Identifying Collaborative Shipping Opportunities

Jeroen Beliën

Stefan Creemers

Robert Boute

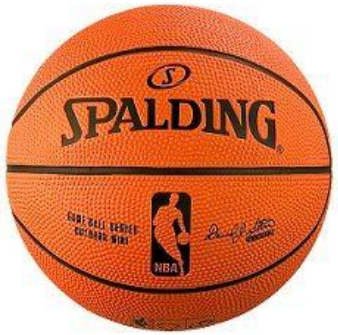
Gert Woumans

KU LEUVEN

IÉSEG SCHOOL OF MANAGEMENT

VLERICK BUSINESS SCHOOL

A meeting of friends: Jeroen

Reality	Role Today
	Owner of Spalding SPALDING Production of basket balls 

A meeting of friends: Stefan

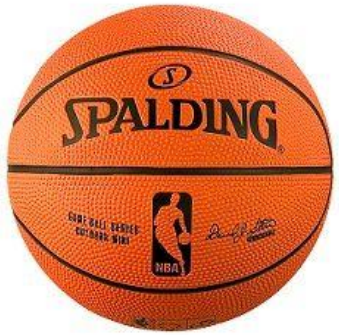
Reality

Role Today

Owner of Asics

Production of running shoes

A meeting of friends

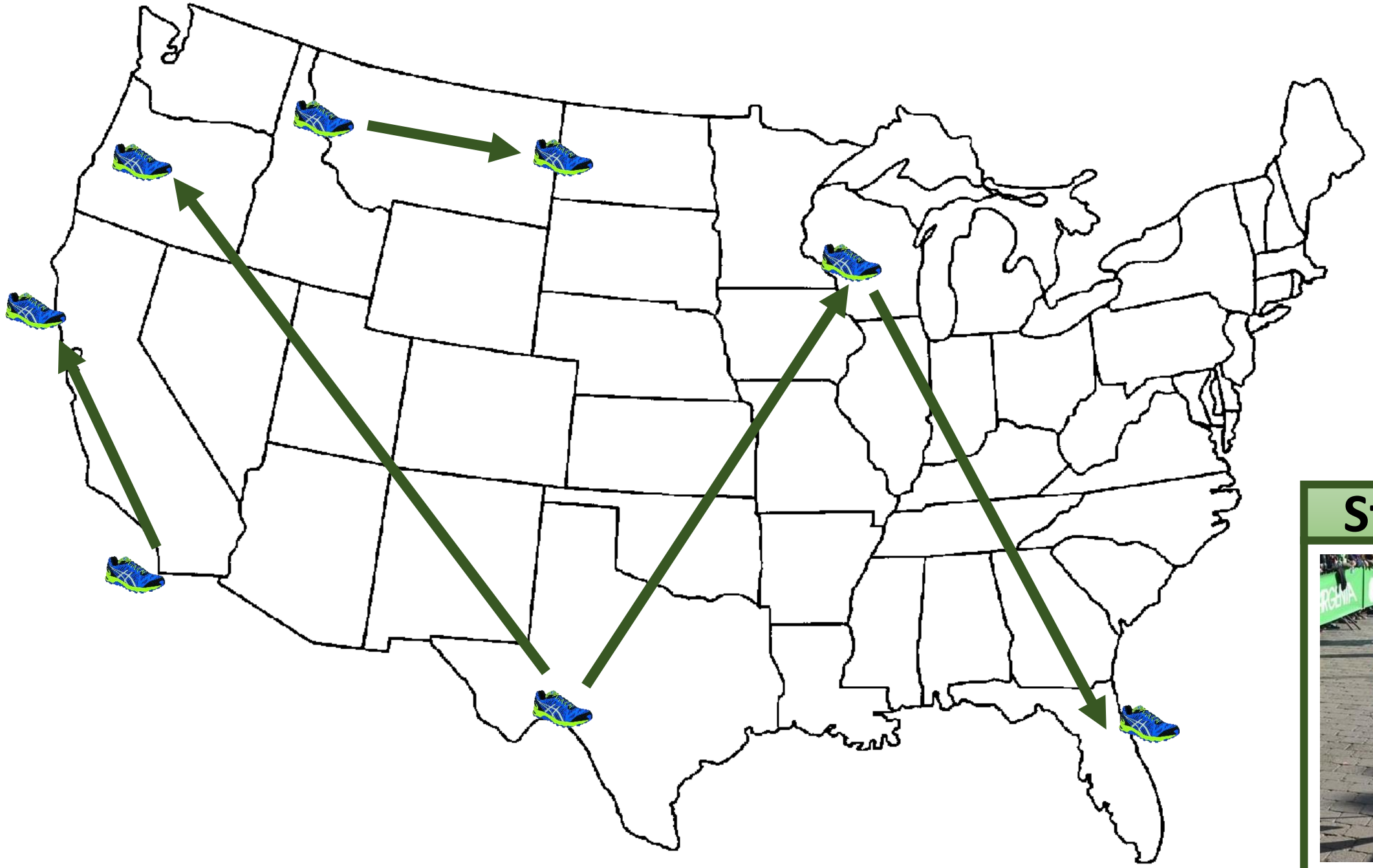
Role Today	Reality	Reality	Role Today
Owner of Spalding SPALDING Production of basket balls 			Owner of Asics asics Production of running shoes 

