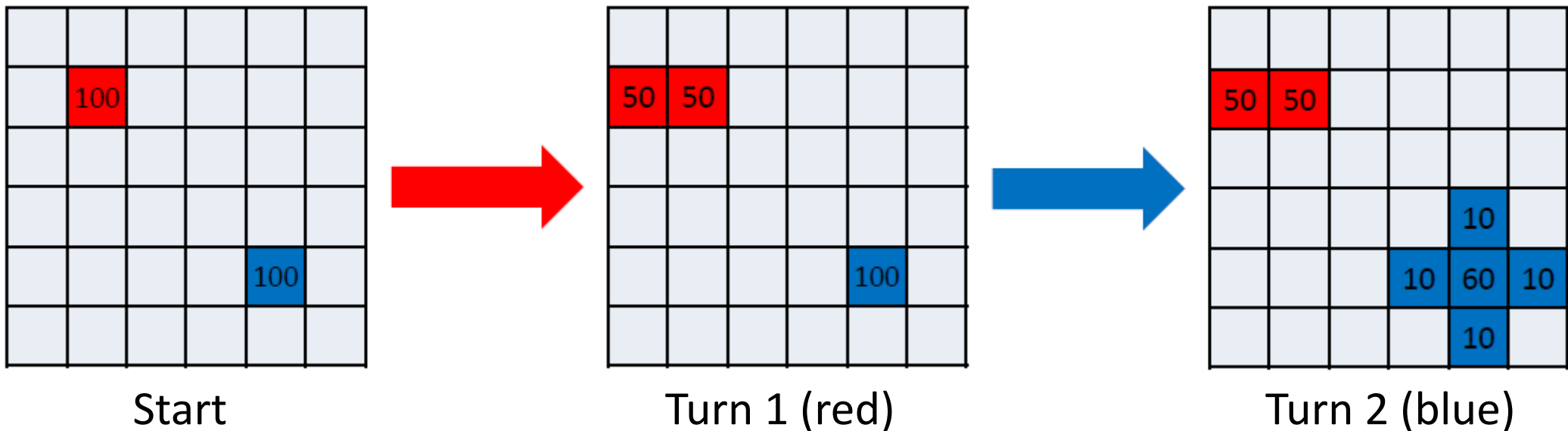# Grid Wars

A Game AI Coding Competition

Benjamin Wolff (CERN/AIS)
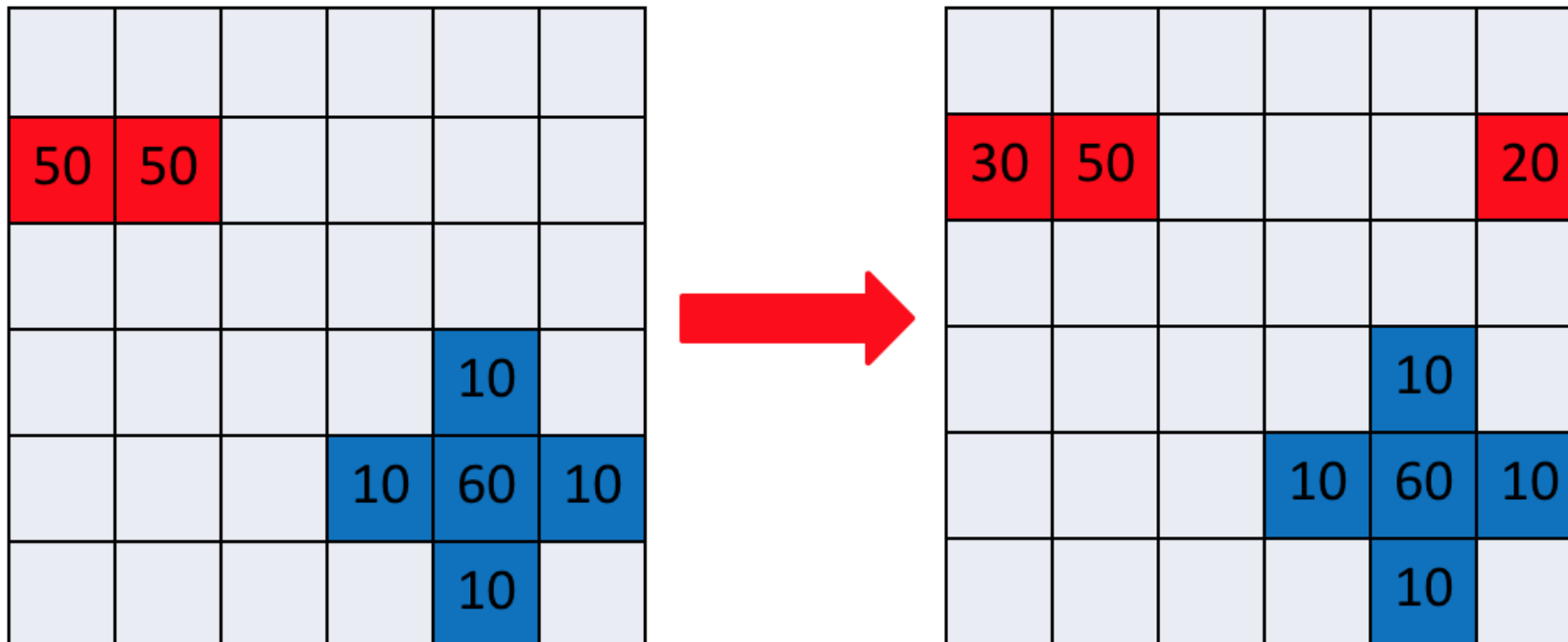
Game Setup

- Universe: 50x50 cells board
- 1vs1 matches between 2 „bots"
- Bots start at a random cell with 100 units (population)
