

A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines. Some nodes are highlighted with blue circles, and others with blue dots. The lines are thin and grey, creating a subtle background pattern.

Projet de CoCoMA

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1.

Introduction

Tenants et aboutissants du sujet

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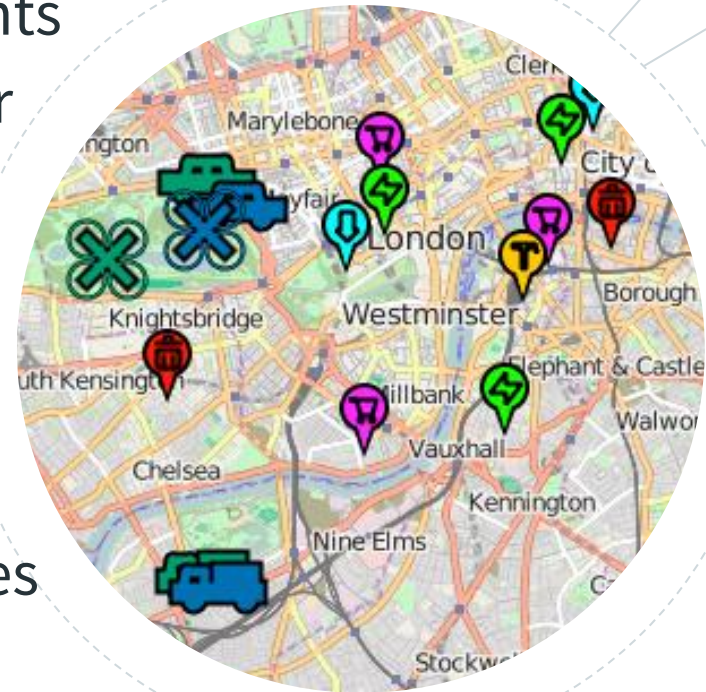
Aperçu du projet

Consignes du projet multi-agents

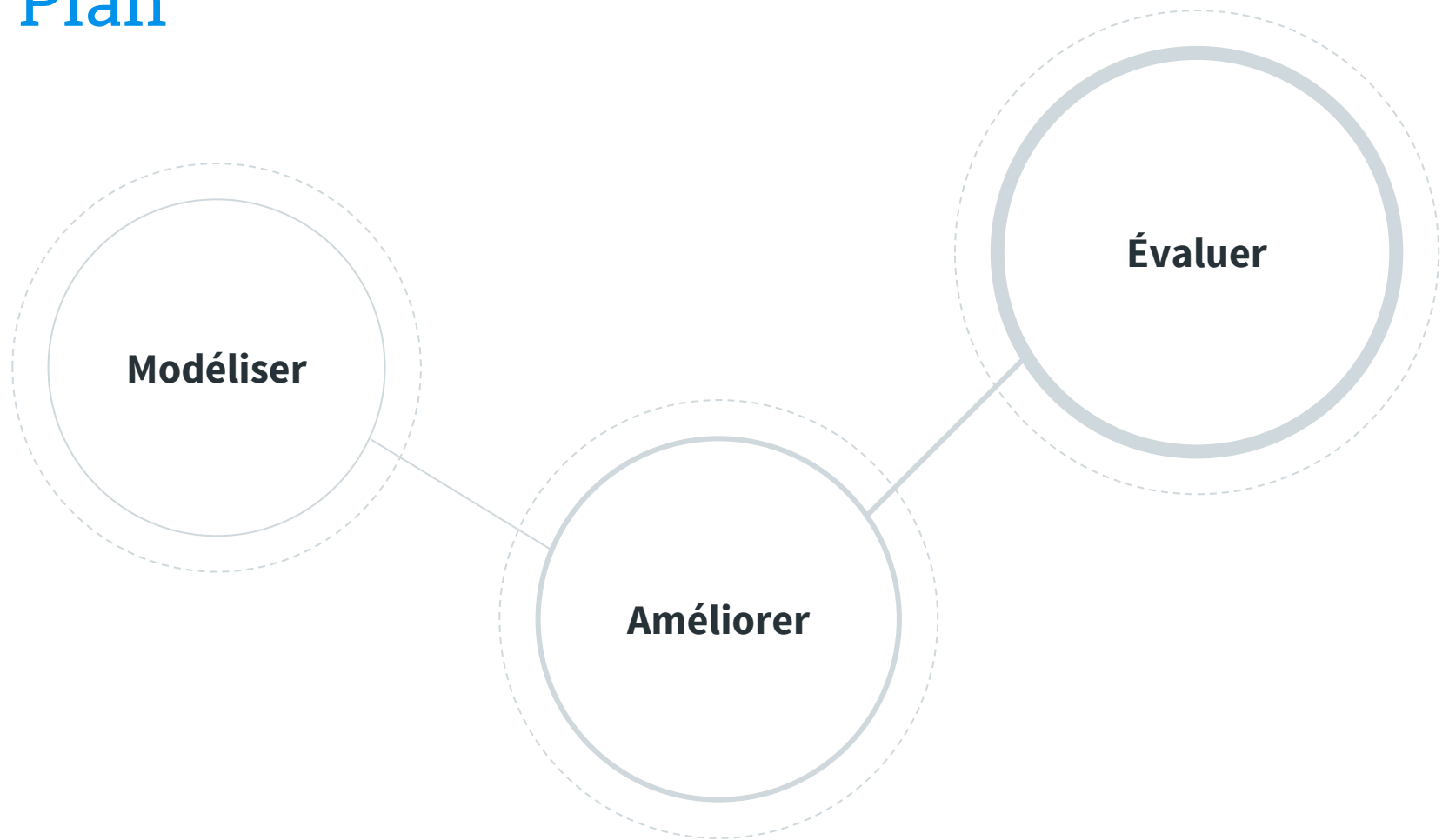
- Équipes de **4** agents différents
- Acquérir – Fabriquer – Livrer
- Maximiser les recettes

