

**Projet Données Réparties**

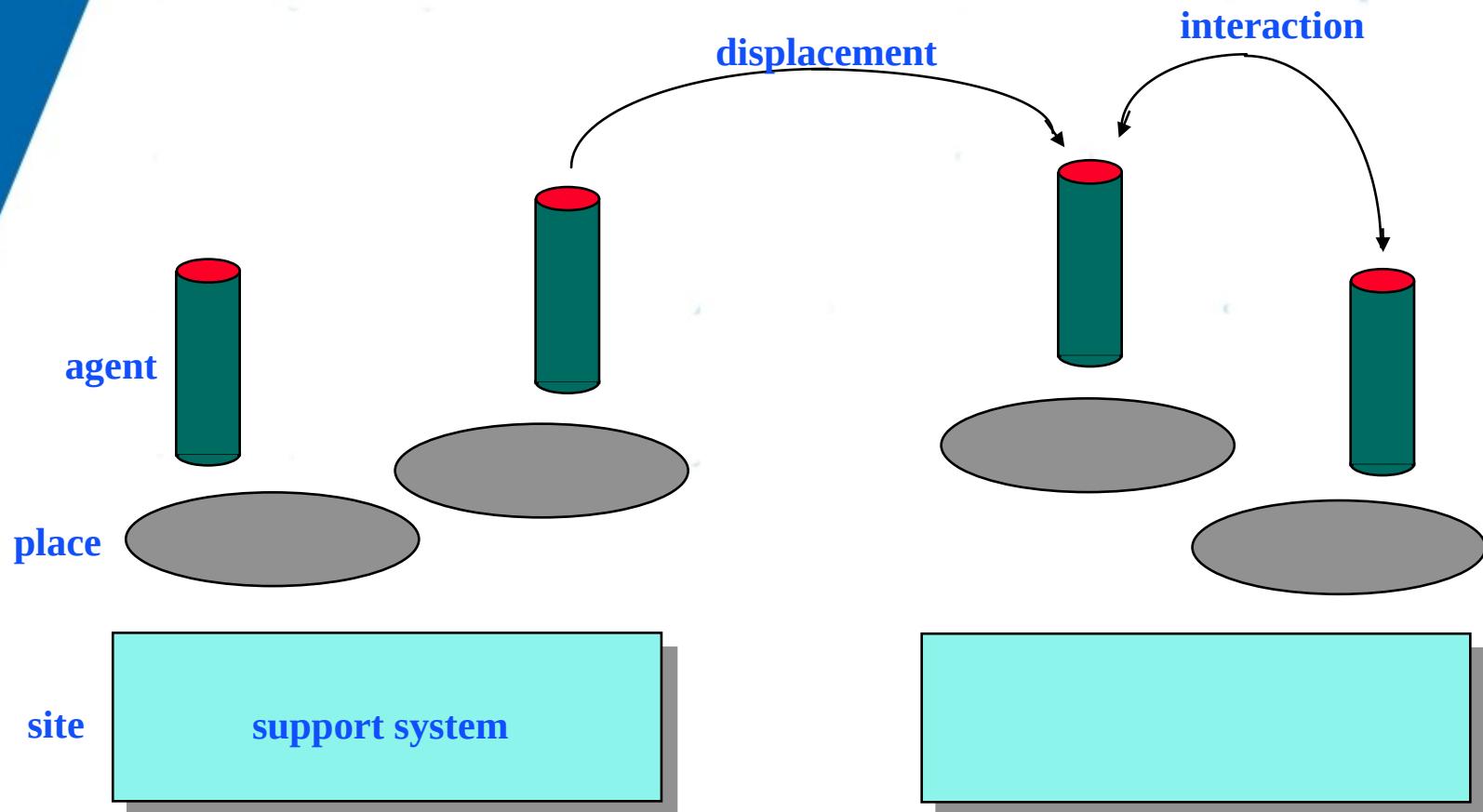
# **Une plateforme à agents mobiles**

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# Objectifs

- Reproduire les expérimentations d'un article
  - L. Ismail, D. Hagimont, A Performance Evaluation of the Mobile Agent Paradigm, OOPSLA 1999
- Implantation d'une plateforme à agents mobiles sur Java
- Évaluation des bénéfices apportés (performances) sur quelques applications

