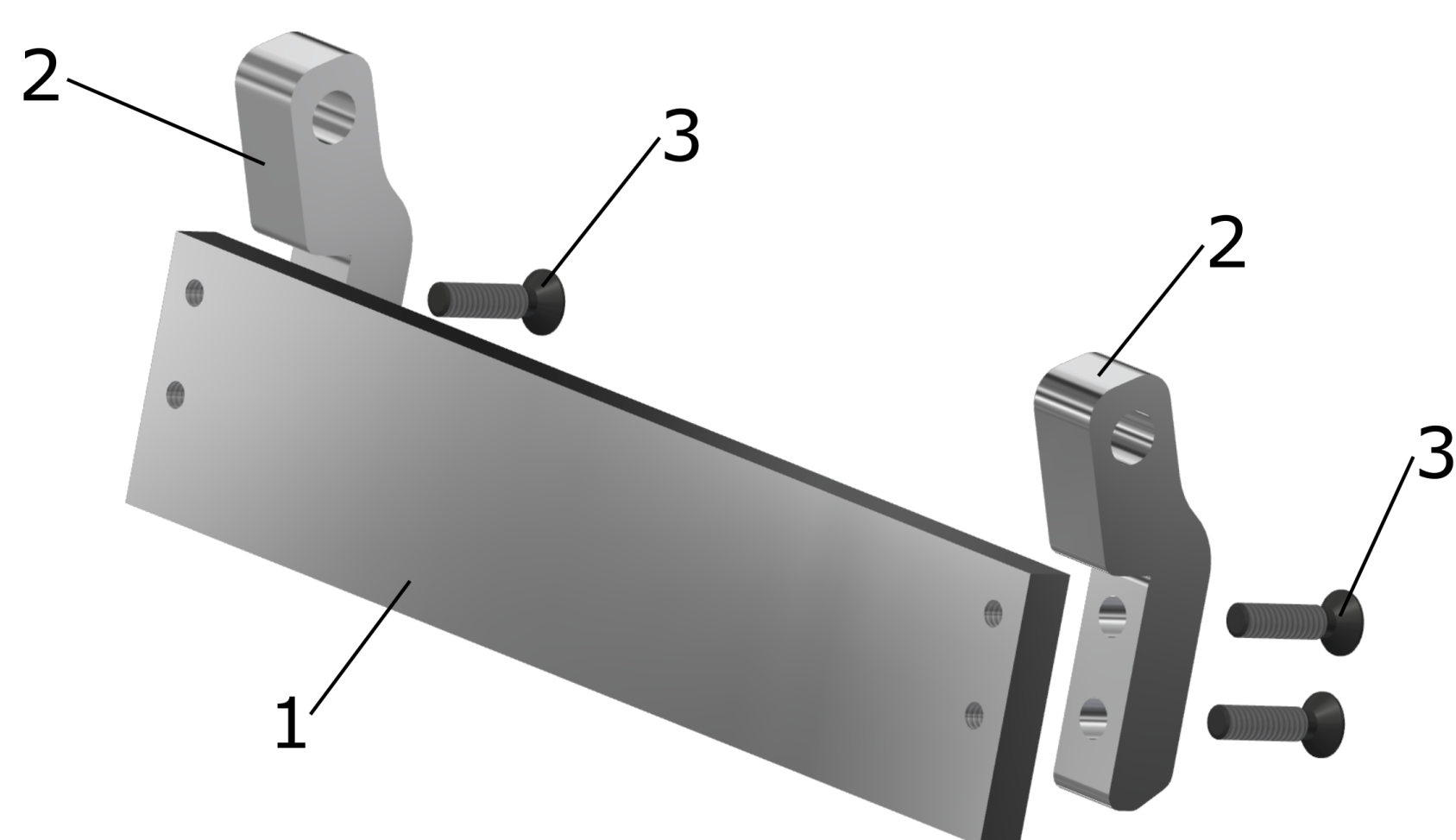


# ER-Force: Improving the 5th Generation

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**Abstract** This poster presents improvements and design considerations of our mechanical and electronical design. We also present an objective based approach to choose pass opportunities.