Problèmes principaux

- **Accepter** une tâche
- **Coordination** des agents
- **Distribution** des sous-tâches



Plan




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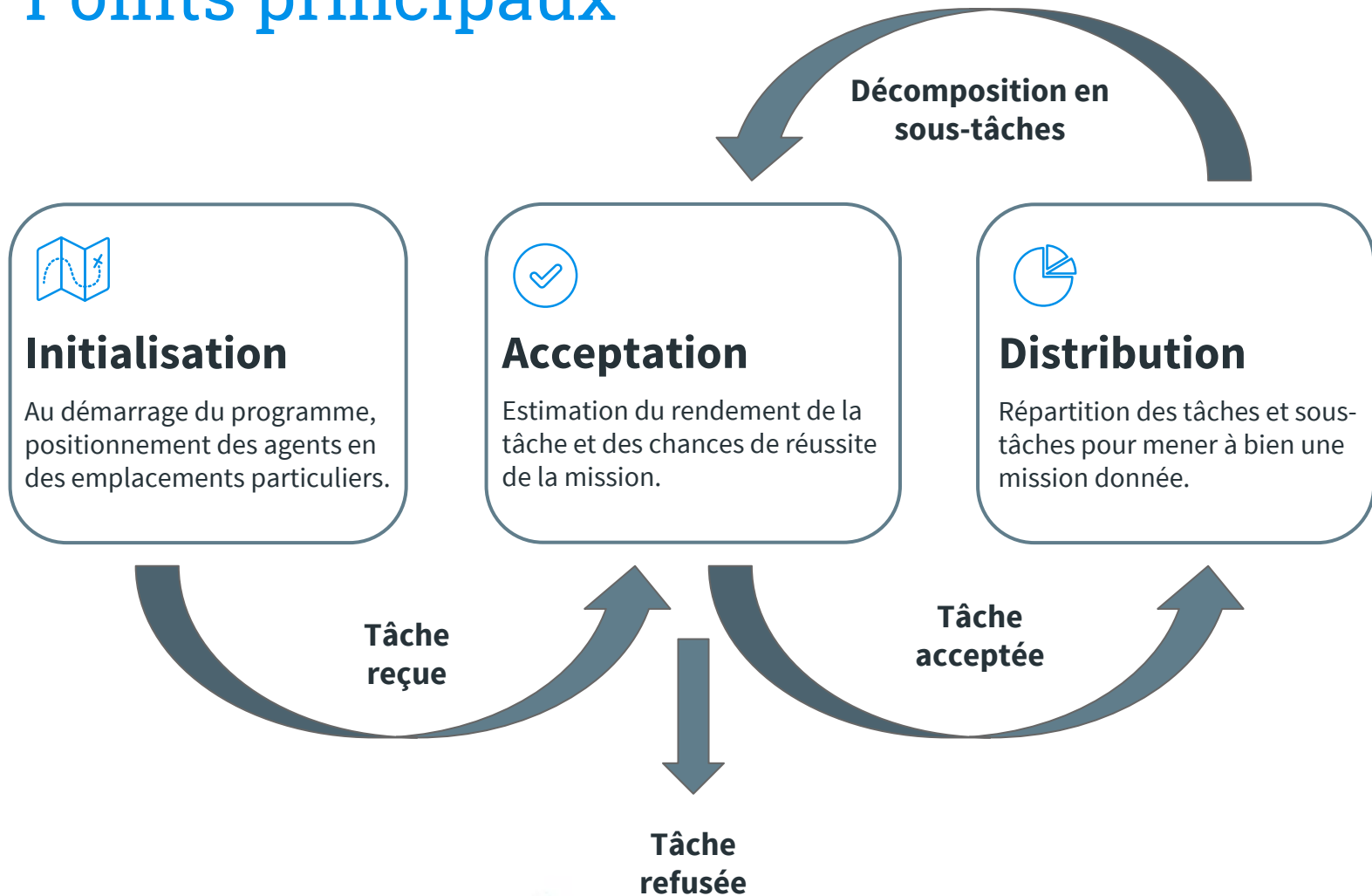
2.