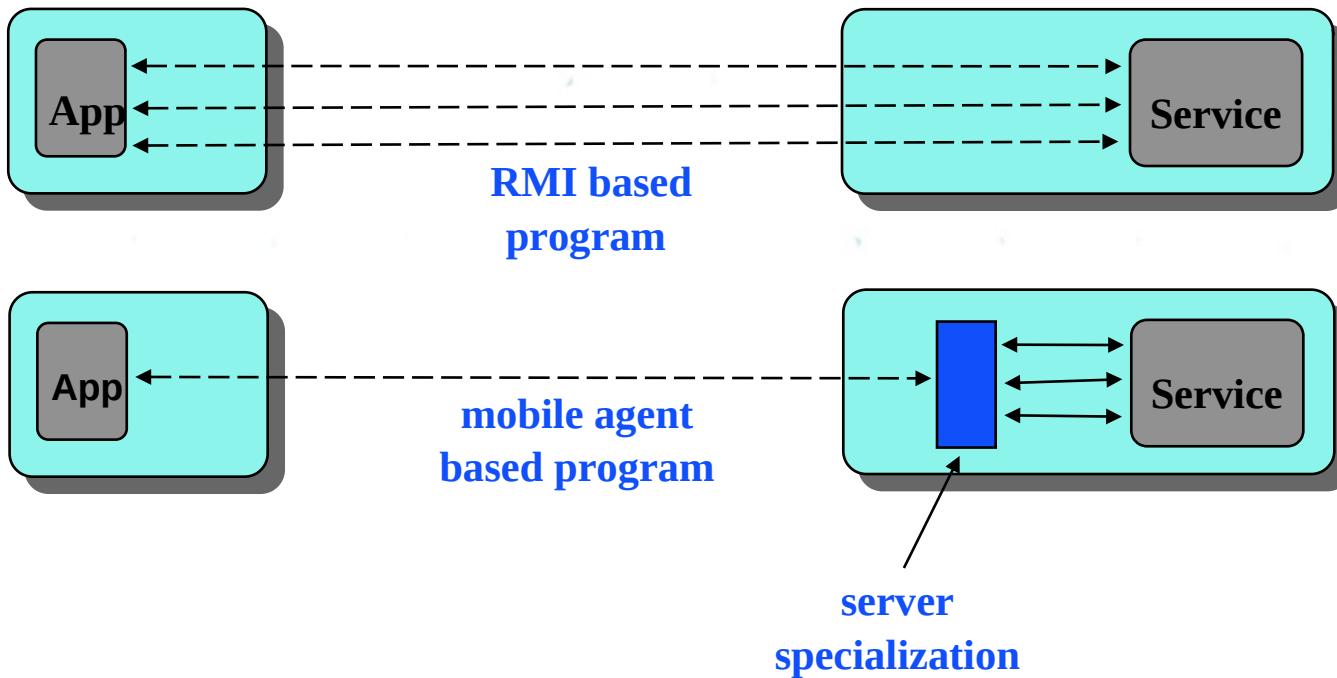
# Plateforme à agents mobiles



# Bénéfice

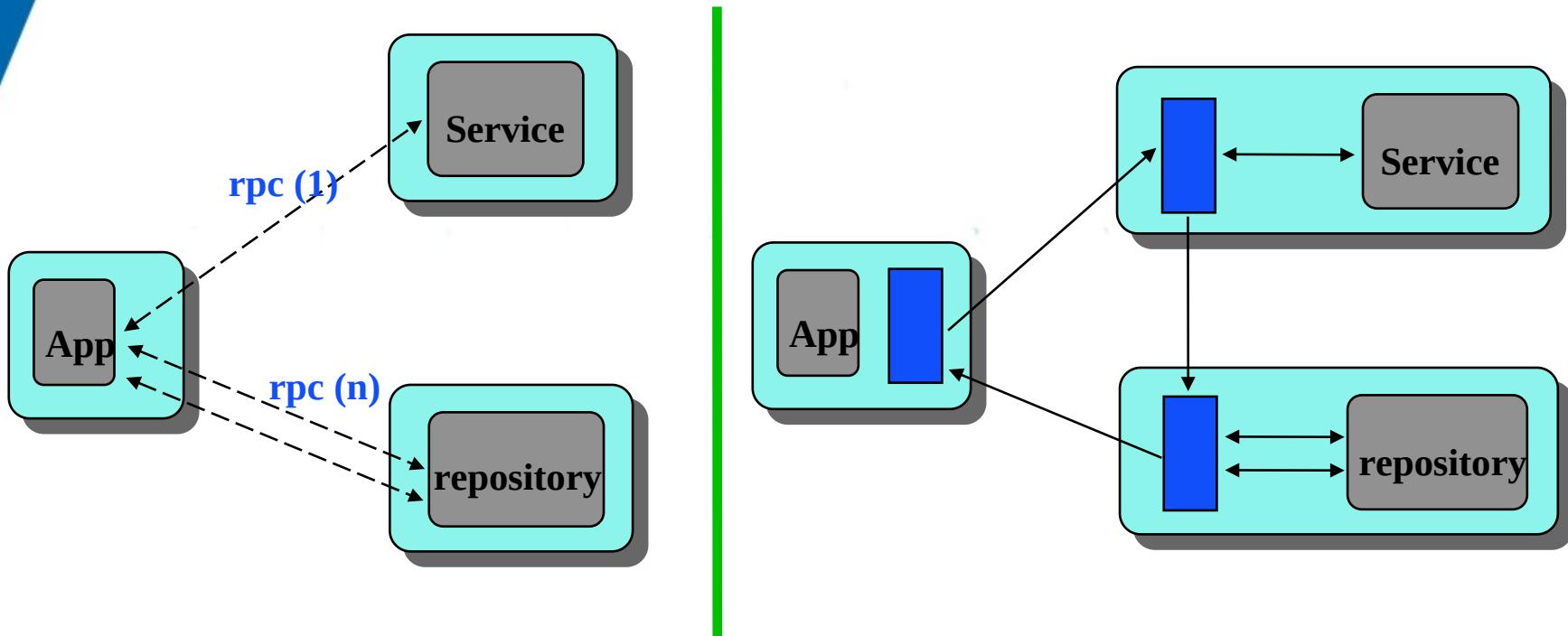
## ■ Comparaison entre

- Remote method invocation (RMI)
- Agents mobiles