Horizontal Cooperation

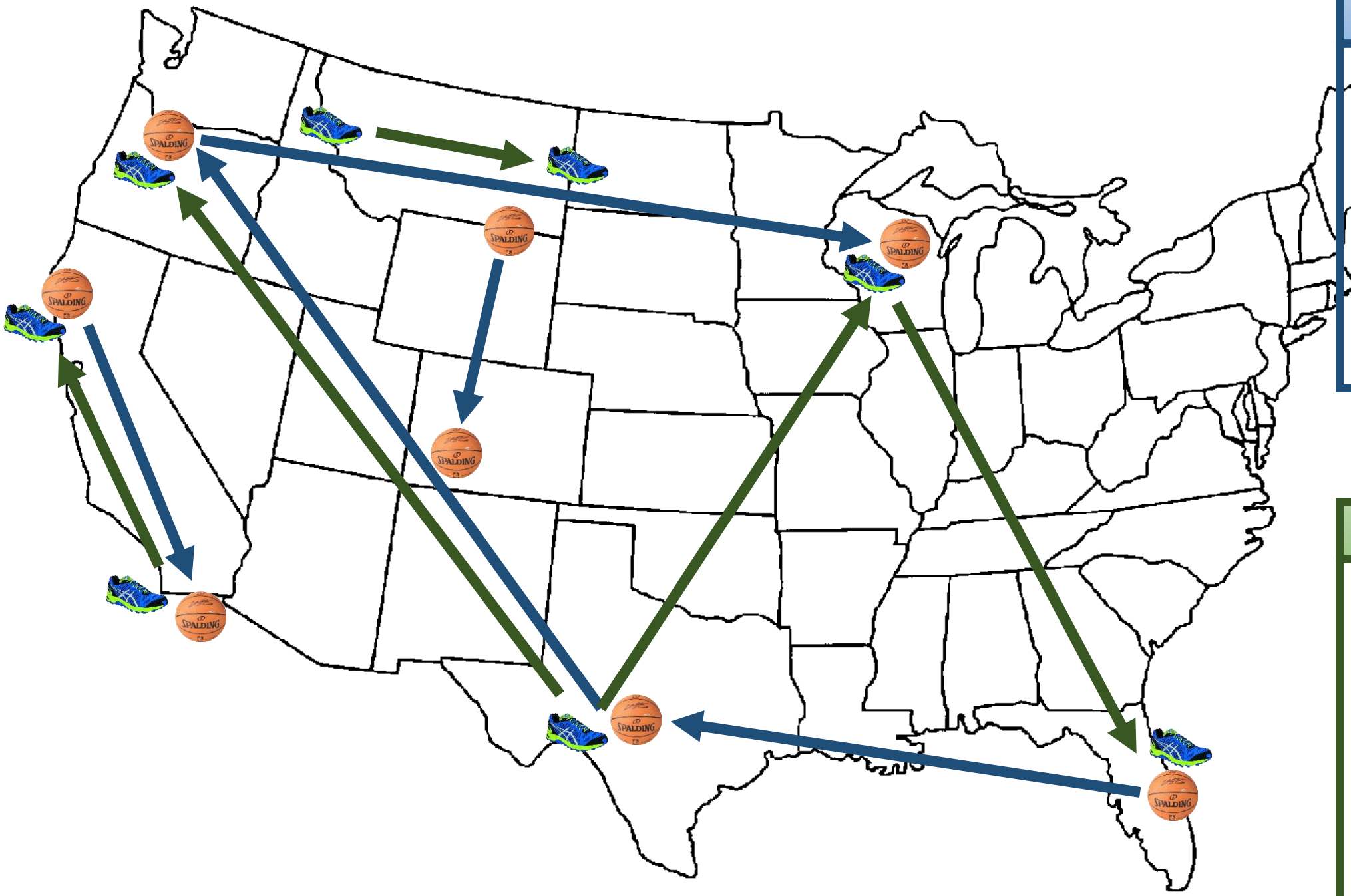
- **What** = cooperation where companies bundle their orders/join shipments
- **Why** = to reduce transport costs, CO2 emissions, and congestion
- **How** = by using the available space in truck hauls of one company to ship items of another company
- Vertical cooperation = cooperation with companies at different level of the supply chain (e.g., supplier & buyers)
- Horizontal cooperation = cooperation with companies at the same level of the supply chain

