



Présentation Battle Royal

R5.A05 - IOT



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A photograph showing several people in an office environment, focused on their work. In the foreground, a person's hands are visible on a laptop keyboard. Behind them, another person holds a tablet displaying a dashboard with various charts and graphs. The scene is set in a modern office with warm lighting and a potted plant in the background.

L'API

Construction de l'API



Choix des routes

POST

Ajouter un personnage

POST

Ajouter une action et une cible

GET

Obtenir tous les personnages

GET

Obtenir un personnage particulier

GET

Voir le statut de l'Engine : tour en cours, nombre de personnages en vie

DELETE

Supprimer tous les personnages





Architecture de l'API

Routes

main.py

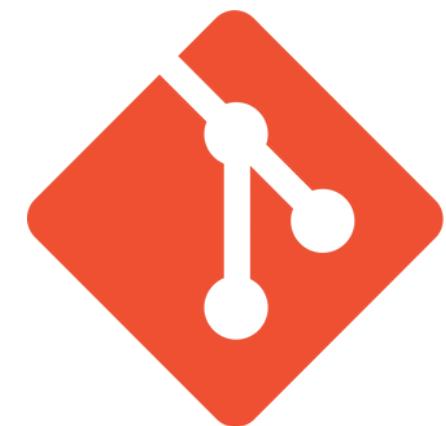
**Production des
messages**

data.py

~~data.json~~



Architecture de l'API



git





Modifications de l'Engine

Vérifications des valeurs

Validation dans le constructeur

```
def __init__(self, cid :str, teamid :str, life :int, strength :int, armor :int, speed :int):
    self._id = cid
    self._teamid = teamid
    self._life = life
    self._strength = strength
    self._armor = armor
    self._speed = speed
    if self._total_stats() > 20:
        raise ValueError("Total stats (strength + life + armor + speed) cannot exceed 20.")
    if self._life < 0 or self._strength < 0 or self._armor < 0 or self._speed < 0:
        raise ValueError("Stats cannot be negative.")
    self._action = None
    self._target = None
    self._dead = False
    self._data = Data()
```

Renvoi d'erreur

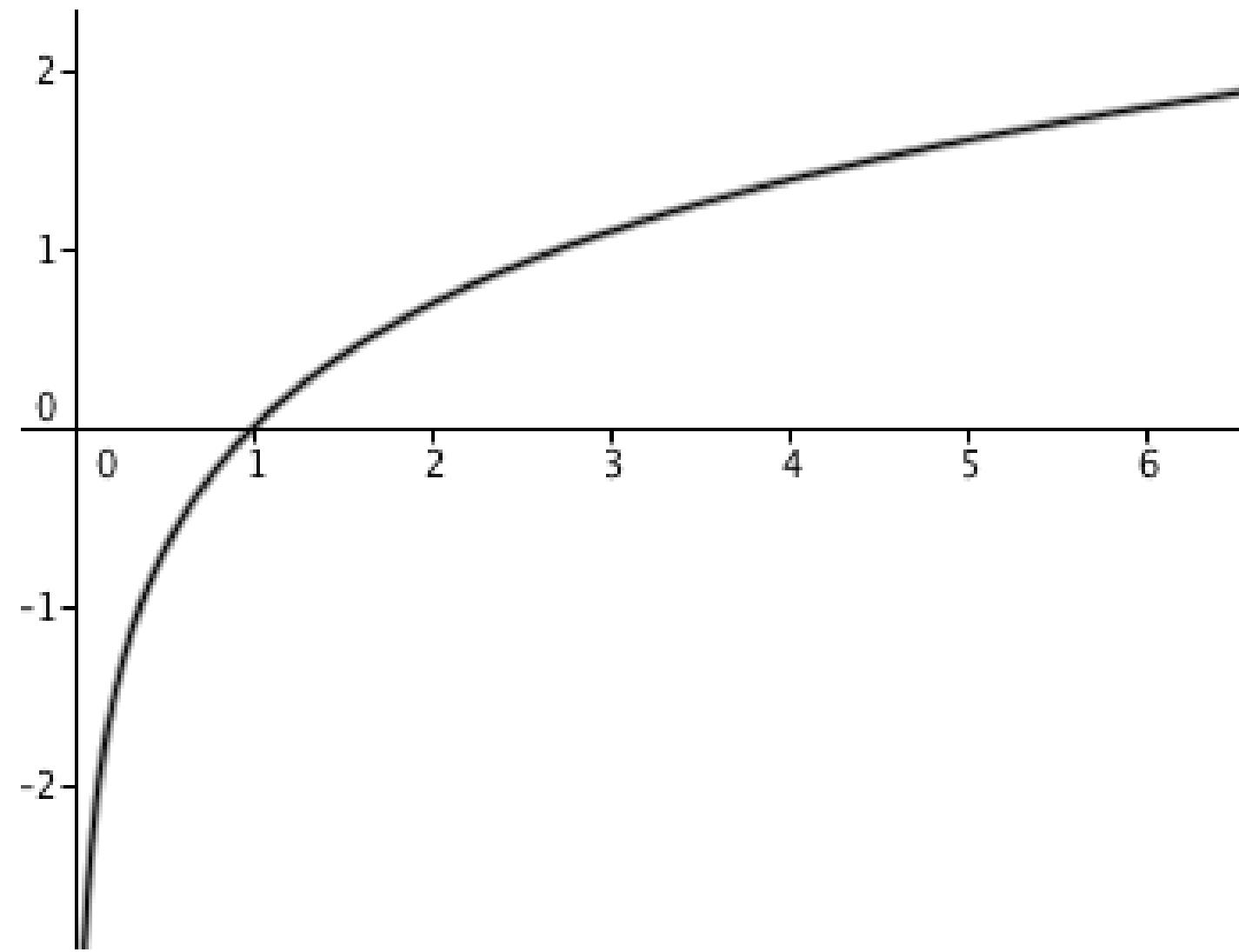
```
1 {"error": "Total stats (strength + life + armor + speed) cannot exceed 20."}
```



Modifications de l'Engine

Refonte du système de bloquage

- + Les personnages attaquent dans l'ordre décroissant par vitesse.
- + L'augmentation de dégâts entre deux niveaux est de plus en plus faible.



A photograph of a woman with dark hair and a small hoop earring, wearing a grey sweater, sitting at a desk. She is looking down at a white laptop screen which displays a colorful dashboard with various charts and graphs. Her hands are visible; one is on the laptop keyboard and the other is pointing at the screen. In the background, another person's hands are visible holding a tablet. The overall scene suggests a professional environment focused on data analysis.

Les agents

Création d'agent

Optimisation générale

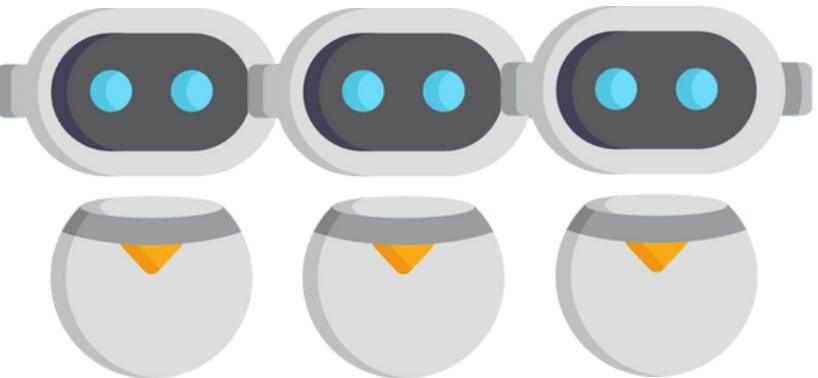
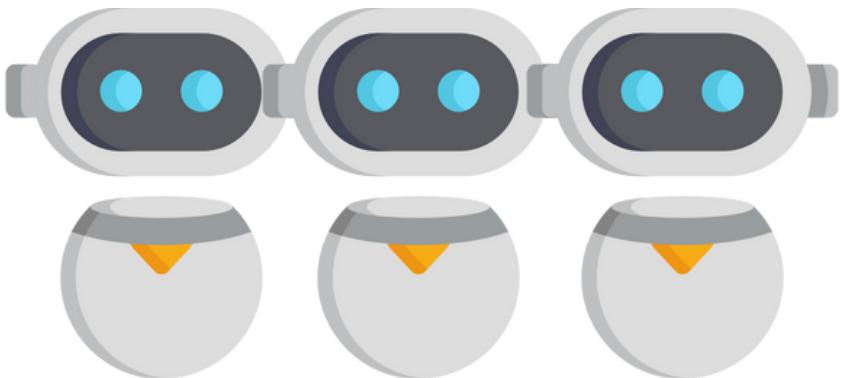
Optimisation des statistiques des
agents par renforcement