- Bots take alternating turns to move units (2 turns = 1 round)

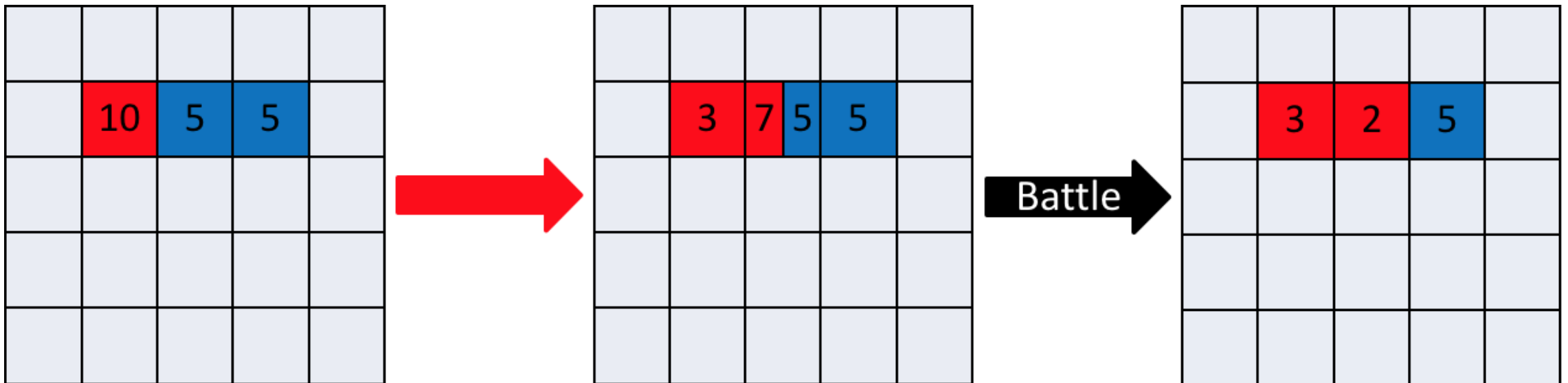Start   Turn 1 (red)   Turn 2 (blue)

Movements

- Units can be moved into directly neighbouring cells
- Up, down, left, right (no diagonals)
- The board is a torus (the edges wrap around)

Battle

- If two bots meet in a cell? Fight!