## Rework Chip Kick Plate



### Problem of previous chip kick design

- Milled from single semi-finished product
- ⇒ High amount of waste material
- ⇒ Excessive production cost

### Redesign towards modular chip kick

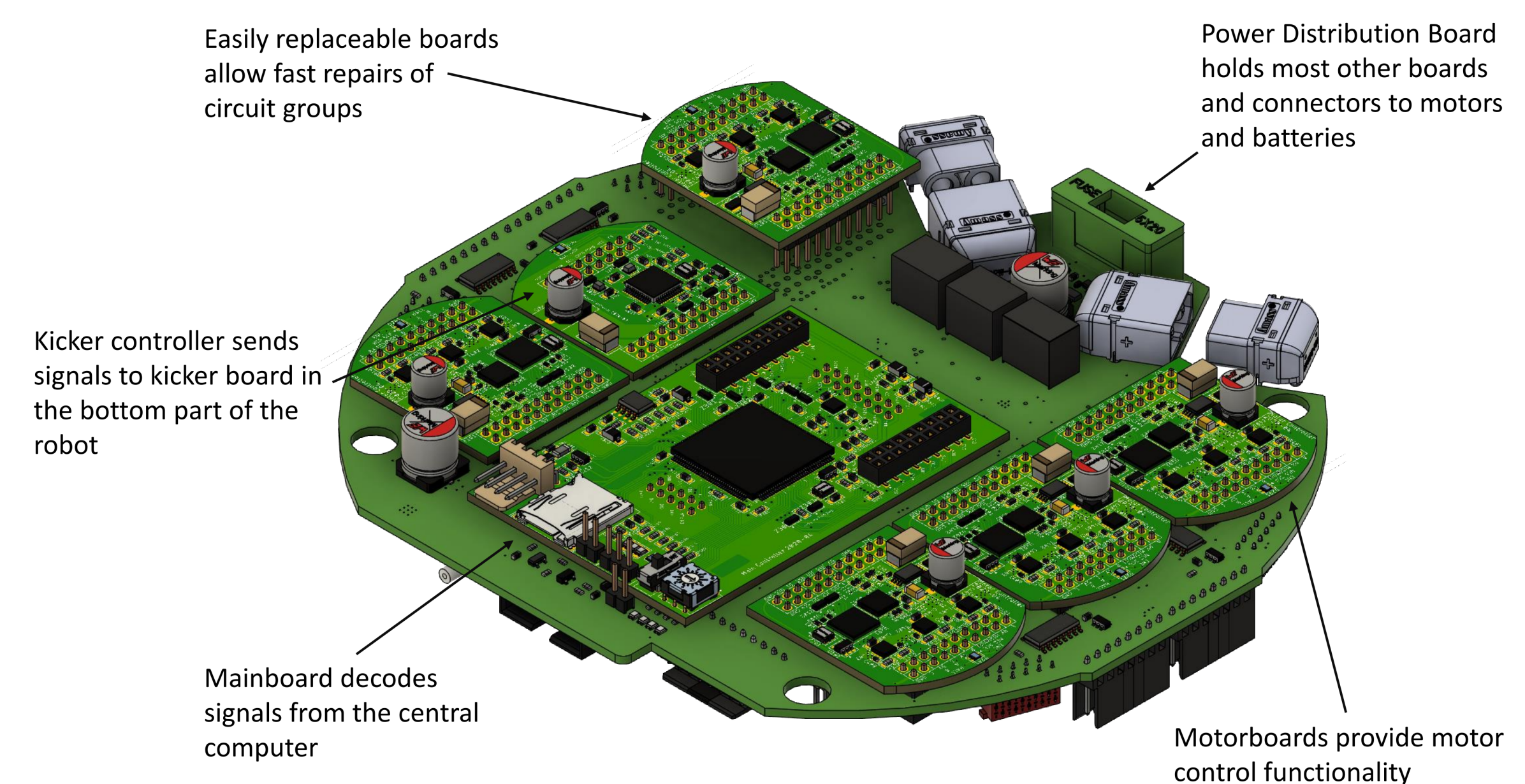
- **Three main parts:**
  - Base plate (1) and two side panels (2)
  - Assembly by four screws (3)
- **Designed for production by laser cutter:** ⇒ Only 2D geometry

