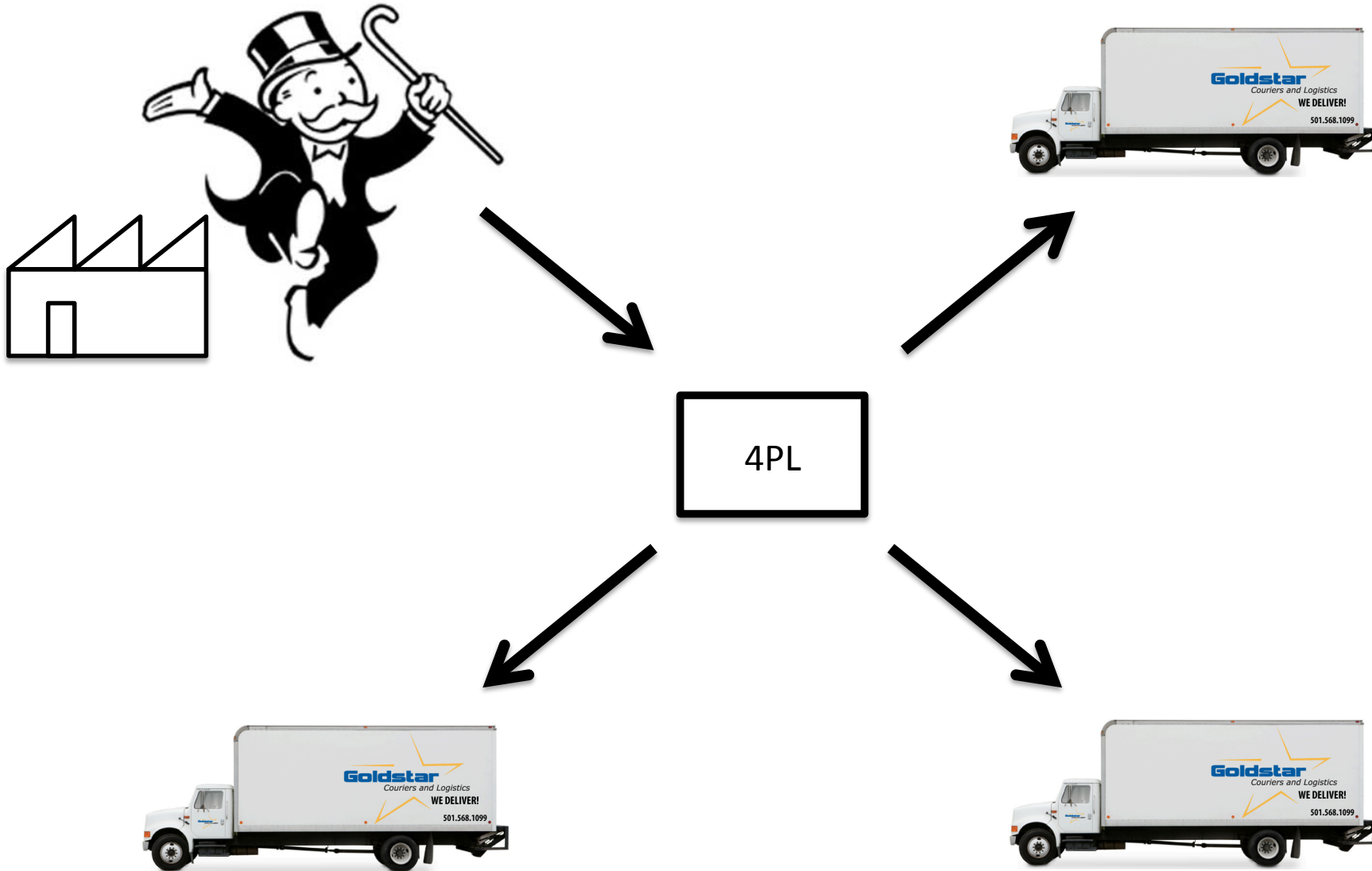


Composite service adaptation: a QoS-driven approach

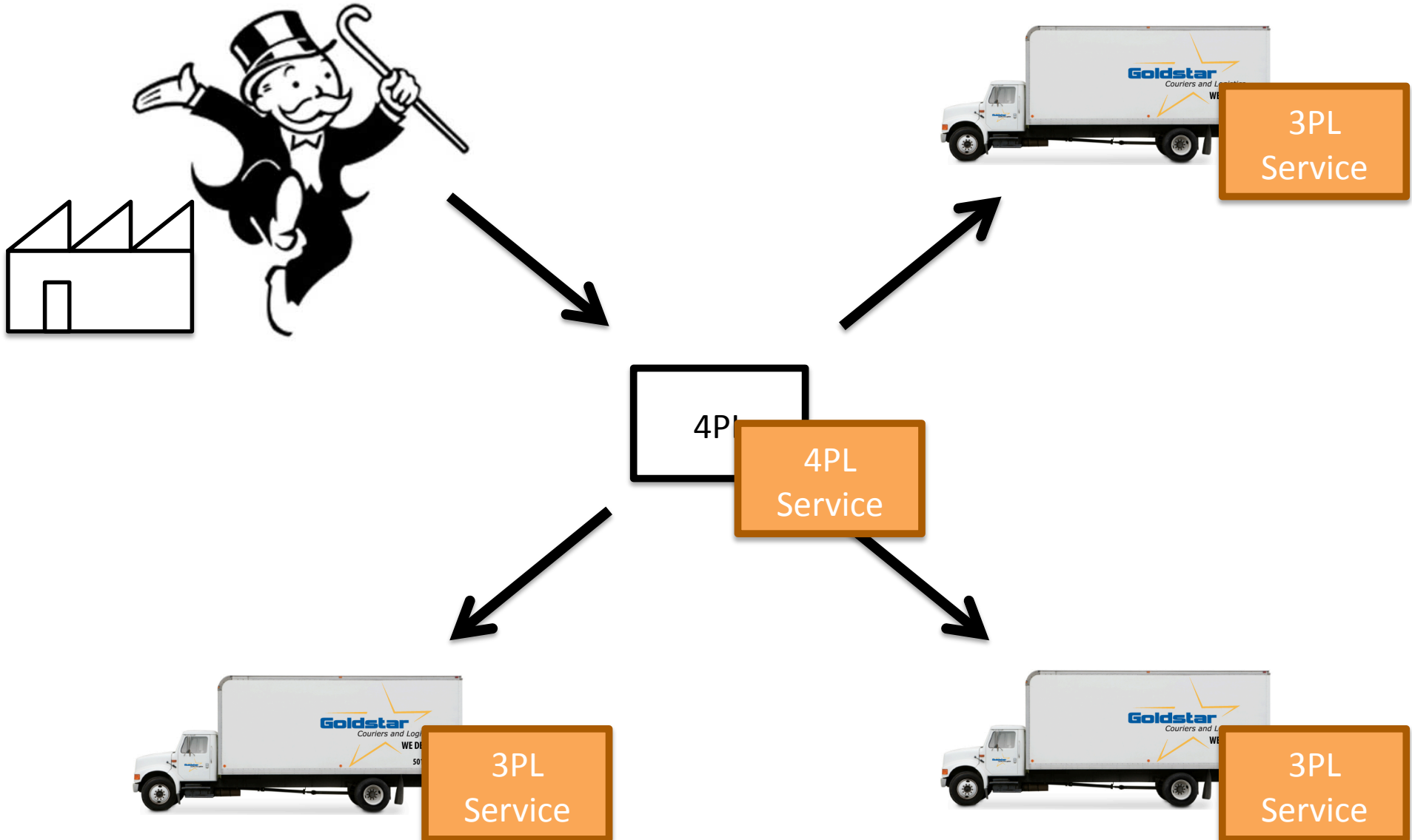
Mario Henrique Cruz Torres Tom Holvoet

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Belgium

Motivation Scenario