Optimisation des choix des actions des
agents par observation algorithmique

> Création d'agent

```
def create_agents_rnd(number_of_teams): #3 agents par team
    all_agents = []
    for i in range(number_of_teams):
        for j in range(3):
            agent = Agent(f"player {os.urandom(4).hex()}", f"equipe {i}", 0, 0, 0, 0)
            random_initialize_stats(agent)
            all_agents.append(agent)
            agent.add_to_arena()

    return all_agents
```



```
"player 0397c43a": {
    "armor": 4,
    "cid": "player 0397c43a",
    "dead": false,
    "life": 1,
    "speed": 10,
    "strength": 5,
    "target": "None",
    "teamid": "equipe 0"
},
"player 2cdb13c0": {
    "armor": 2,
    "cid": "player 2cdb13c0",
    "dead": false,
    "life": 3,
    "speed": 10,
    "strength": 5,
    "target": "None",
    "teamid": "equipe 1"
},
```

> Création d'agent

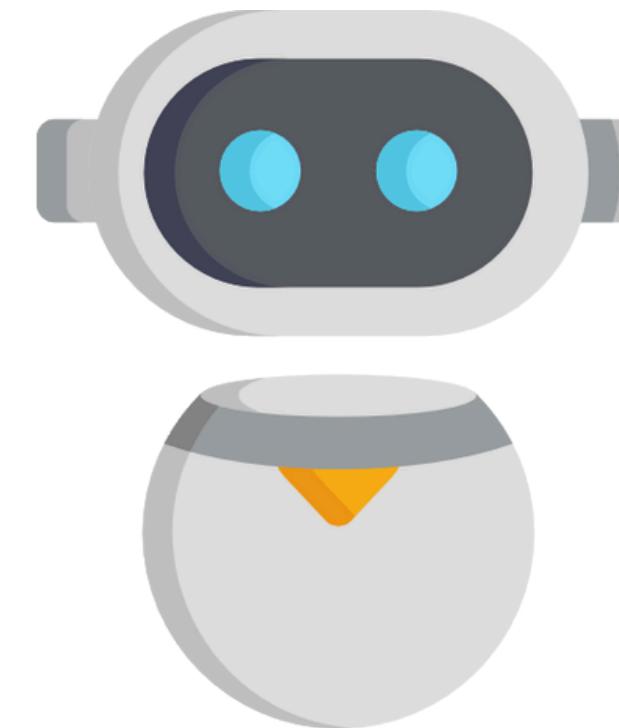
20

speed

armor

strength

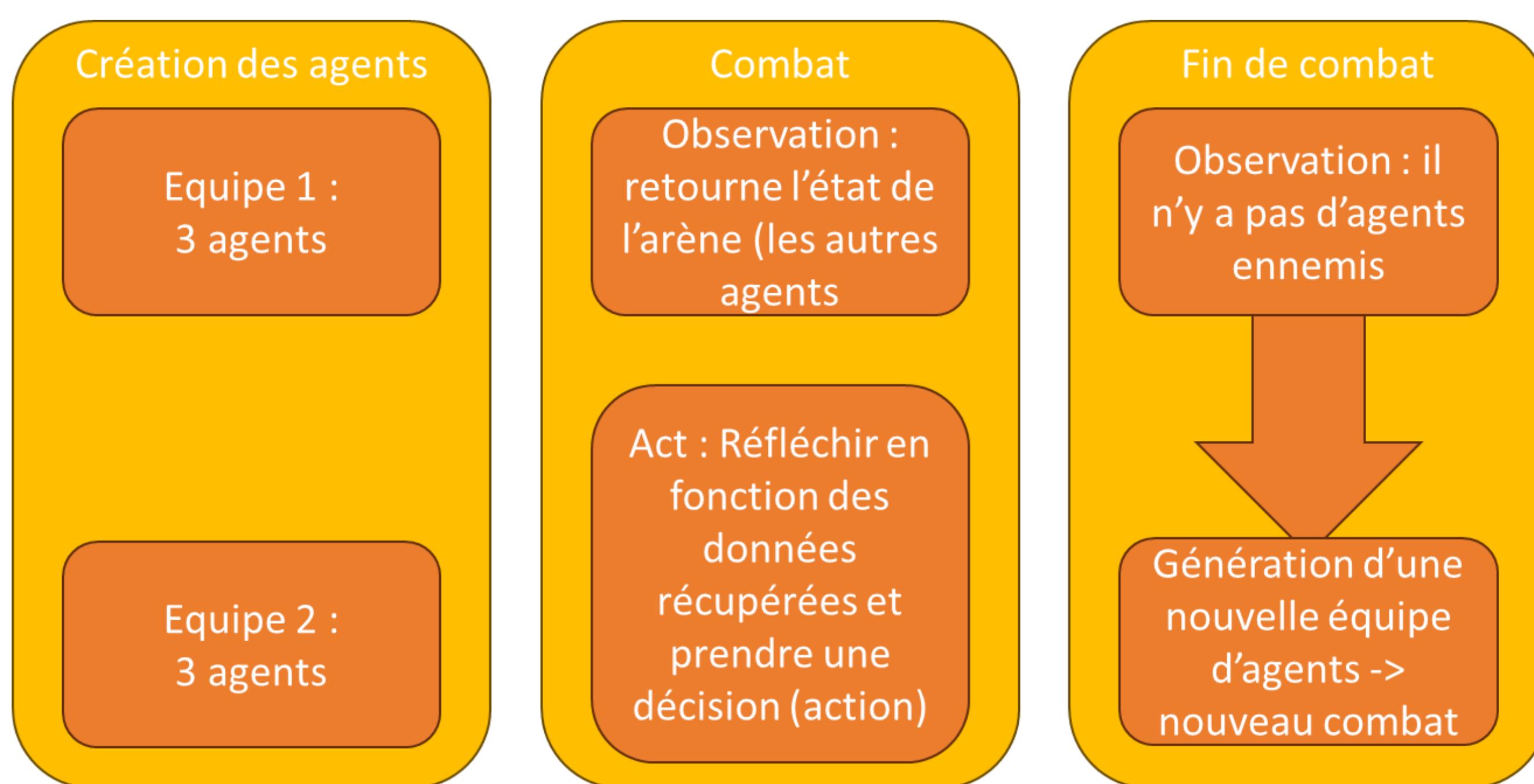
life



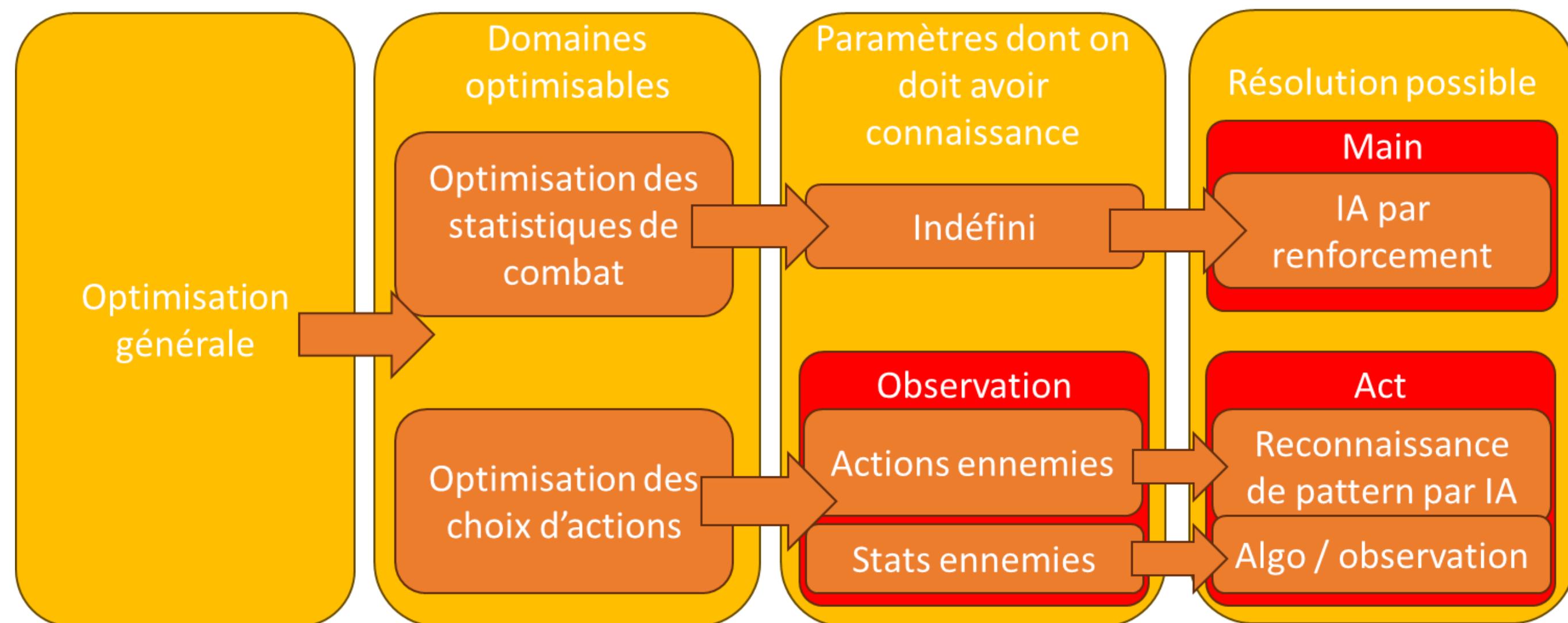
```
def random_initialize_stats(agent):
    stats_points = 20
    for i in range(stats_points):
        field = random.choice(["_life", "_strength", "_speed",
                               "_armor"])
        setattr(agent, field, getattr(agent, field) + 1)
```



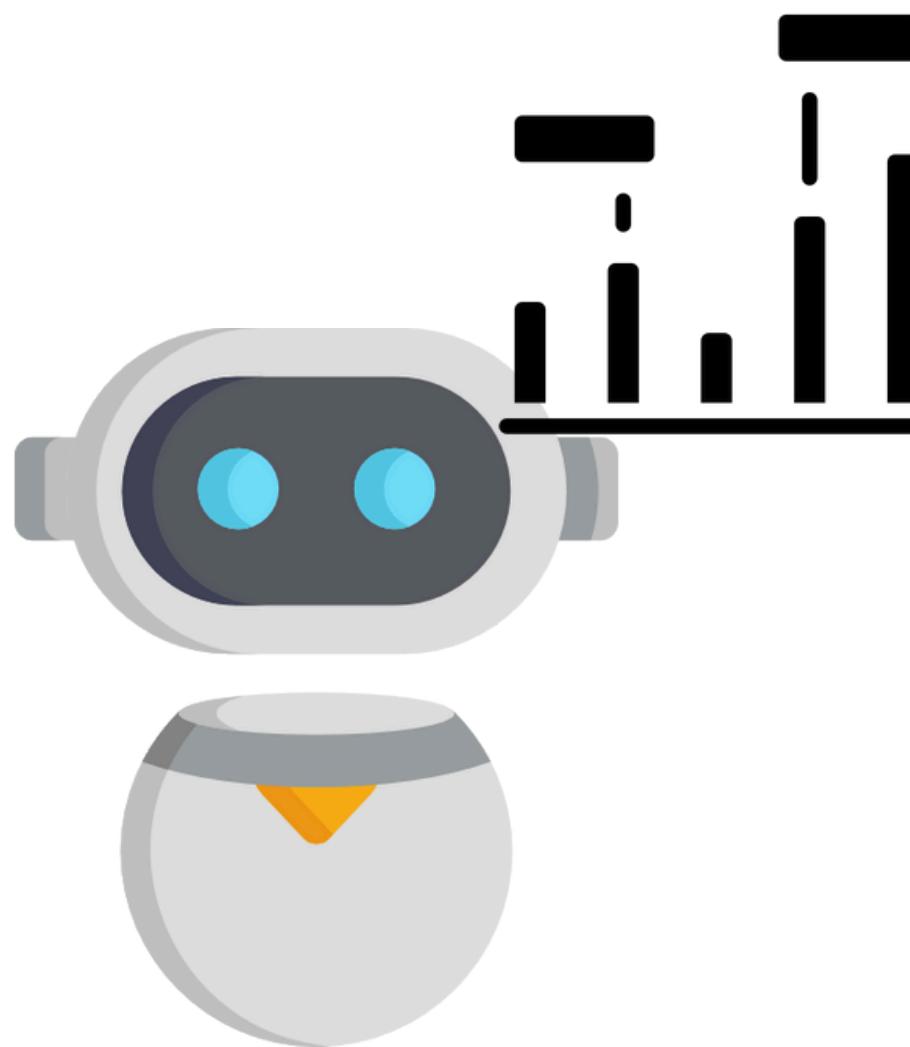
Optimisation générale