### Summary of modular design

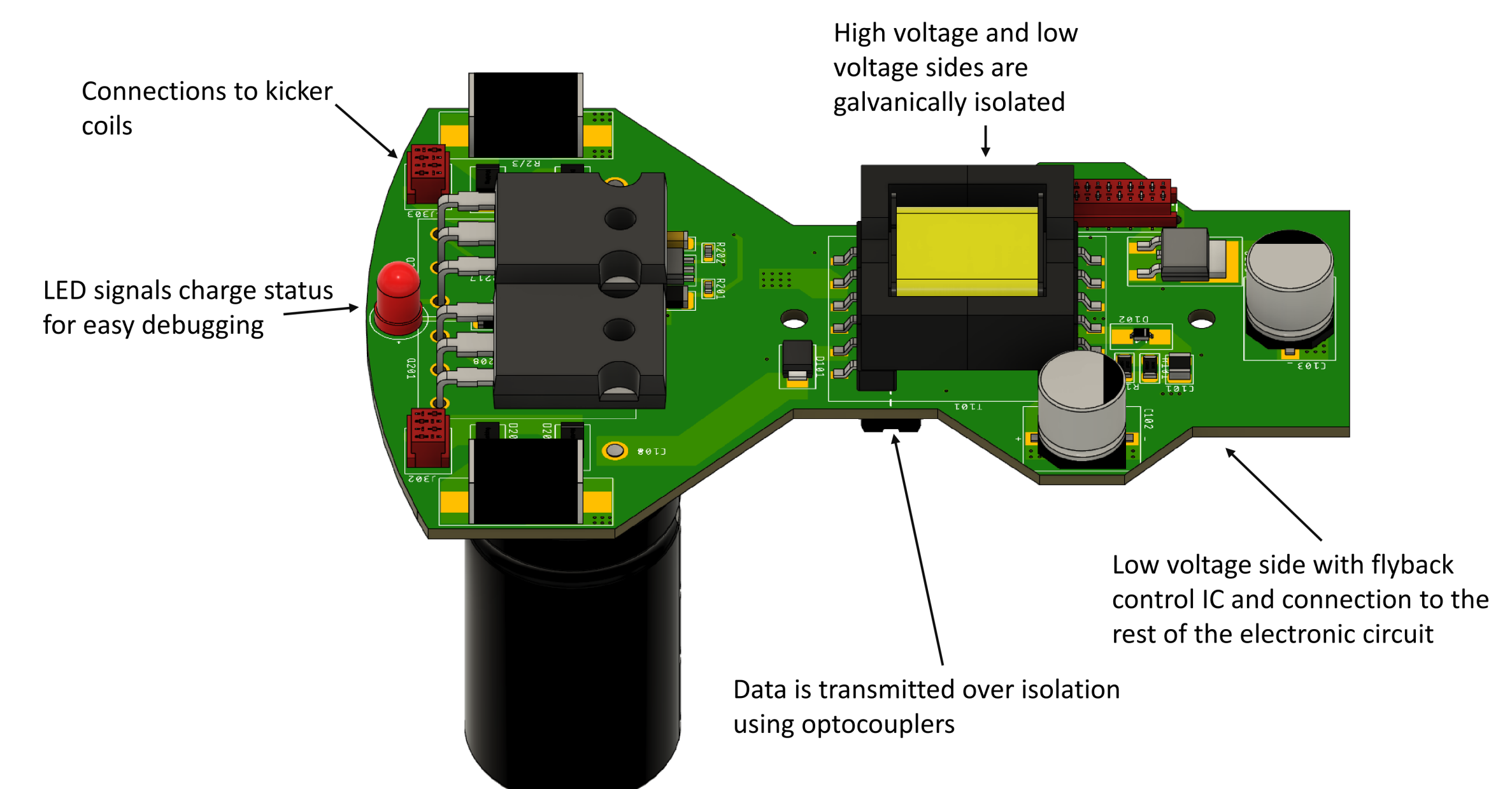
- **Early problems:** Torque deformation of weakly designed panels
- **Benefits:** Faster manufacturing and 50% cost reduction