Motivation Scenario



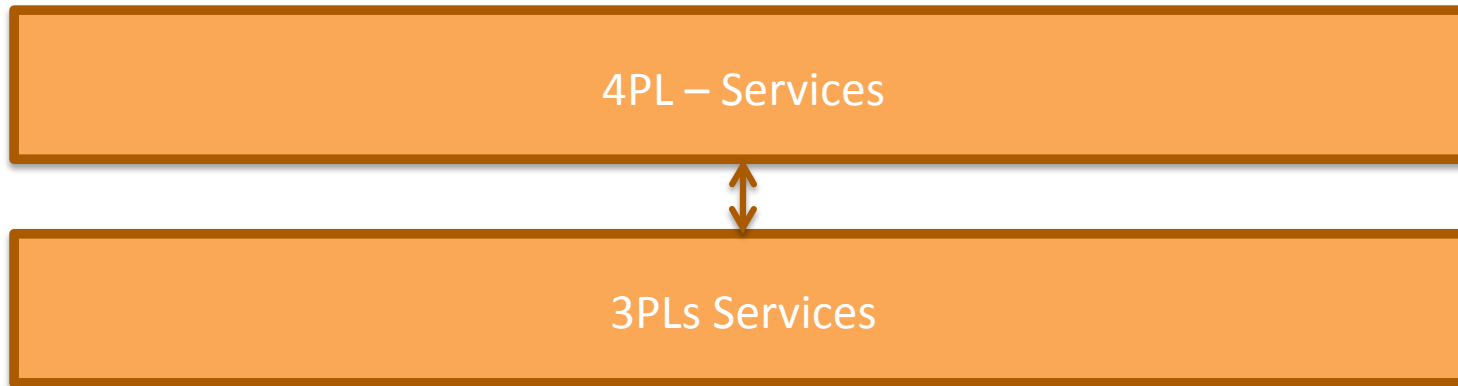
Motivation Scenario

- Supply Chain Domain
- 4PL - Fourth Party Logistics needs to organize transports
- Assigns sub-transports to 3PLs
- Needs to follow up what is happening