Optimisation générale



Optimisation des actions des agents par observation algorithmique



```
bonus = {'bonus_dodge': 15., 'bonus_hit': 15., 'bonus_block': 15.}
action = ActionEnum.HIT

# // DEFINE BEST ACTION BY GIVING BONUSES TO POSSIBILITIES
agents_targeting_me = len([agent for agent in observation if agent._target == self])
bonus_dodge = (self._speed - CONST_SPEED_MOYENNE) * agents_targeting_me

# Si j'ai beaucoup de degats et de speed, je veux vouloir attaquer
bonus_hit = (self._speed - CONST_SPEED_MOYENNE) + (self._strength - CONST_STR_MOYENNE) + (5 * (3 - len(ennemis)))

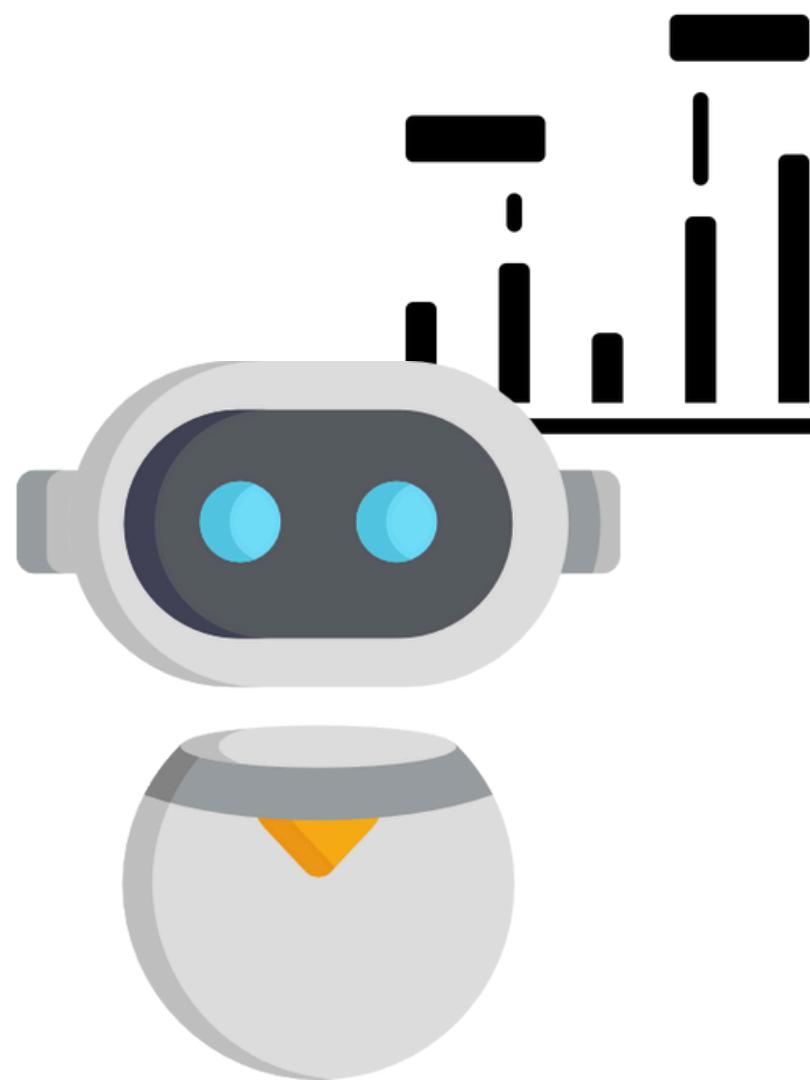
# Si j'ai beaucoup de defense et peu de speed (donc que j'ai plus de chance de recevoir des degats)
# je veux vouloir reduire
bonus_block = (CONST_SPEED_MOYENNE - self._speed) * (self._armor - CONST_ARMOR_MOYENNE)

# FOCUS : choisir l'agent qui a le plus de degats/speed et le moins d'armure/vie
# Find the agent with the best score
agent_to_focus = max(ennemis, key=lambda agent: agent._strength + agent._speed - (agent._life + agent._armor))

for chosen_bonus_key in ['bonus_dodge', 'bonus_hit', 'bonus_block']:
    bonus[chosen_bonus_key] += locals()[chosen_bonus_key]

for other_bonus_key in bonus:
    if other_bonus_key != chosen_bonus_key:
        bonus[other_bonus_key] -= locals()[chosen_bonus_key] / 2
```