## Electronical Design

### New and improved electronics stackup

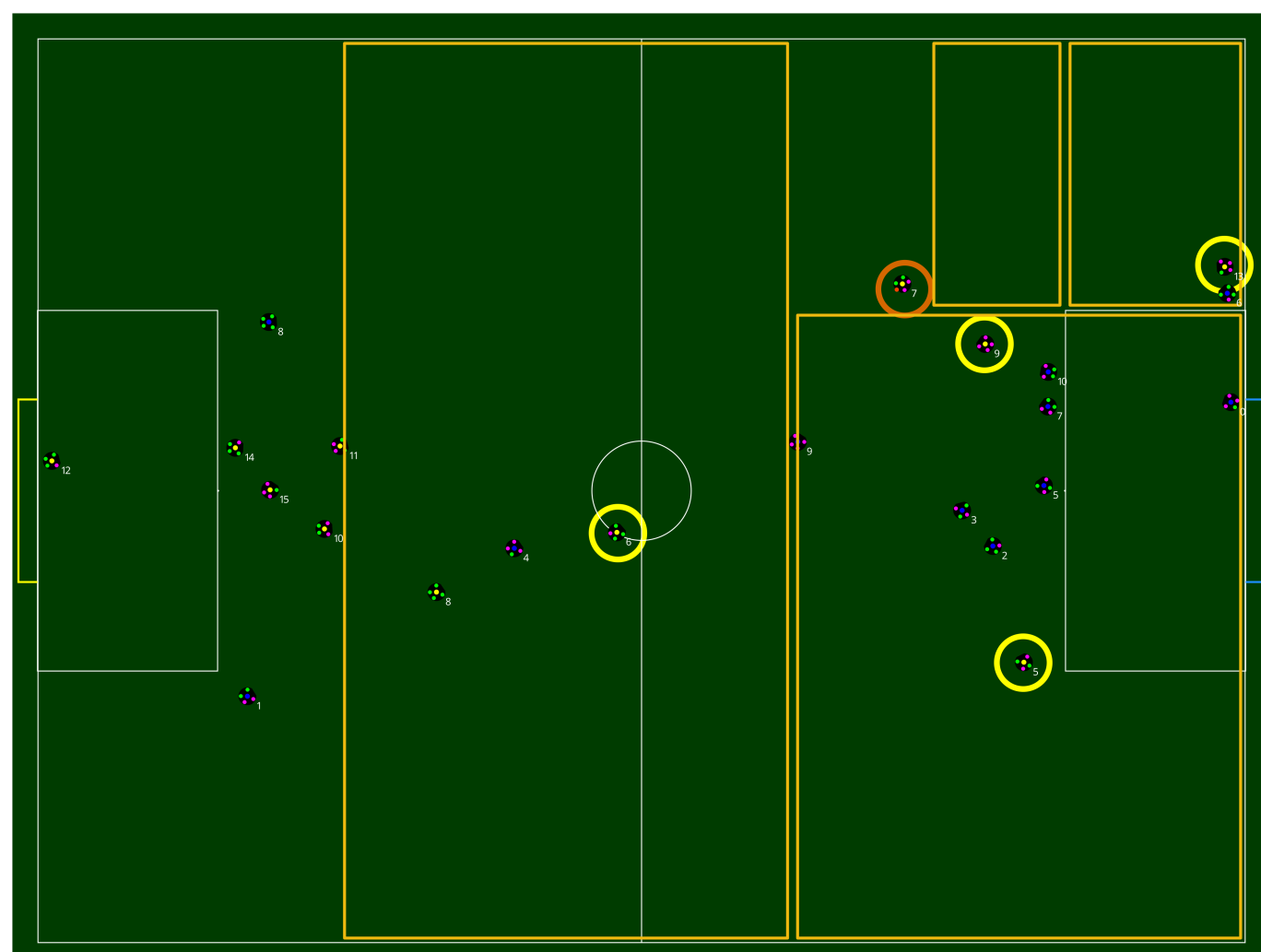


### Combined flyback charger and kicker circuit



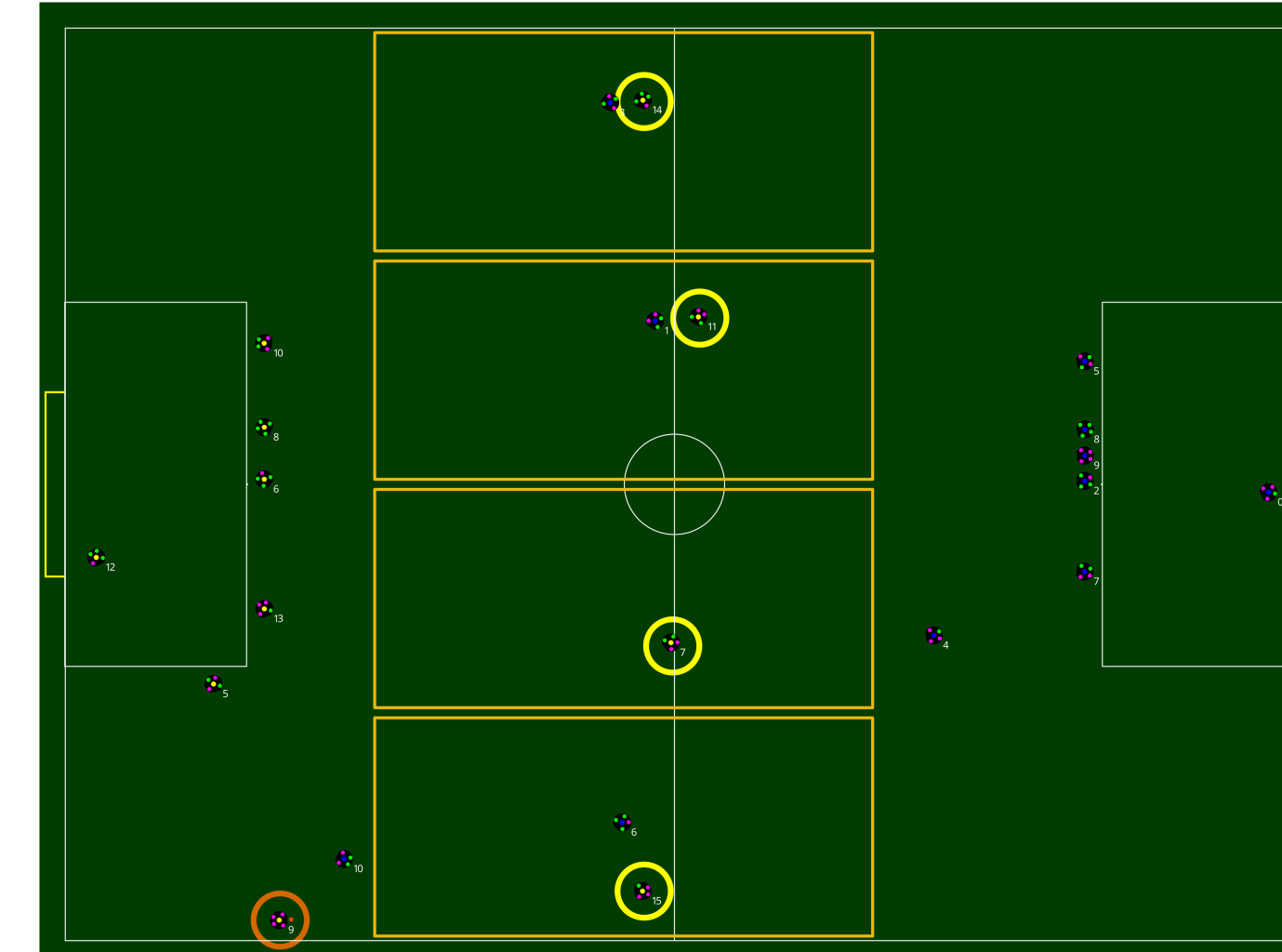
## Objective Based Attack Strategy

### Situation in front of opponent goal



- A single pass could lead to a goal opportunity here
- Zones are created around the opponent defense area
- Passes are rated based on how likely a goal opportunity is

### Situation close to own defense area

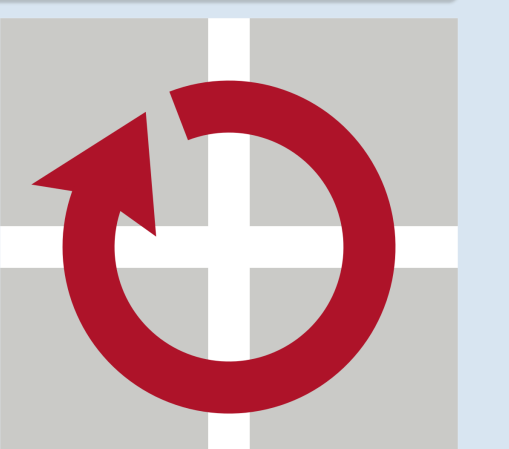


- No chance of scoring a goal from this position
- Zones are mostly in the middle of the field
- Passes are rated based on how likely they move the ball towards the opponent goal

\*The orange circle marks the main attacker with the ball and the yellow circle marks the supporters. The yellow squares are the zones.



QR-Code for the  
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