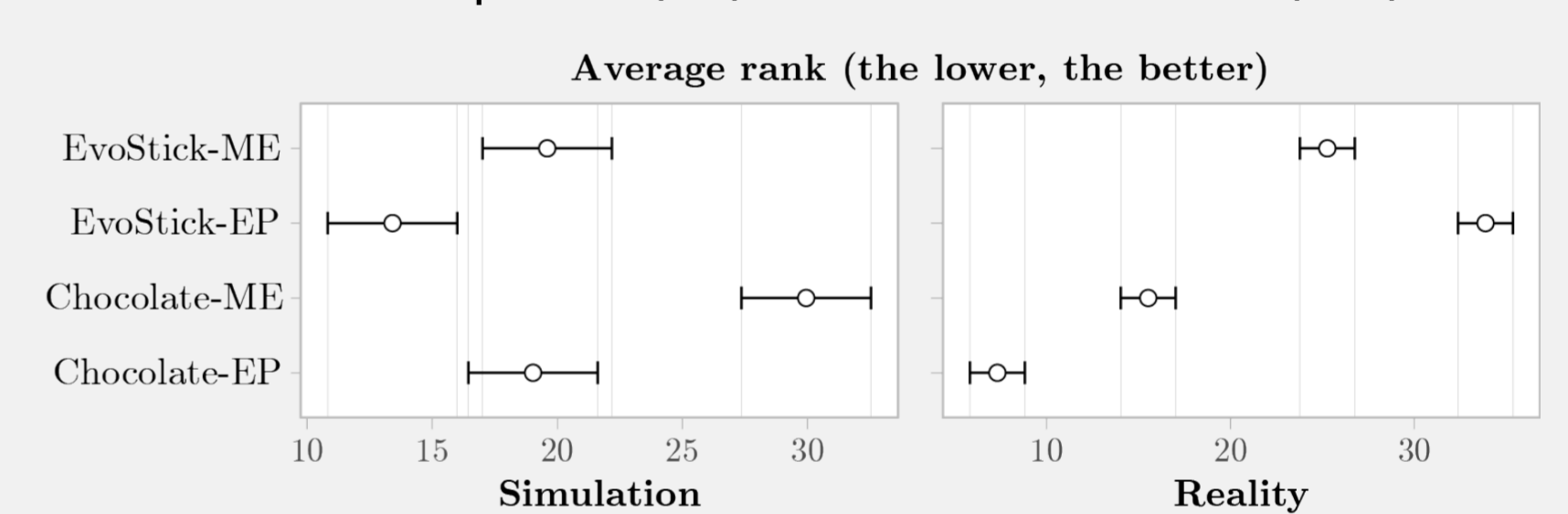
Transferability of design methods  
applying e-pucks' design methods to the Mercators



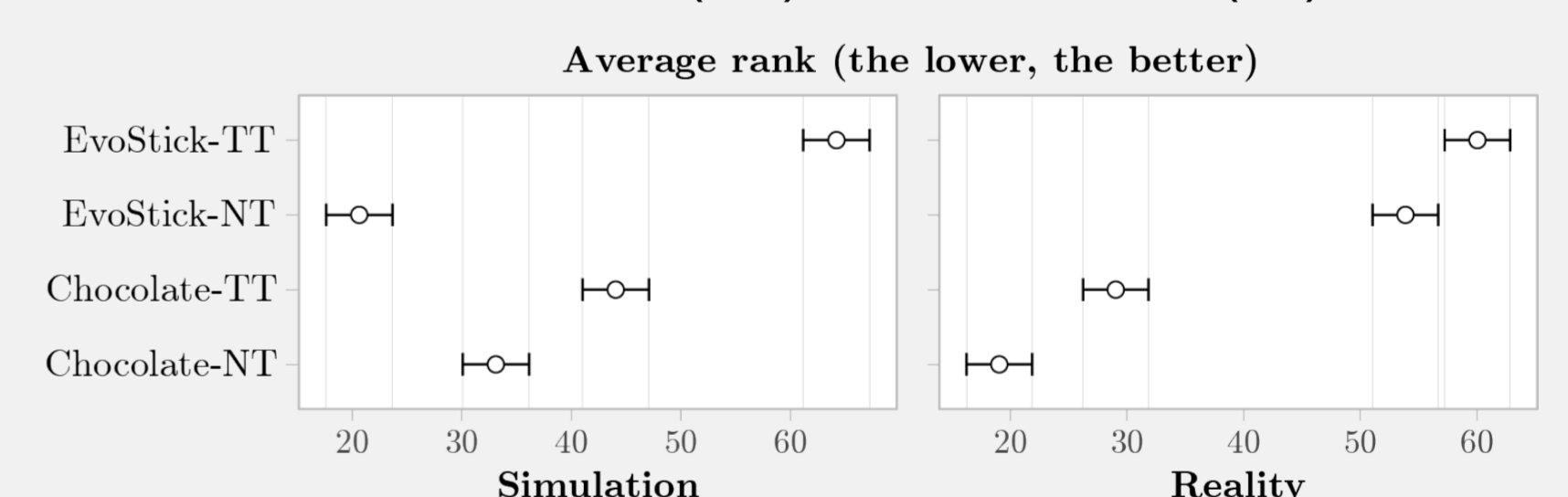
Transferability of control software  
transferring control software between e-pucks and Mercators



Chocolate vs EvoStick  
with the e-pucks (EP) and the Mercators (ME)



Chocolate and EvoStick's control software  
not transferred (NT) vs transferred (TT)



## The conclusions

### How to achieve better results?

- transferring automatic design methods instead of control software

### What to do next?

- conceiving protocols to predict the relative robustness of the methods

Read more!!!



## Our paper

Automatic off-line design of robot swarms:  
exploring the transferability of control software and design methods across different platforms

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