Modèle de base

Coordination, acceptation et
distribution des tâches

A decorative network diagram in the bottom-right corner, similar to the one in the top-left. It shows a cluster of nodes connected by lines, with some nodes being more prominent than others. The overall style is minimalist and technical.

Points principaux



Intérêt de l' initialisation

Seules sont connues
les positions lorsque
les agents sont à des
endroits spécifiques.



Méthodes d'initialisation

Arbitraire

Les agents sont envoyés vers un emplacement choisi arbitrairement.

Méthode choisie

- Introduit une diversité des positions.
- Expérimentalement plus satisfaisante.

Déterminée

Les agents sont tous envoyés vers un emplacement précis (i.e. au centre de la carte).

Communication

Déplacement
arbitraire
jusqu'à
destination

Envoi d'un
message aux
 $n-1$ autres
agents
indiquant la
position

Attente des
 $n-1$
messages
réponses



Acceptation d' une tâche

Recettes \geq Coûts



Estimation des coûts

- Livraison : T
- Achat : $T + \lambda \times p \times n$
- Fabrication : $T + \lambda \times c$
- Recette : $\lambda \times r$

λ est le ratio entre les frais monétaires et le temps moyen de parcours T .

Rendement

On note R le rendement (recette - coûts de livraison, d'achat et/ou de fabrication).


Une tâche est acceptée si et seulement si son rendement est strictement positif.



Valeur de λ

$$\lambda = 10$$

λ est borné :