Examples of Horizontal Cooperation

Jeroen



Stefan



Jeroen

Stefan

Bundling

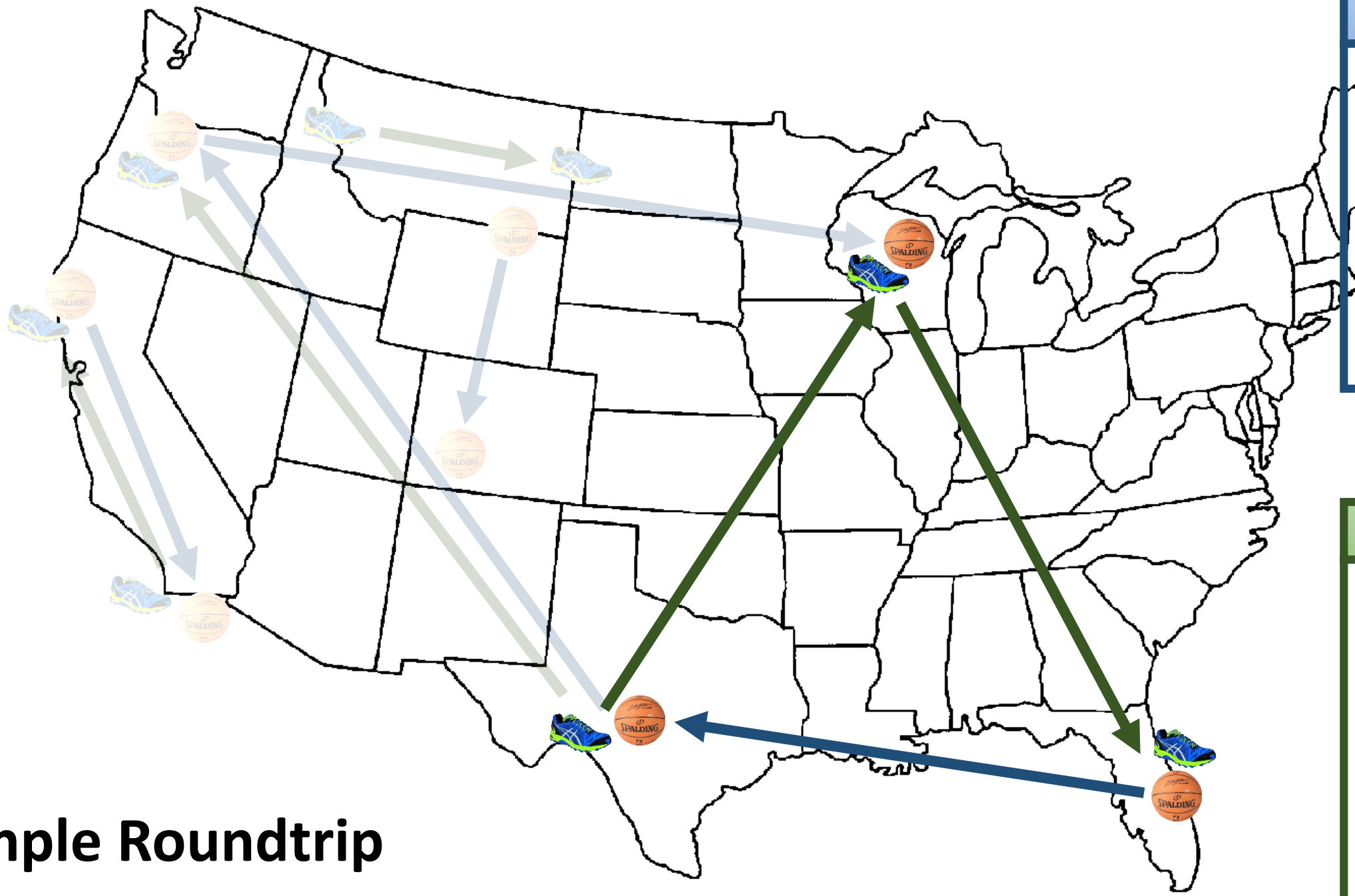
Jeroen

Stefan

Backhauling

Jeroen

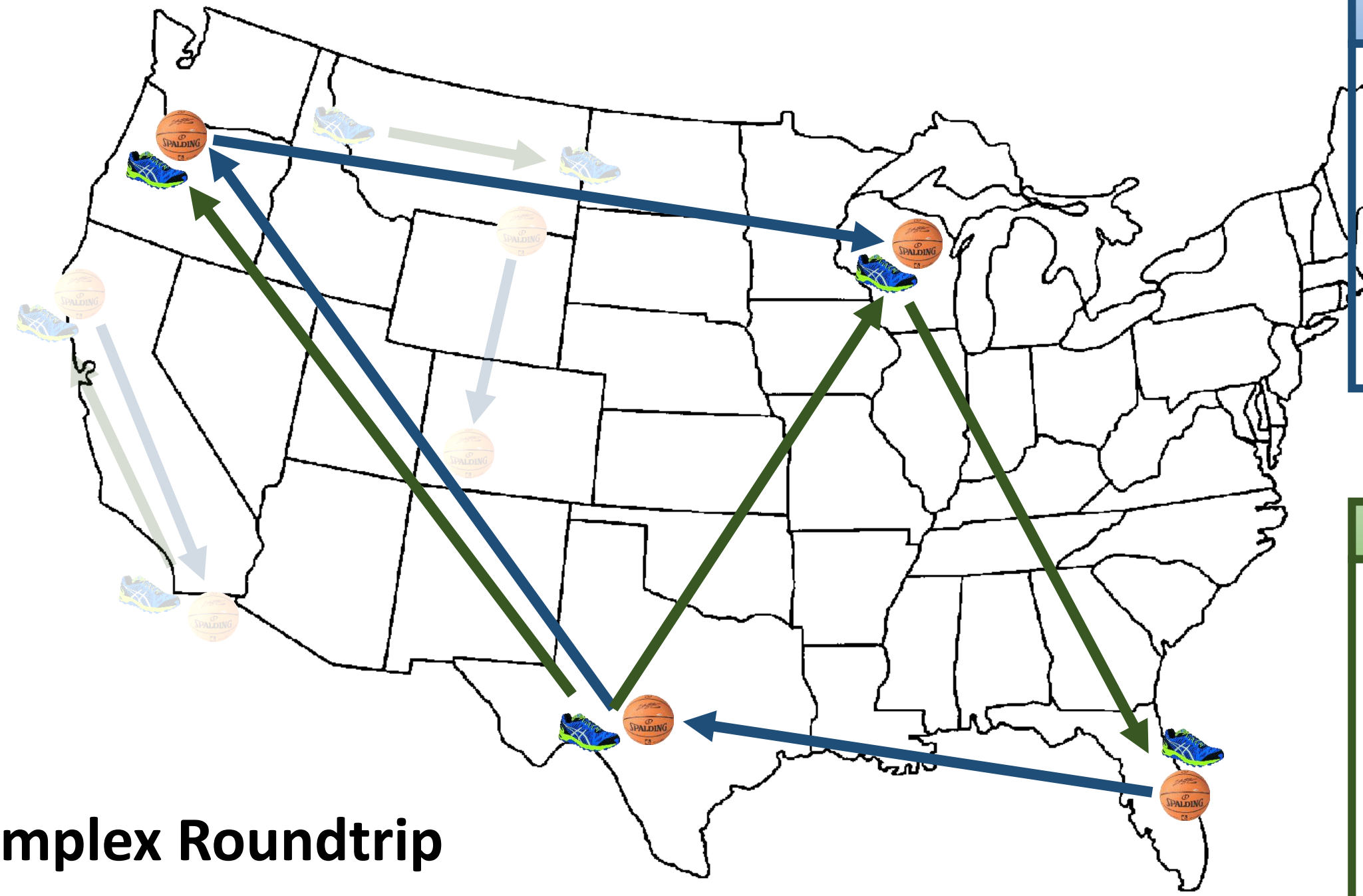