Optimisation des statistiques des agents observation algorithmique



Définition de variables moyennes (moyenne de speed de tous les agents)

Analyse des stats de l'agent par rapport à l'agent moyen

Speed : +1,2
Strength : +1,4
Life : -0,7
Armor: -1,9

Attribution de bonus sur chaque action

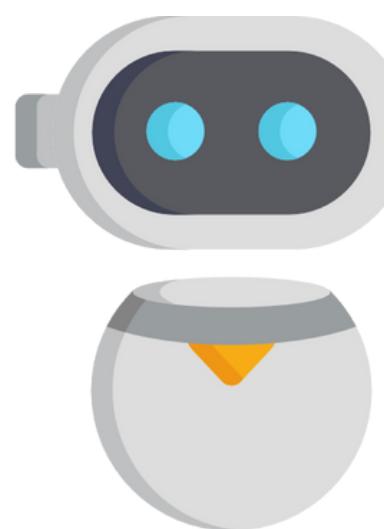
Action.HIT : 33% + 20% = 53%
Action.BLOCK : 33% - 25% = 8%
Action.DODGE : 33% + 5% = 38%

Sélection d'une action finale

Action.HIT

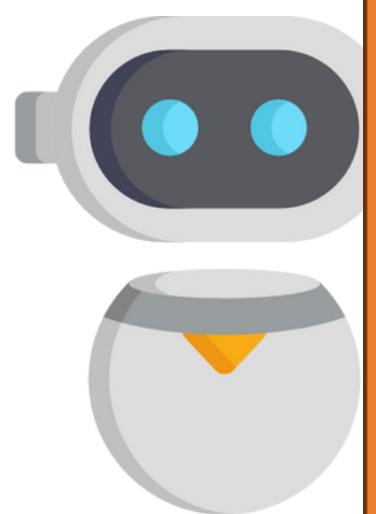
```
action_bonus = random.choices(list(bonus.keys()), weights=list(bonus.values()), k=1)[0]
```

Optimisation des statistiques des agents observation algorithmique



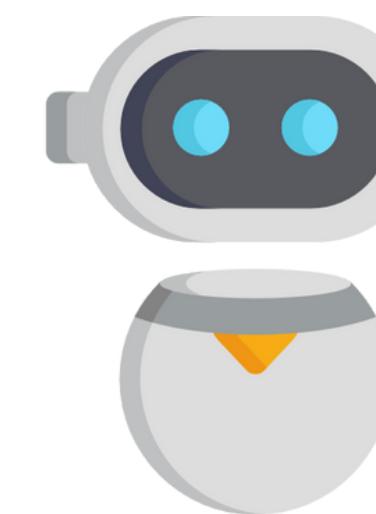
Si rapide et fort
(écart de speed
et de strength
important avec
les autres agents)

Bcp de chances
de taper



Si rapide défensif
(écart de speed
et d'armor
important avec
les autres agents)

Bcp de chances
d'esquiver / taper

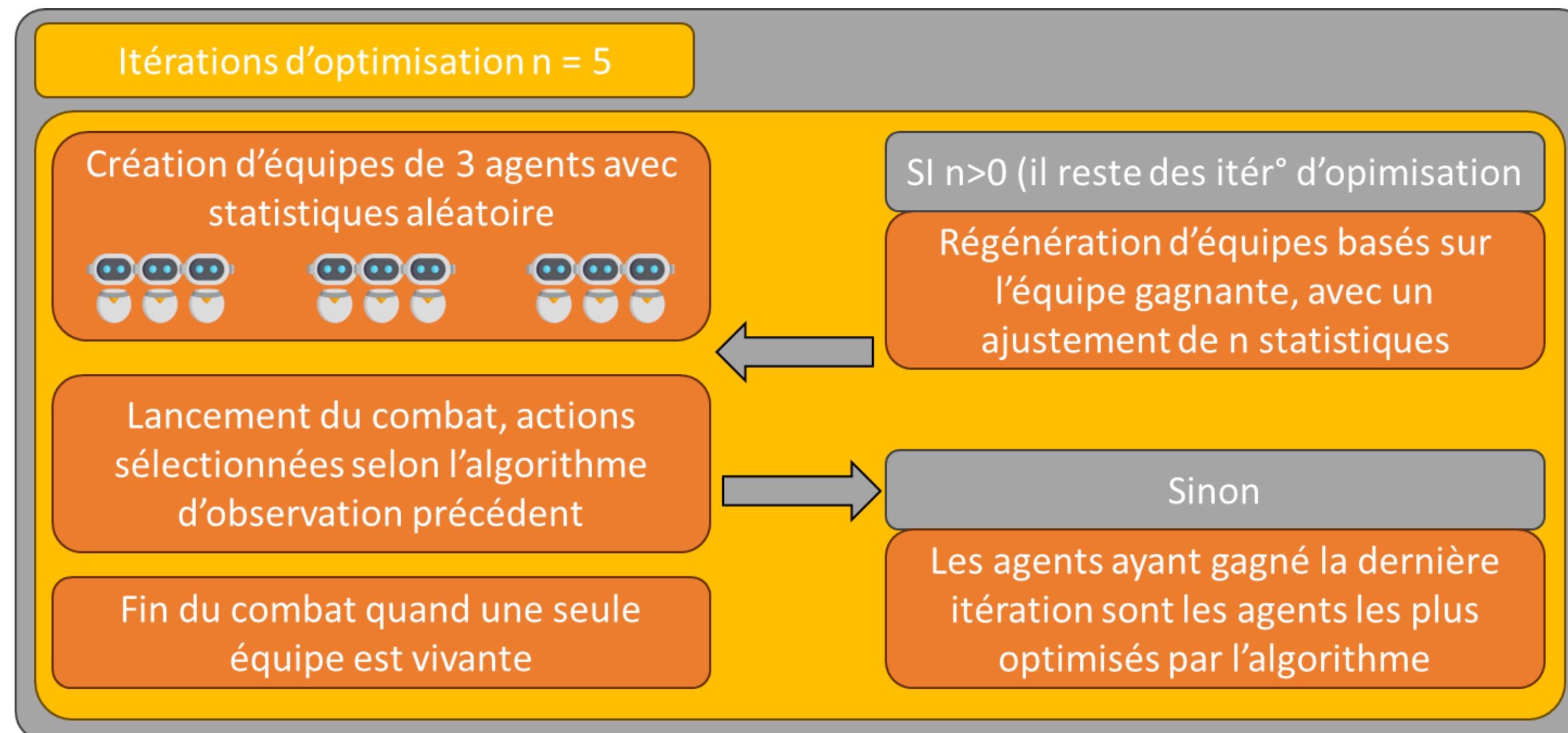


Si lent défensif
(écart de speed
d'armoret vie
important avec
les autres agents)