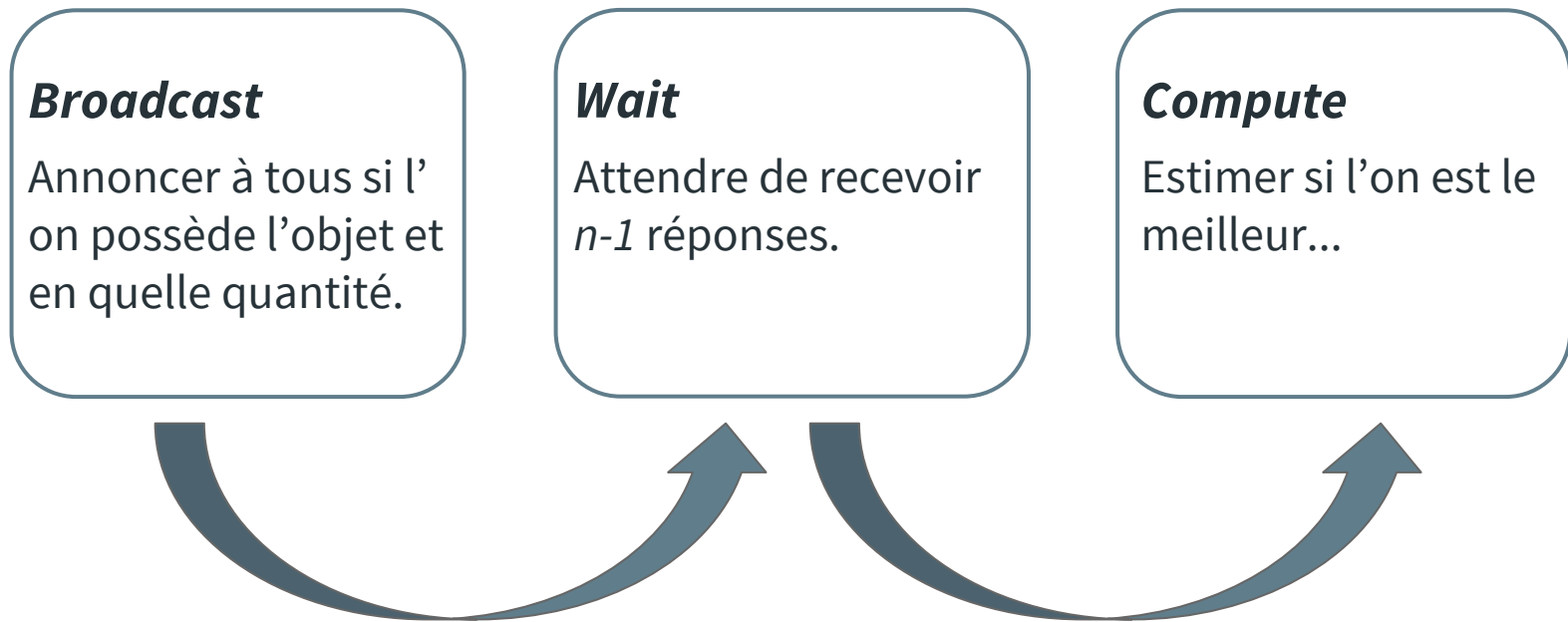
- ⊙ Si trop faible, refus systématique ;
 - ⊙ Si trop élevé, acceptation déraisonnable.
- 