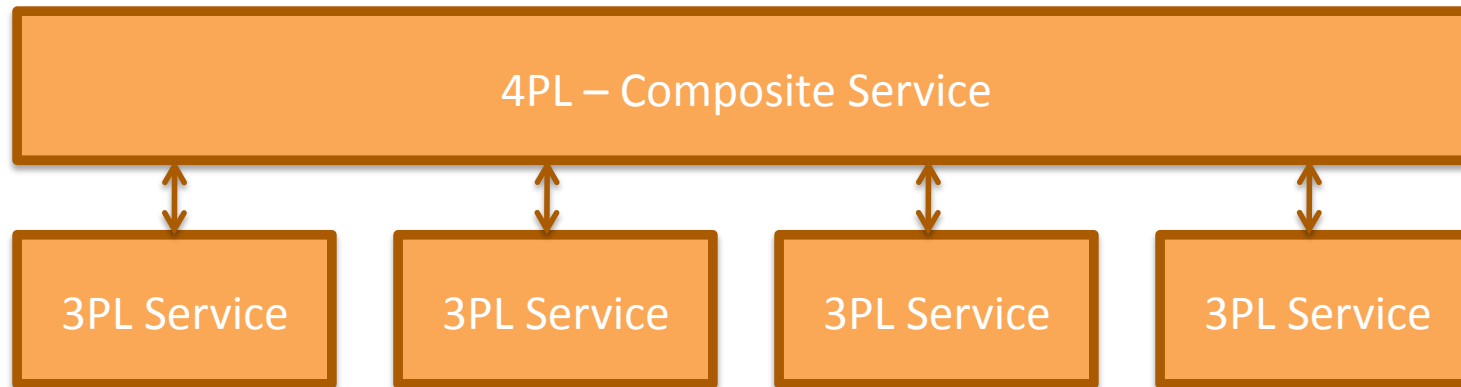
Overview

- Motivation
- Current Solution
- Our Solution
- Conclusion

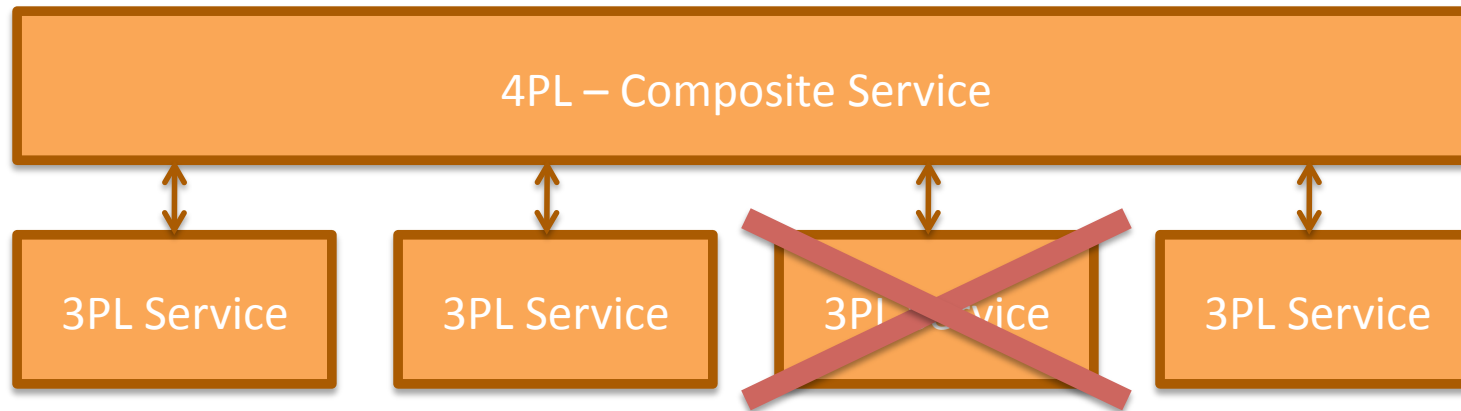
Services Solution



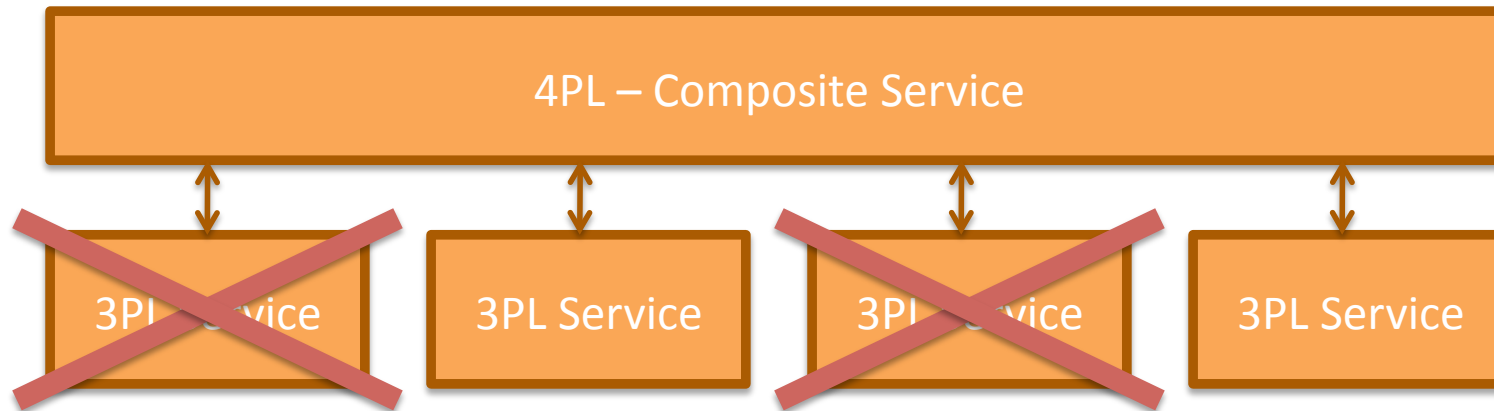
Services Solution