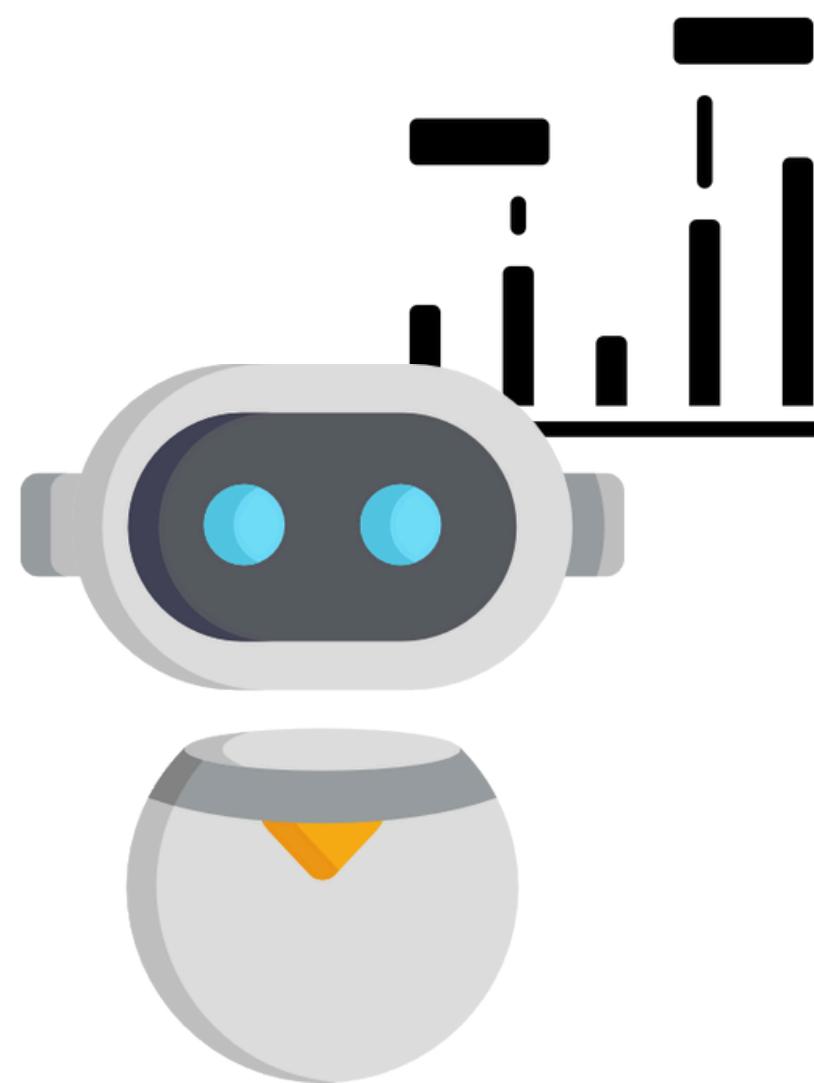
Bcp de chances
de bloquer

```
agents_targeting_me = len([agent for agent in ennemis if agent._target == self])  
bonus_dodge = (self._speed - CONST_SPEED_MOYENNE) * agents_targeting_me
```

Optimisation des actions des agents par renforcement

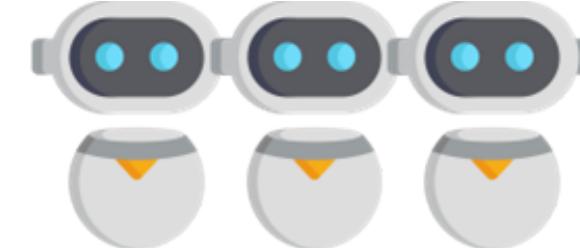
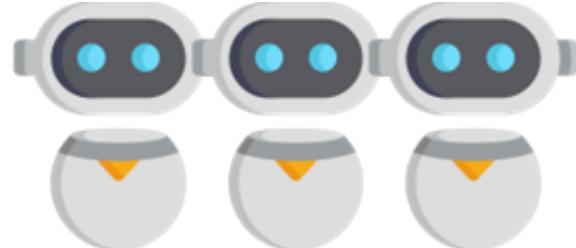
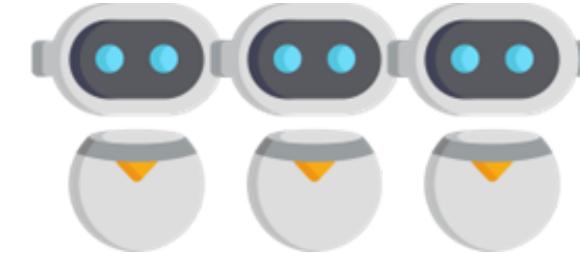
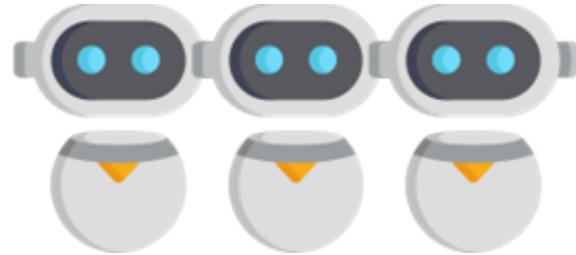
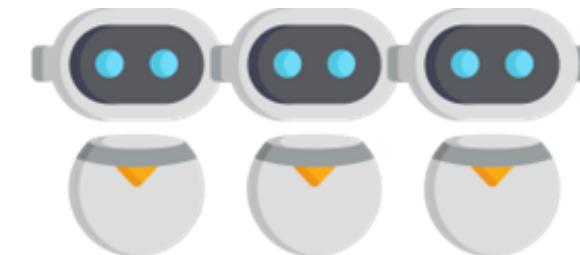
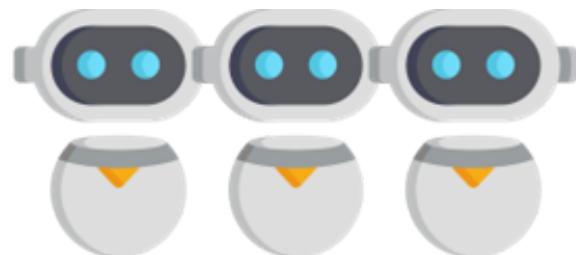


Optimisation des actions des agents par renforcement



Optimisation des actions des agents par renforcement

Strength : 5 Strength : 5 Strength : 8
Speed : 6 Speed : 6 Speed : 2
Armor : 3 Armor : 5 Armor : 3
Life : 6 Life : 4 Life : 7

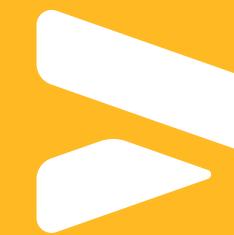


Strength : 5 ""
Speed : 8 ""
Armor : 4 ""
Life : 3 ""

A photograph showing several people in an office environment, focused on their work. In the foreground, a person's hands are visible on a laptop keyboard. Behind them, another person holds a tablet displaying a complex dashboard with various charts, graphs, and data points. The scene conveys a sense of teamwork and data analysis.