Distribution d' une tâche

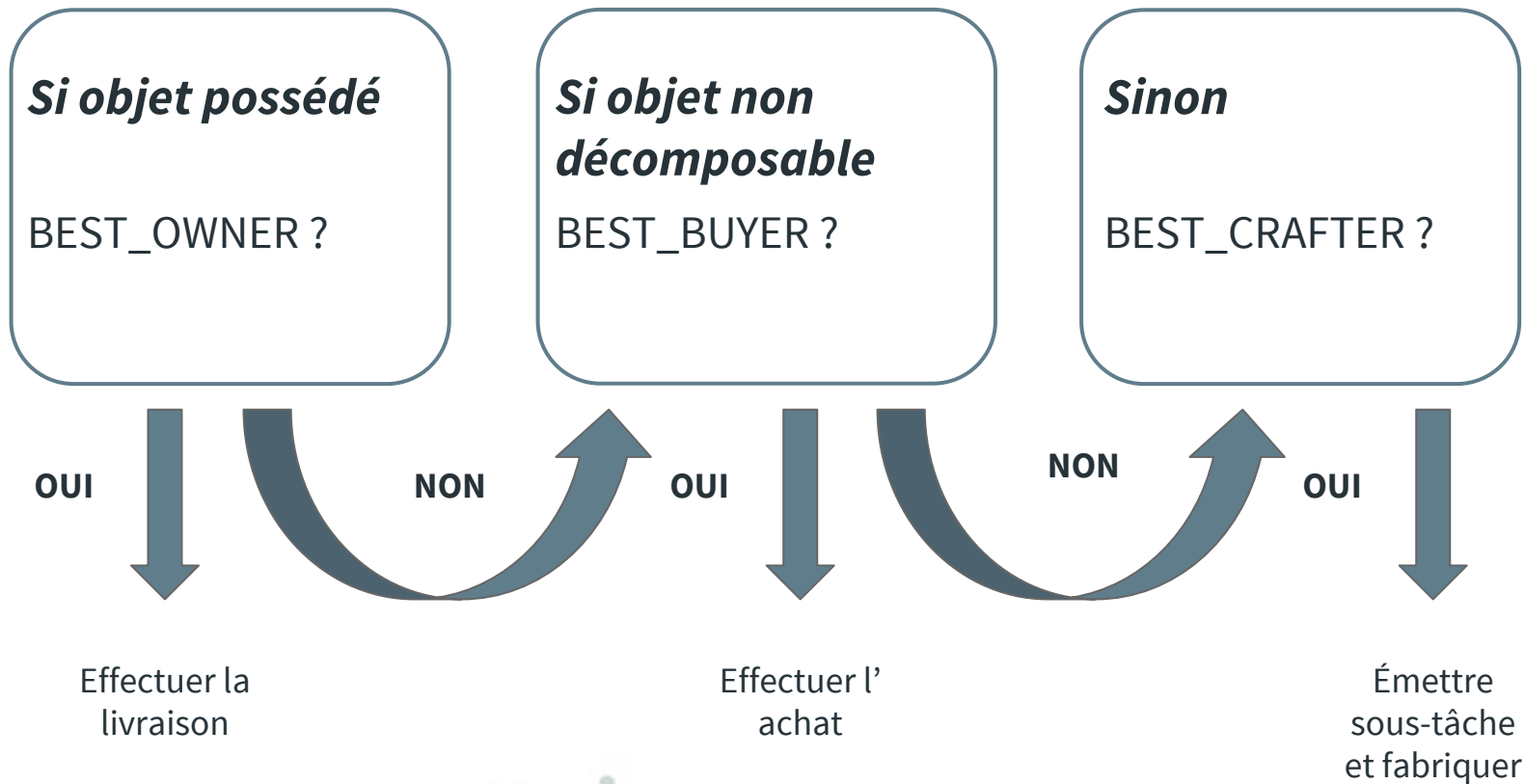
Comment désigner
le meilleur agent
possible ?