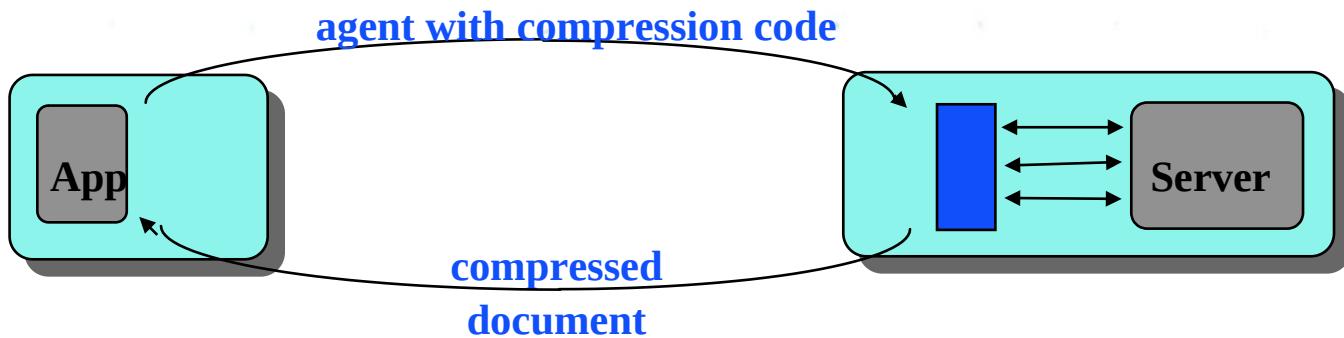
# Exemple 1

- Exemple de reduction du nombre de messages
  - Un serveur retourne une liste de noms (ex. hotels)
  - Un serveur gère un annuaire téléphonique