- Simple comparison (more units will win)

- Surviving units = attacking – defending units (can result in 0)

- Battles occur after every turn (not round)

Population Growth

- After every round (2 turns = one turn per bot)
- Population increased by 10% (growth rate)
- Rounding to nearest integer (e.g. 4.4 = 4, 5.5 = 6)
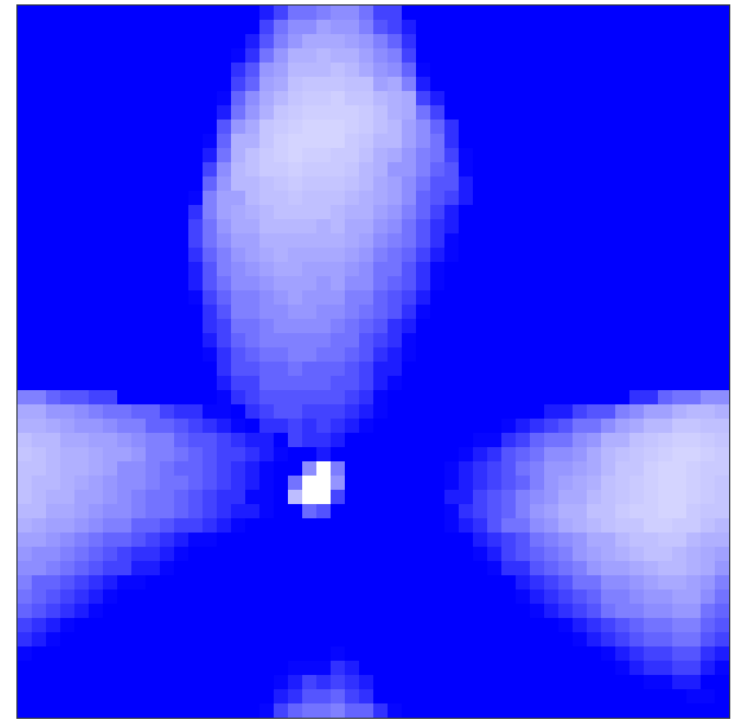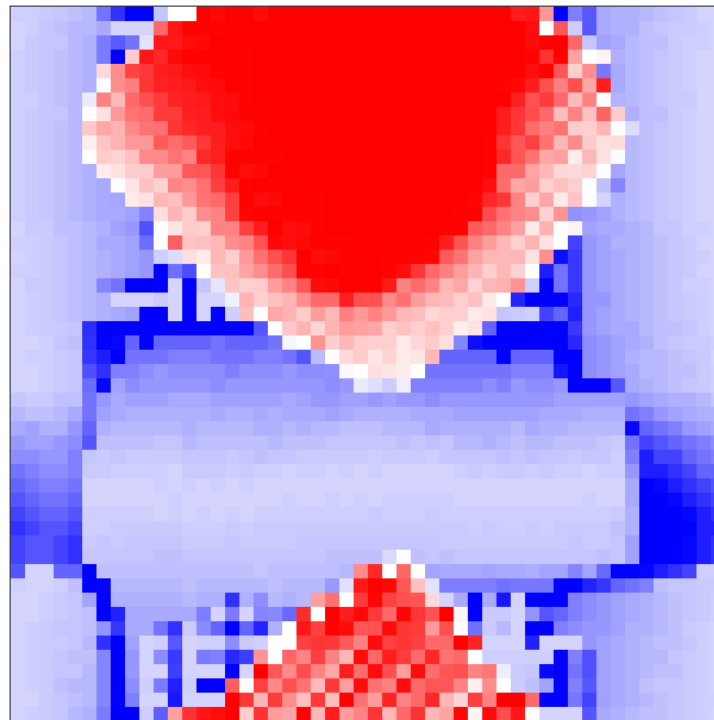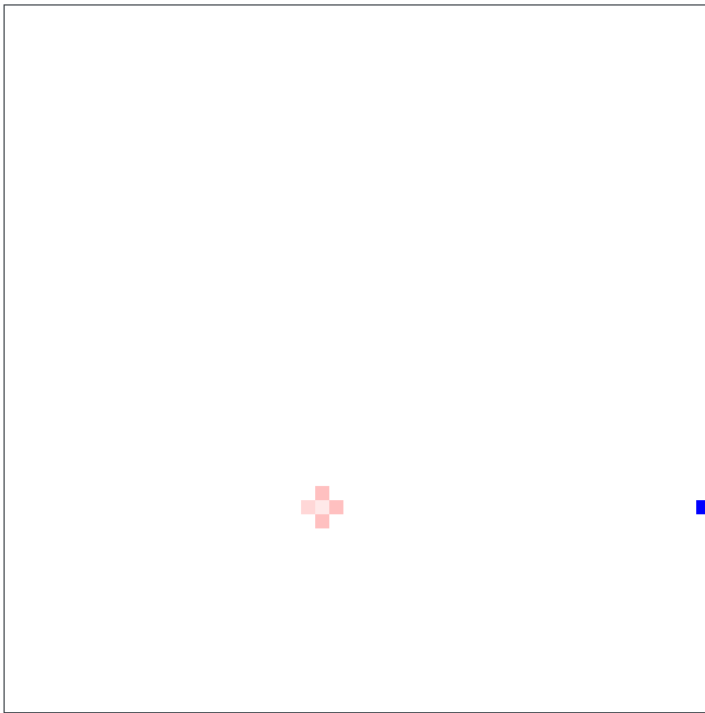- Maximum population per cell = 100
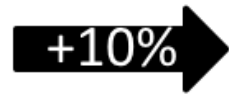
Before	+10%	After
1	1.1	1
2	2.2	2
3	3.3	3
4	4.4	4
5	5.5	6