Kafka / Graphana

Métriques de notre cluster



Données sur confluent

9 messages shown

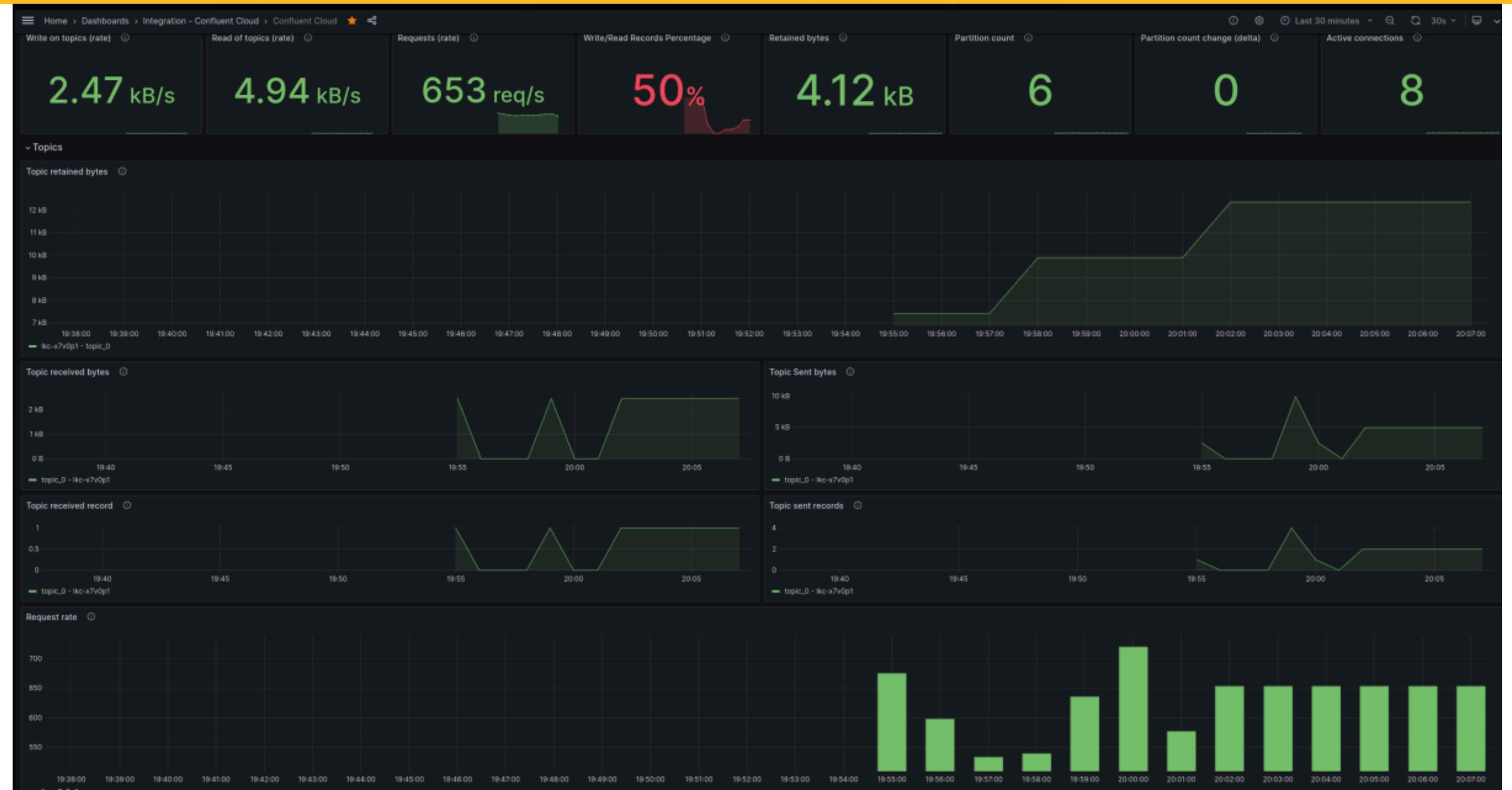
Auto-refresh on

[↓ CSV](#) [↓ JSON](#)

Timestamp	Offset	Partition	Key	Value	
1702065210639	0	3		{"set_action":[[1700488455.6944273,{"cid":"66","teamid":null,"life":10,"strength":1,"armor":0,"speed":4,"target":"No..."}]}	👁
1702065138477	3	4		{"set_action":[[1700488455.6944273,{"cid":"66","teamid":null,"life":10,"strength":1,"armor":0,"speed":4,"target":"No..."}]}	👁
1702064025166	1	2		{"set_action":[[1700488455.6944273,{"cid":"66","teamid":null,"life":10,"strength":1,"armor":0,"speed":4,"target":"No..."}]}	👁
1702062983996	0	2		{"set_action":[[1700488455.6944273,{"cid":"66","teamid":null,"life":10,"strength":1,"armor":0,"speed":4,"target":"No..."}]}	👁
1702062106275	2	4		{"set_action":[[1700488455.6944273,{"cid":"66","teamid":null,"life":10,"strength":1,"armor":0,"speed":4,"target":"No..."}]}	👁
1702061883897	0	0		{"set_action":[[1700488455.6944273,{"cid":"66","teamid":null,"life":10,"strength":1,"armor":0,"speed":4,"target":"No..."}]}	👁
1702061701362	0	5		{"set_action":[[1700488455.6944273,{"cid":"66","teamid":null,"life":10,"strength":1,"armor":0,"speed":4,"target":"No..."}]}	👁



Métriques du Cluster



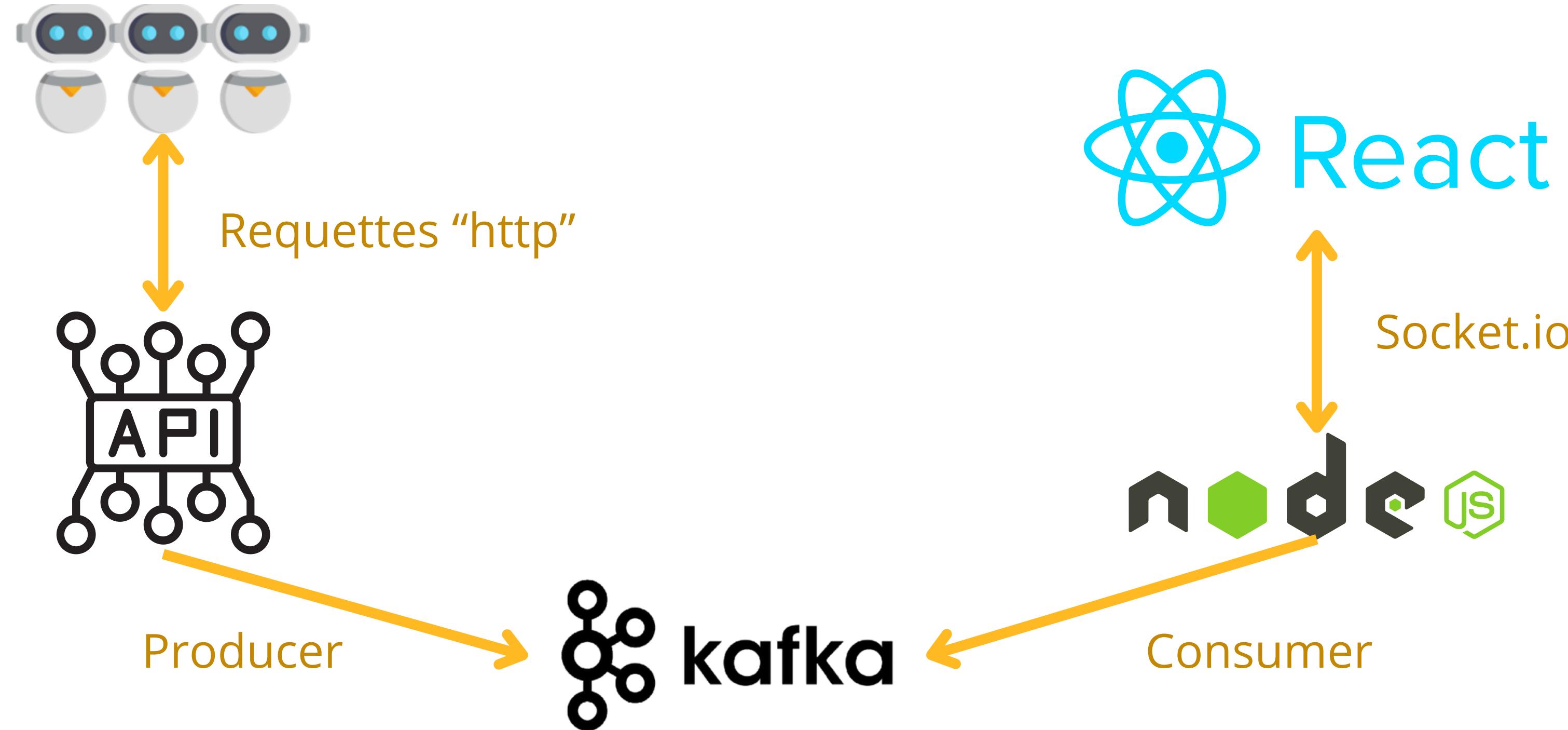
A photograph showing several people in a meeting room, focused on their work. In the foreground, a person's hands are visible on a laptop keyboard. Behind them, another person holds a tablet displaying a complex dashboard with various charts and graphs. The scene is set in an office environment with other people and desks visible in the background.

