**Reinforcement Agent Based Modeling**

**Three Layers supply chain:**
- facilities are now agents with demand and supply
- in phase 1: agents request goods from the next upper layer
- in phase 2: items are shipped from top to bottom
- in phase 3: reinforce


**Phase 1: How to request goods?**

Probabilistic approach:
- probability is product of fidelity and visibility
- Fidelity: strength of the connection in the network ← → loyalty to store
- Visibility: Constant Matrix with 1 over the distance as entrance → ensures distance dependance
- beta: parameter to control weighting

**Phase 2: How to ship items if demand is higher then supply**
- Greedy Version:
  - Ranking of Customers based on distances → most profitable for them
  - fullfill demand from top to bottom
- Fidelity based version:
  - reuse probability matrix and use it to probabilistic distribute the goods
- Common: ship only if trade is profitable


**Phase 3: <u>Reinforcement!!</u>**

- Conditions: successful shipping & profitable
- Reinforce connection in the fidelity matrix
- create a decay mechanism to make a transition from exploration to convergence phase