Stefan



Simple Roundtrip

Jeroen

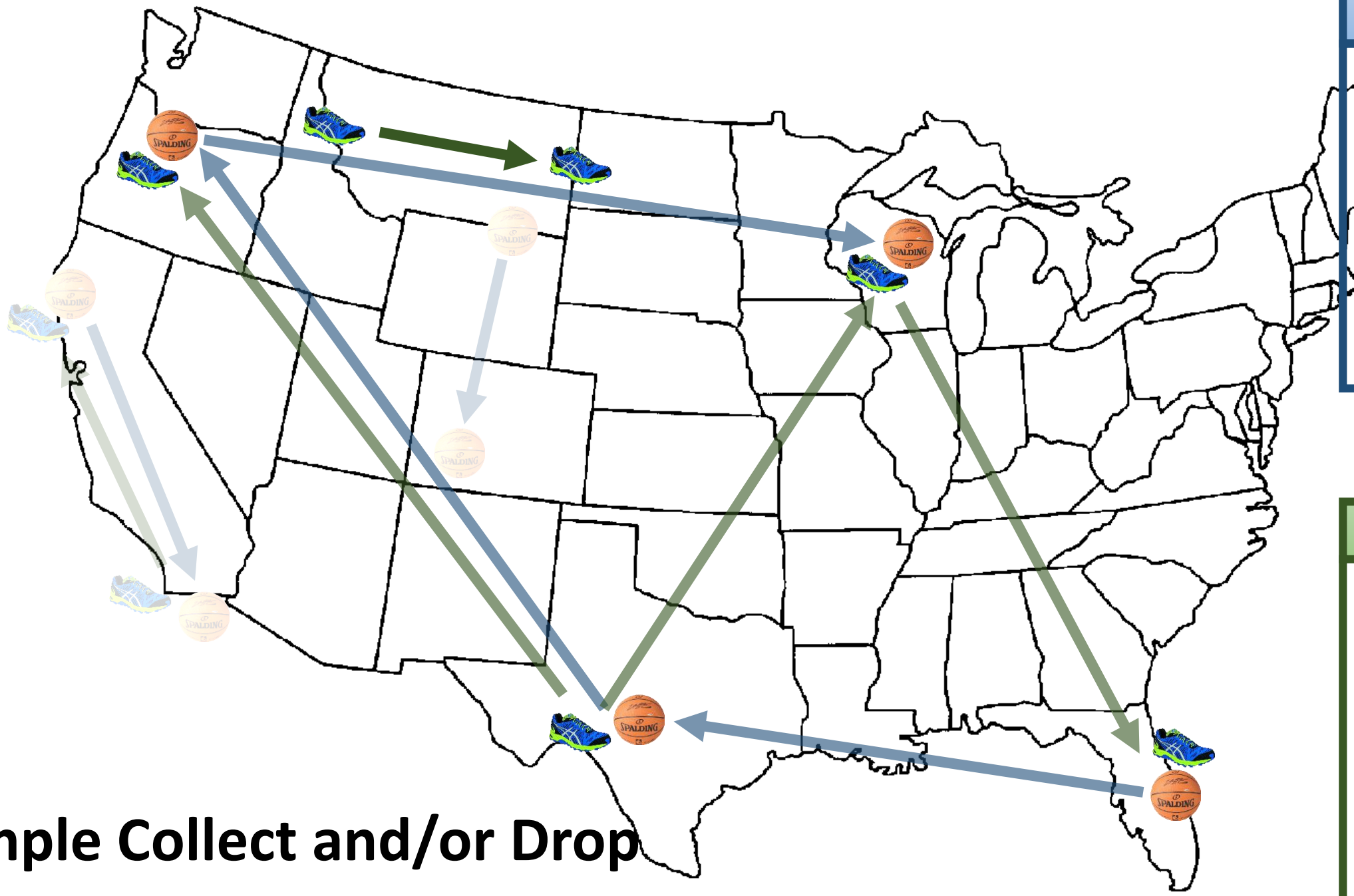
Stefan



Complex Roundtrip