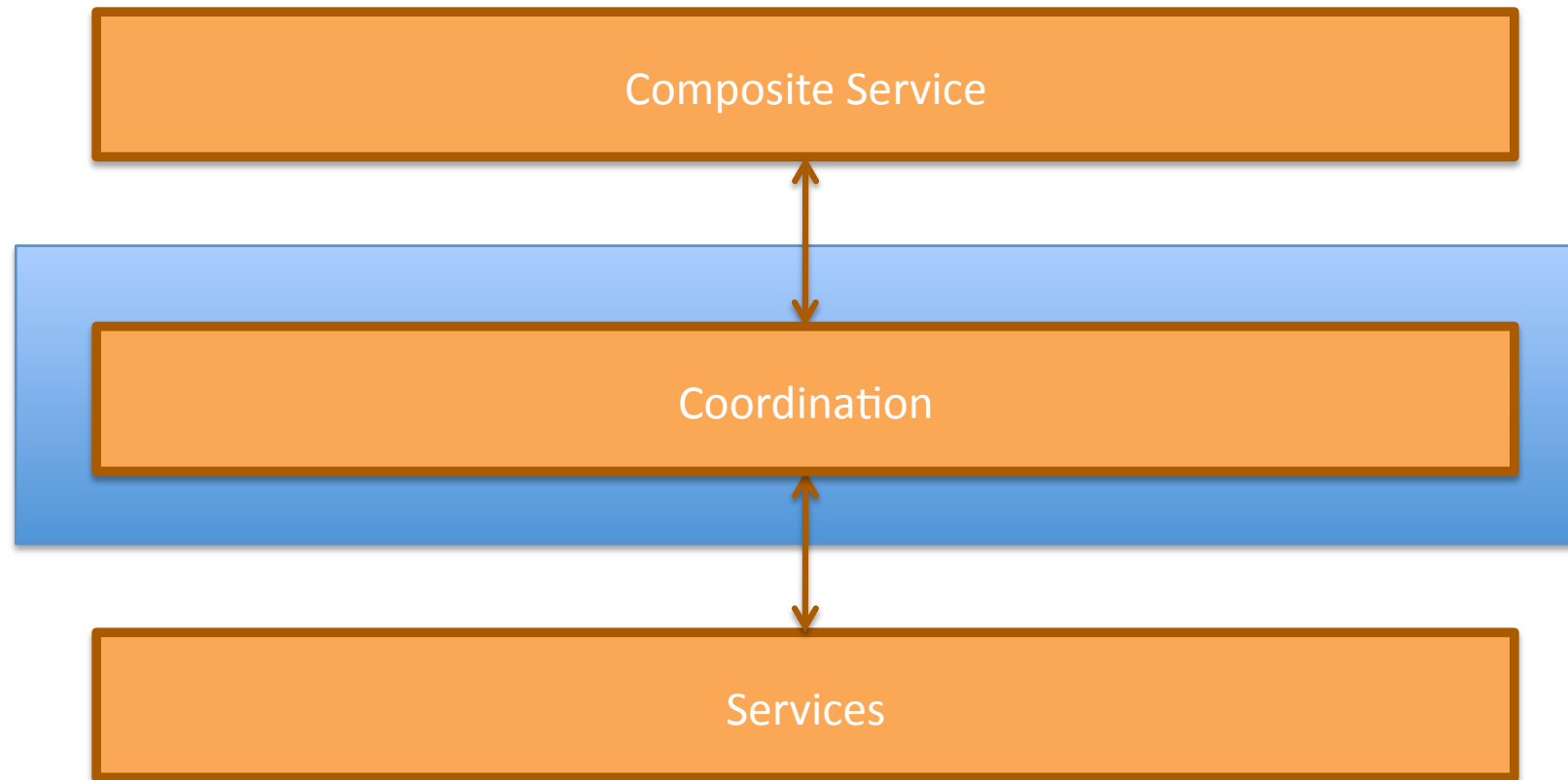
Services Problems



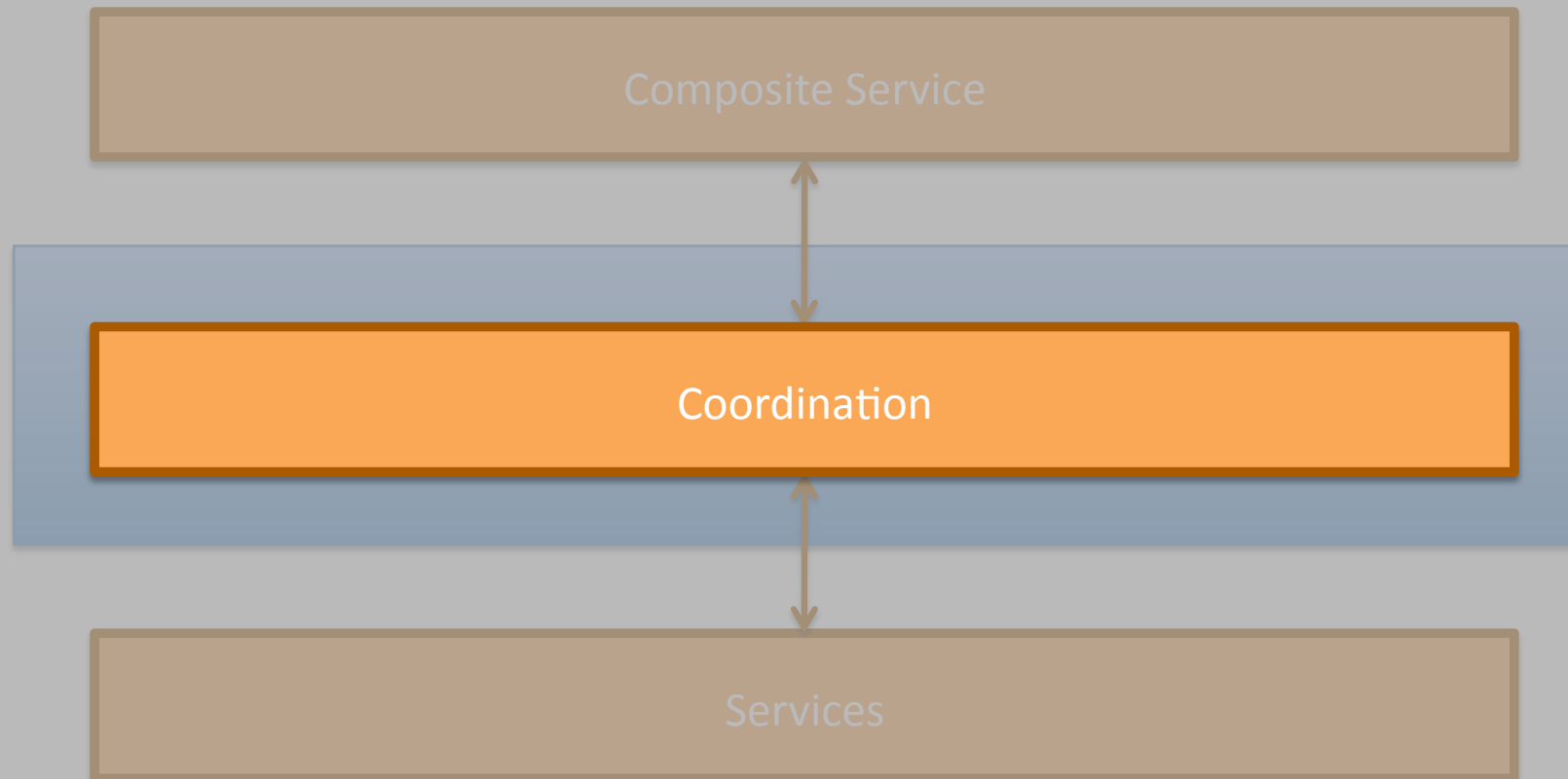
Services Problems



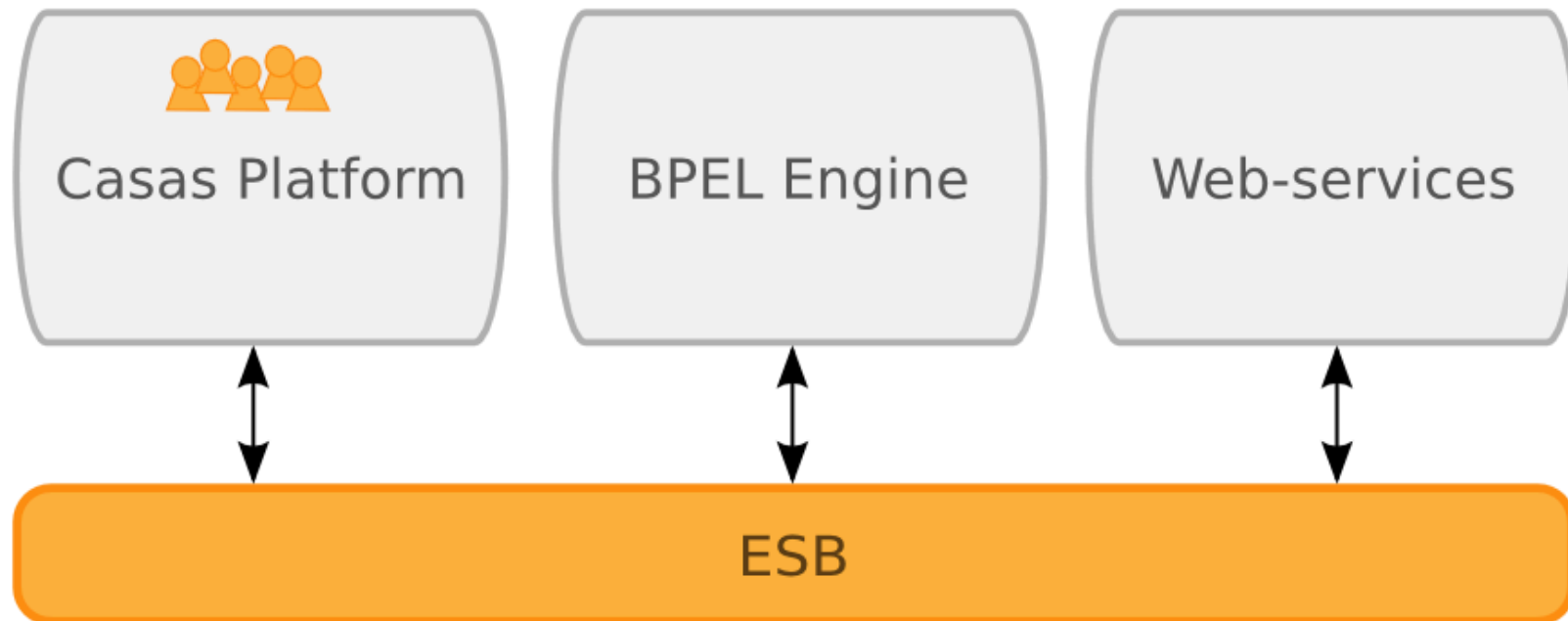
Adapting Composite Services



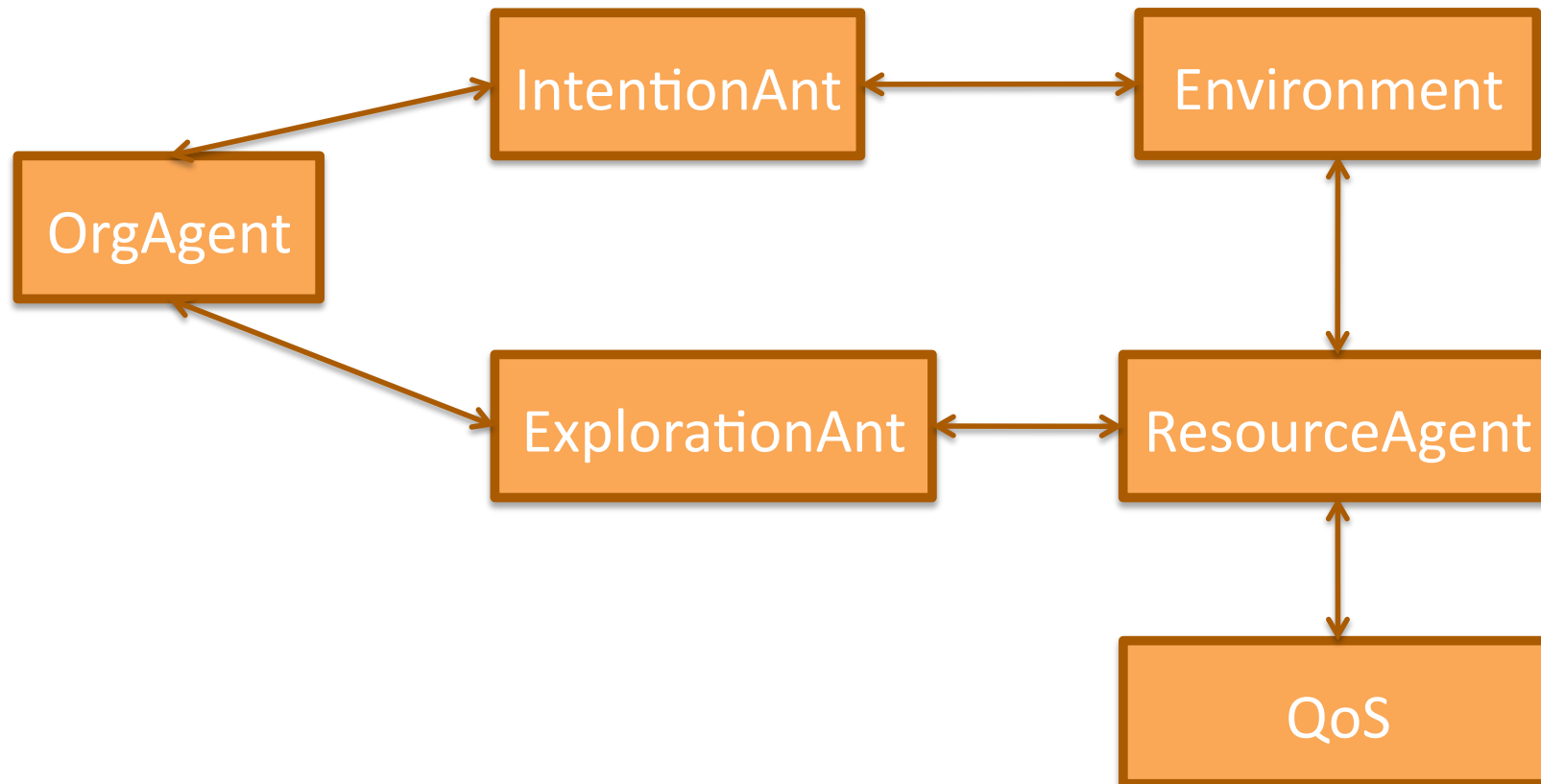