Visualisation

Visualisation de nos données



Rappel de l'architecture



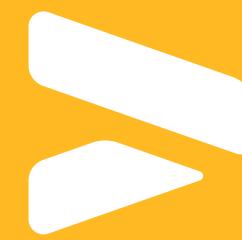
> Topics

Général

- Lancement de la partie
- Nouveau tour

Joueur

- Ajout/édition d'un joueur
- Ajout d'une action
- Ajout d'une cible



Page de visualisation

Game Stats

Players

Player	Strength	Armor	Speed	Life	Action	Target
player d042ddbf	4	5	6	6	None	
player d283d16c	4	3	6	7	BLOCK	player aa648269
player 989dce97	5	6	4	5	None	
player 52e720a5	5	5	5	6	None	
player 06528df5	9	4	4	6	None	
player aa648269	4	4	4	6	None	

Turns

Actual turn : 4

1	17:53:45
2	17:53:45
3	17:53:45
4	17:53:45

Actions

player d042ddbf 4

player 52e720a5

player d283d16c 0

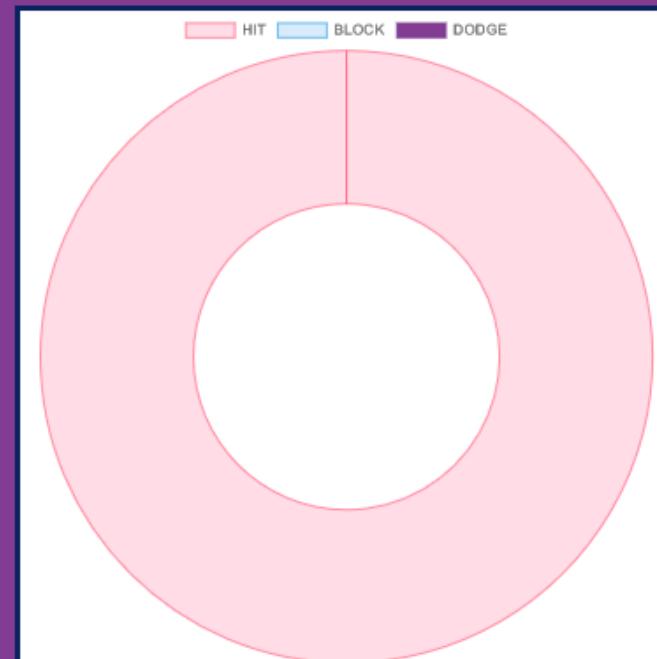
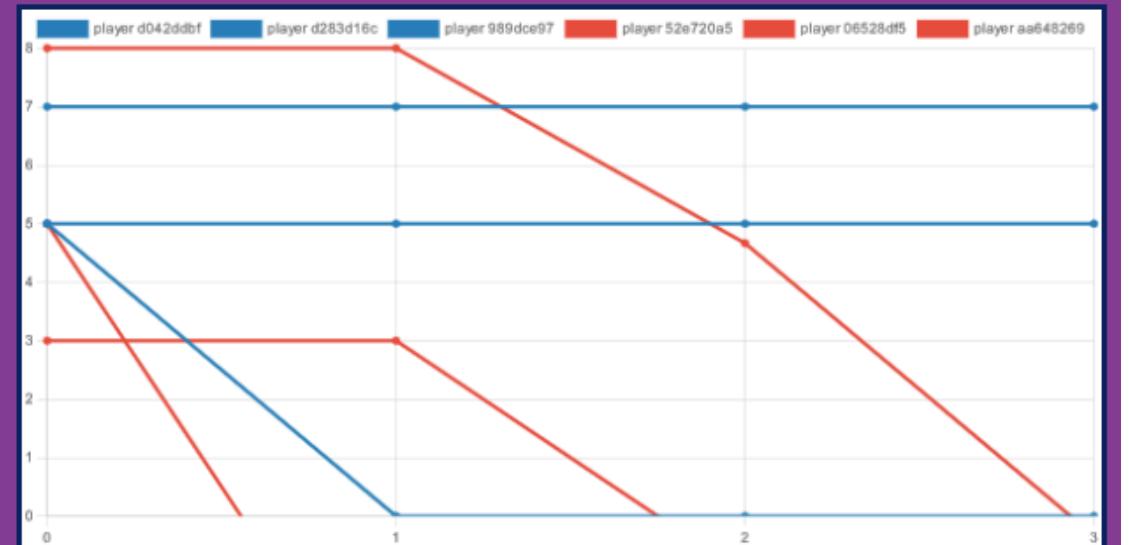
player 52e720a5 5

player d042ddbf

player 989dce97 5

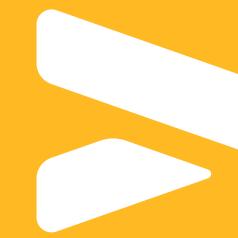
player 52e720a5

Game



Damage Dealt Damage Received Damage Dodged

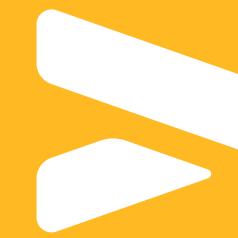
4 5 0 0



Métrique : Les “ joueurs”

Players

Player	Strength	Armor	Speed	Life	Action	Target
player d042ddbf	4	5	6	4	None	
player d283d16c	4	3	6	7 ❤️	BLOCK	player aa648269
player 989dce97	5	6	4	5 ❤️	None	
player 52e720a5	5	5	5	4	None	
player 06528df5	9	4	4	3	None	
player aa648269	4	4	4	2	None	