Winning

- Last surviving bot
- Or highest total population after 2000 rounds

Coding Competition

- Form small teams (team == more than 1 person ;))

- Register on the GridWars platform: https://gridwars.cern.ch/

  - 1 user account per team

  - Registration password: **5pr1ngC4mpu52018!**

  - Please provide a valid e-mail address

- Develop your bot locally and upload it to compete against the bots of other teams

Bot Development

- Getting Started guide: https://gridwars.cern.ch/docs/getting-started
- Programming language: Java 8
- Bots are packaged and uploaded as Java jar files
- Server will generate and play matches against all other bots on upload
- Only one active bot at a time, will be replace with new upload
  - You can upload new versions your bot as often as you want
- Final bot upload deadline at the end of the competition

Bot Development

- Do I need awesome programming skills?
  - Basic programming knowledge is enough
  - Simple examples are provided
  - Opportunity to learn
- What if I can't programm at all?
  - Find team with someone who knows how to
  - Programming is only one part, it's also important to come up with a good strategy and algorithms, can also be done with pen & paper

Bot Development

Demo

Some more rules

- Illegal move = all moves for the turn are ignored

- Timeout on bot initialisation (3s)
    - If the bot fails to initialise in time, it will idle for the whole match.

- Timeout getting the next moves for a turn (50ms)
    - All moves added after the timeout are ignored

- Stateful bots are allowed

- Use of 3rd party libraries is **not** allowed

- Java reflection & file access etc. is **not** allowed

- More infos in the FAQ: https://gridwars.cern.ch/docs/getting-started

Schedule

When	What
Today, at lunch break	Registrations will open
Tuesday, 18h45 – 19h45	Hackathon
Wednesday, 18h45 – 19h45	Hackathon
Thursday, around lunch time	Closing of bot upload, playoffs
Thursday, 16h15	Results & price ceremony

Hackathons will take place in the library

Questions?

Talk to me

Join the hackathons

grid.wars@cern.ch