Adapting Composite Services



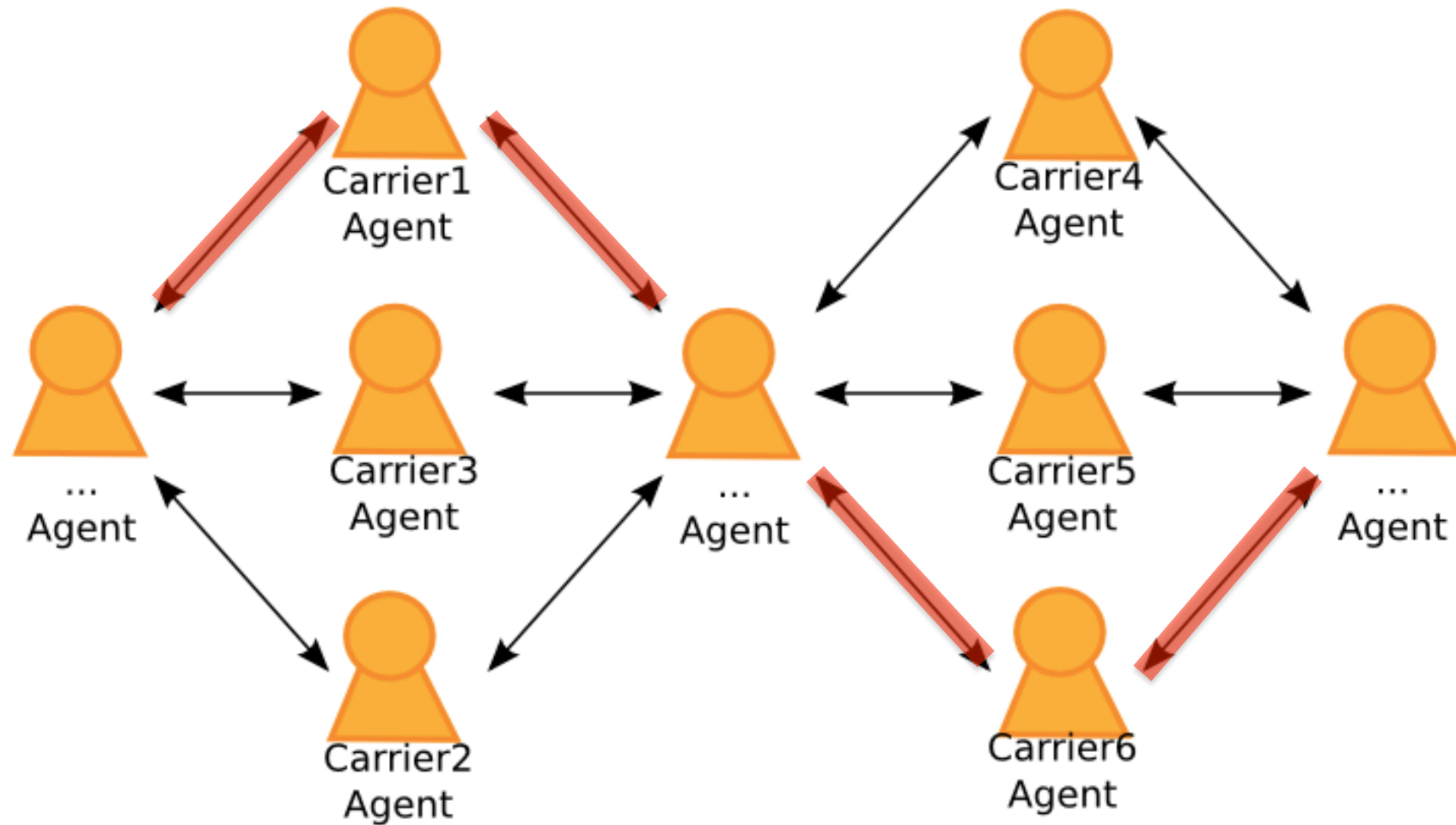
CASAS Platform Prototype



Coordination. How?



Coordination



Coordination Concerns

- How to avoid instability in the network?
 - Current approach is to stick to pre-selected compositions