Points principaux

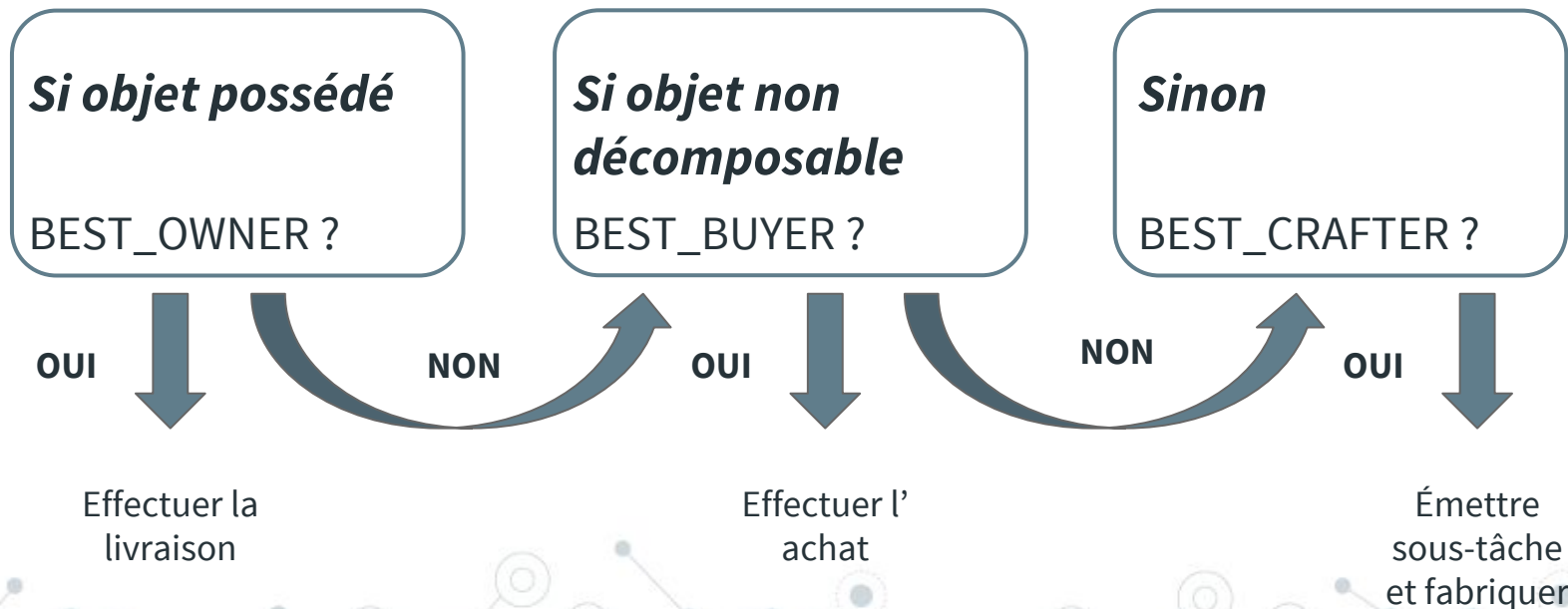


Fonctions de coût



Fonctions de coût : remarques

- Unicité du meilleur agent
- Résistance aux pannes
- Terminaison





Fonction BEST_OWNER

Pour chaque agent disposant de suffisamment d'objets, on calcule BEST_OWNER selon les termes :

- ⊙ Distance au lieu de livraison.
- 

Fonction BEST_BUYER

On calcule BEST_BUYER selon les termes :

- ◎ Distance aux magasins ;
- ◎ Distance magasin-livraison.

Fonction BEST_CRAFTER

Pour chaque agent disposant des compétences nécessaires, on calcule BEST_CRAFTER selon les termes :

- ⊙ Distance aux ateliers ;
- ⊙ Distance atelier-livraison.

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3.

Améliorations

Détails et améliorations
de notre algorithme

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Communication

Sûreté

Des agents et des canaux de communication

FIFO

First In First Out

Asynchronisme

Des canaux de communication

Améliorer les échanges

- Topologie en anneaux
 - Système de jetons




Ressources & engagement

Indisponibilité des
ressources réservées






Gestion des tâches et priorités

- ⊙ Refus des tâches secondaires lors de l'initialisation ;
 - ⊙ Tâches effectuées par ordre de réception.
- 

A decorative network diagram in the top-left corner, featuring a complex web of interconnected nodes and lines. The nodes are represented by small circles, some of which are larger and have concentric circles, suggesting different levels of connectivity or importance. The lines are thin and gray, creating a mesh-like structure.

4.

Évaluation des performances

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Nombre cool

Meilleur résultat obtenu sur la tâche

Analyse, remarques



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5.

Conclusion & Perspectives

Résumé et ouverture

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Réalisations

Algorithme décentralisé permettant de résoudre les tâches proposées via :

- Gestion des communications
- Génération de plans
- Prévention des inter-blocages

Perspectives : contraintes

- ⊙ Capacité
- ⊙ Batterie
- ⊙ Assistance

Perspectives : améliorations

- ◎ Fonctions de coût
- ◎ Gestion des tâches
- ◎ Synchronisation

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6. **Démonstration**

A decorative network diagram in the bottom-right corner, similar to the one in the top-left. It shows a cluster of nodes connected by lines, with some nodes being larger and having concentric circles, indicating a similar hierarchical or multi-layered structure. The lines are thin and gray.



Merci !

Avez-vous des questions ?