# Exemple 2

- Exemple d'extension d'un serveur
  - Un client demande un document à un serveur
  - Le client passe un algorithme pour chiffrer ou compresser les données retournées
  - Le code de chiffrement ou compression est propre au client



# Interface

```
public interface Agent extends java.io.Serializable {  
    public void init(String name, Node origin);  
    public Hashtable<String, Object> setNameServer(Hashtable<String, Object> ns);  
    public Hashtable<String, Object> getNameServer();  
    public void move(Node target) throws MoveException;  
    public void back() throws MoveException;  
    public void main() throws MoveException;  
}
```

# Exemple de programme

```
public class Hello extends AgentImpl {  
  
    boolean start = true;  
    Node n1 = new Node("localhost",2001);  
    Node n2 = new Node("localhost",2002);  
    Node place = null;  
  
    public void main() throws MoveException {  
        if (start) {  
            start = false;  
            place = n1;  
            System.out.println("before move to node1: Hello World !!!");  
            move(n1);  
        }  
        if (place == n1) {  
            place = n2;  
            System.out.println("before move to node2: Hello World !!!");  
            move(n2);  
        }  
        if (place == n2) {  
            place = null;  
            System.out.println("before back: Hello World !!!");  
            back();  
        }  
  
        System.out.println("I am back: Hello World !!!");  
  
        Object o = getNameServer().get(this.getClass().getName()+"_lock");  
        synchronized(o) {o.notify();}  
    }  
}
```

# Exécution

The image shows three terminal windows side-by-side, each displaying a different step in the execution of a Java application.

- Terminal 1 (Left):** Shows the initial state where the user lists files in a directory and runs the first server instance. It outputs the classpath and the start of the application logic.
- Terminal 2 (Middle):** Shows the user listing files again, then running the second server instance. It outputs the server ready message and the application logic for moving to node1.
- Terminal 3 (Right):** Shows the user listing files again, then running the third server instance. It outputs the server ready message and the application logic for moving back from node1 to the original node.

```
hagimont@hagimont-pc:~/shared/cours/enseeih/cours/Projet-donnees-reparties/2025/poc$ ls
comp.sh  mobilet  readme.txt  run-server.sh
Hello.jar  mobilet_orig  run-app.sh  System.jar
hagimont@hagimont-pc:~/shared/cours/enseeih/cours/Projet-donnees-reparties/2025/poc$ source comp.sh
hagimont@hagimont-pc:~/shared/cours/enseeih/cours/Projet-donnees-reparties/2025/poc$ source run-server.sh 2001
server ready
ServerImpl: received agent
Loader: loading StarterImpl
StartAgent
Loader: loading appli.Hello
before move to node2: Hello World !!!!

hagimont@hagimont-pc:~/shared/cours/enseeih/cours/Projet-donnees-reparties/2025/poc$ source run-app.sh 2000
server ready
Loader(jar): META-INF/
Loader(jar): META-INF/MANIFEST.MF 66
Loader(jar): appli/
Loader(jar): appli/Hello.class 2051
Loader(jar): StarterImpl.class 1817
Loader: loading appli.Hello
before move to node1: Hello World !!!!
ServerImpl: received agent
Loader: loading StarterImpl
StartAgent
Loader: loading appli.Hello
I am back: Hello World !!!!  
appli.Hello_lock
hagimont@hagimont-pc:~/shared/cours/enseeih/cours/Projet-donnees-reparties/2025/poc$ source run-server.sh 2002
server ready
ServerImpl: received agent
Loader: loading StarterImpl
StartAgent
Loader: loading appli.Hello
before back: Hello World !!!!
```

# Résultats attendus

- Plateforme d'agents mobile
- Au moins 2 scénarios d'application
- Evaluation de performances
- Soutenances
  - Une démonstration
  - Un rapport

# Déroulement

## ■ Suivi

- 28/11 : démarrage
- 3/12 (A/L12) - 4/12 (L34) : suivi 1
- 9/12 (L) - 10/12 (A) : suivi 2
- 16/12 : suivi 3
- 7/01 : suivi 4
- 13/01 : soutenances

## ■ Constitution des binômes

- Mail à daniel.hagimont@irit.fr
- Avant le 2/12 (midi)