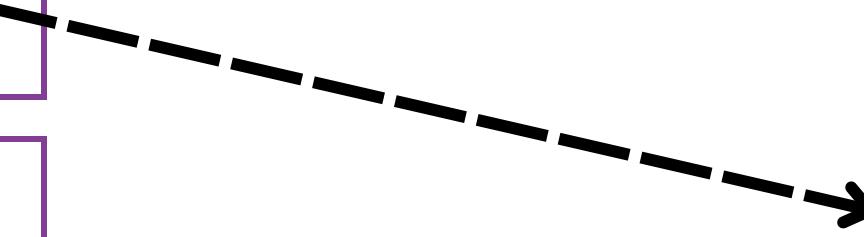


Métrique : Les tours et les actions

Turns

Actual turn : 4

- 1 17:53:45
- 2 17:53:45
- 3 17:53:45
- 4 17:53:45



Actions

player 4 player
d042ddbf 52e720a5

player 0
d283d16c

player 5 player
52e720a5 d042ddbf

player 5 player
989dce97 52e720a5

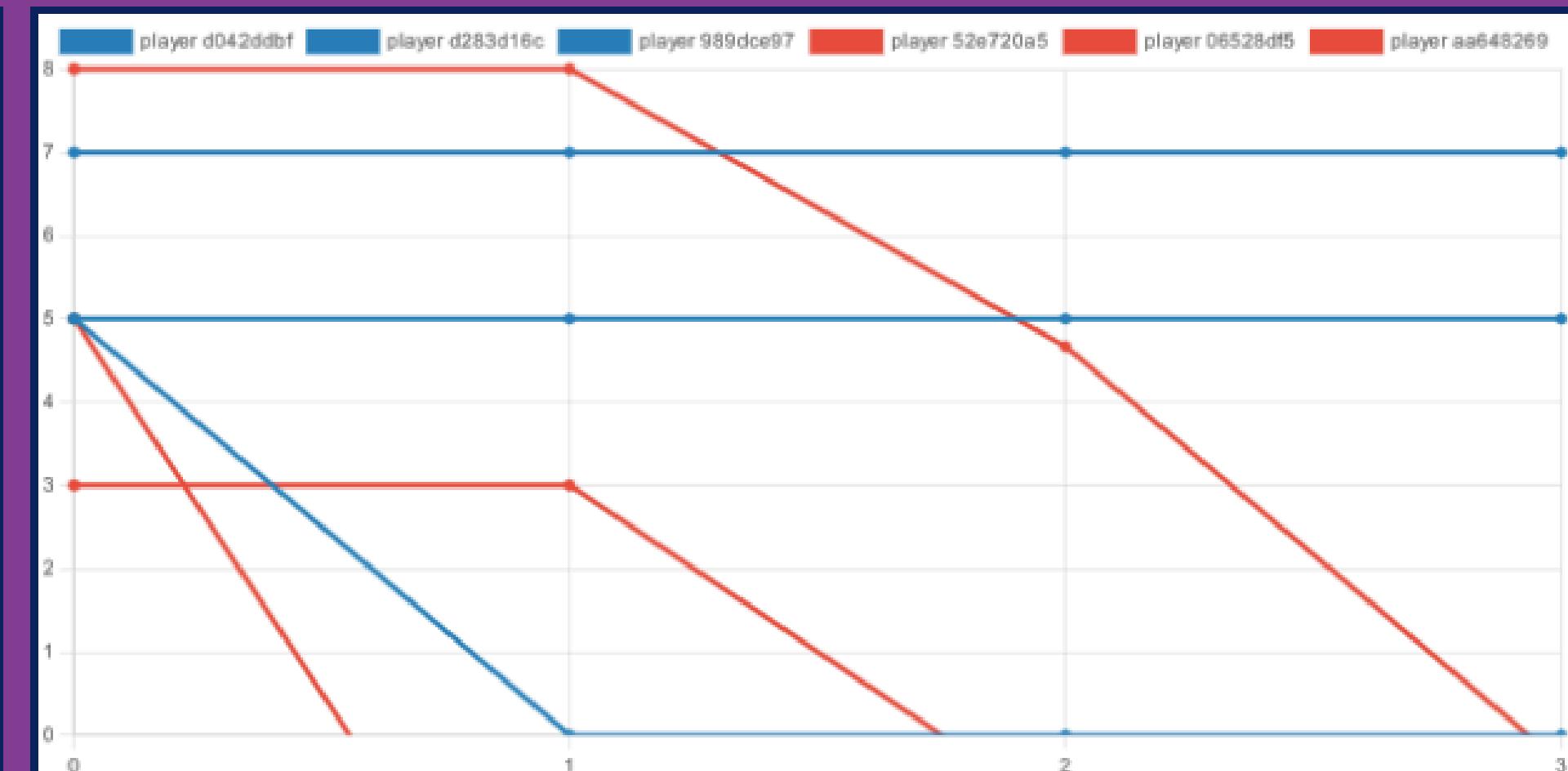
player 0 player
06528df5 d042ddbf

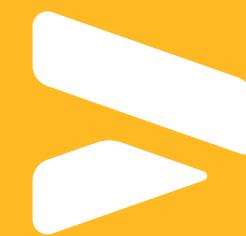
player 0
aa648269



Métrique : Nombres de joueurs en vie & vie

Game

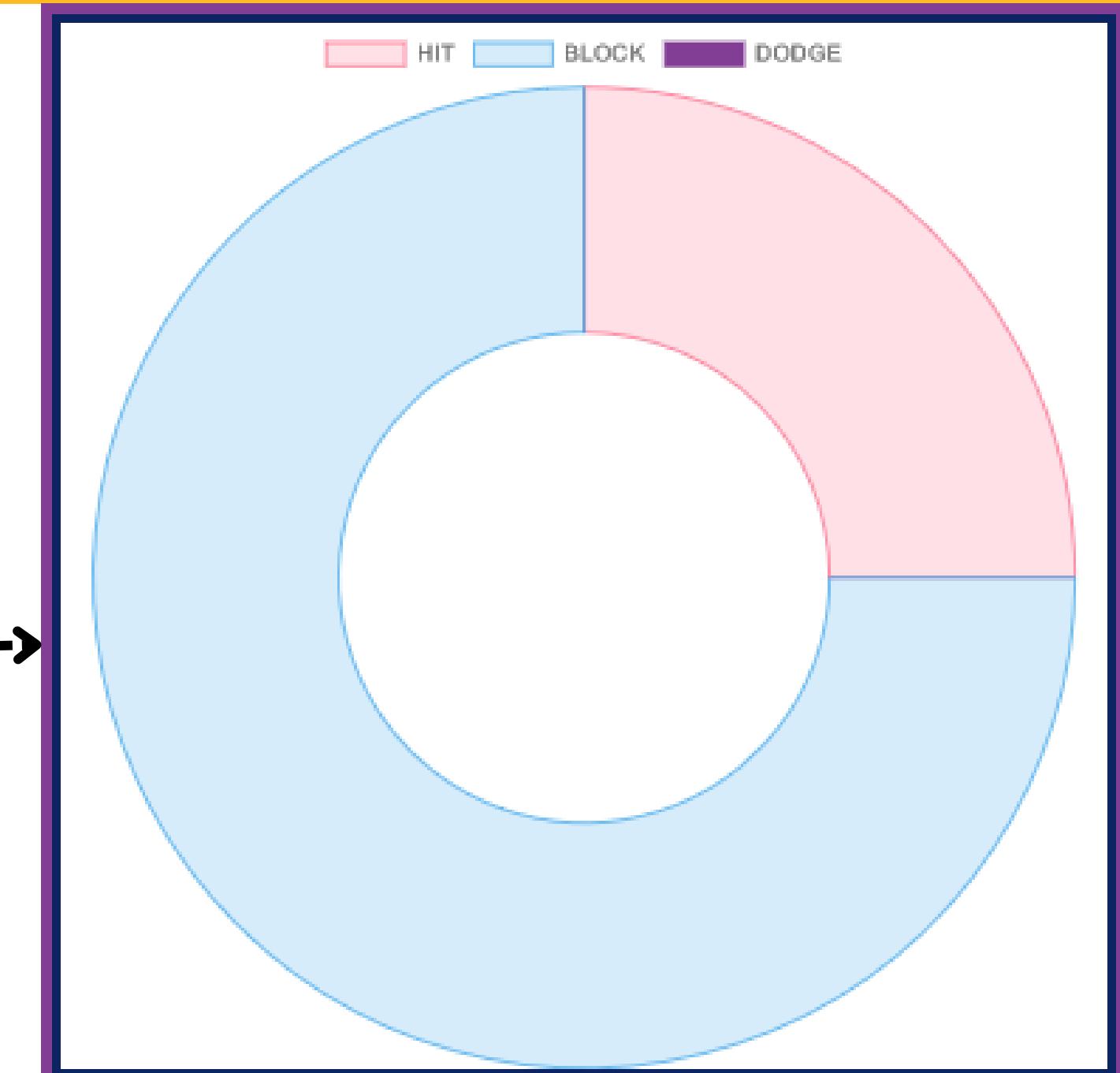




Métrique : Les stats des joueurs

Players

Player	Strength	Armor	Speed	Life	Action	Target
player d042ddbf	4	5	6	8	None	
player d283d16c	4	3	6	7	BLOCK	player aa648269
player 989dce97	5	4	4	5	None	
player 52e720a5	5	5	5	8	None	
player 06528df5	9	4	4	8	None	
player aa648269	4	4	4	8	None	



Damage Dealt Damage Received Damage Dodged Damage Blocked

4 5 0 0

A photograph showing several people in a meeting room, focused on their work. In the foreground, a person's hands are visible on a laptop keyboard. Behind them, another person holds a tablet displaying a complex dashboard with various charts and graphs. Other people are partially visible, also engaged with their devices. The scene suggests a professional environment like a data analysis or strategy session.

Démo du jeu



Merci de votre
attention !