- How to increase robustness?
- Achieve robustness through redundancy

Conclusions

- We show a decentralized model to adapt composite services
- Middleware prototype implementing this concepts

Ongoing Work

- Coordination in large telecom's network
- Experimenting with non-Gaussian failure probabilities
- How to give guarantees on robustness

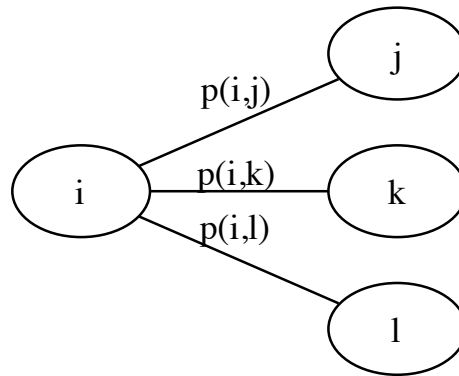
For the Curious... OrgAgent

$$\min \sqrt{\frac{1}{n} \sum_{i=0}^n \left(\theta(a_i, t_i) - \overline{\theta(a, t)} \right)^2}$$

and

$$\min \sum_{a \in Path} p_a$$

For the Curious... ExplorationAnt



$$P_{ij}(t) = \frac{[\tau_{ij}(t)]^\alpha [\eta_{ij}(t)]^\beta}{\sum_{l \in N_i} [\tau_{il}(t)]^\alpha [\eta_{il}(t)]^\beta}$$