Jeroen

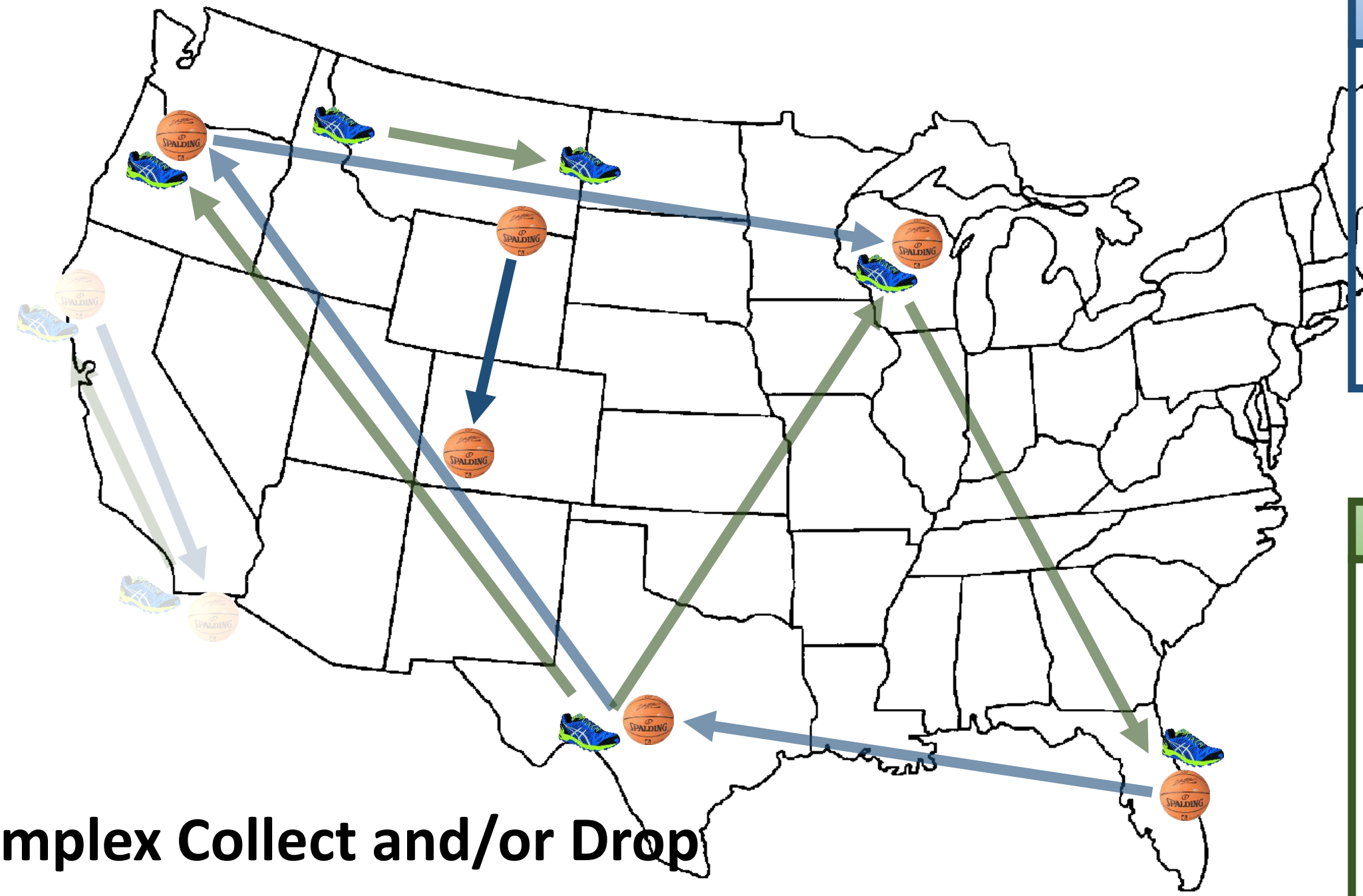
Stefan



Simple Collect and/or Drop

Jeroen

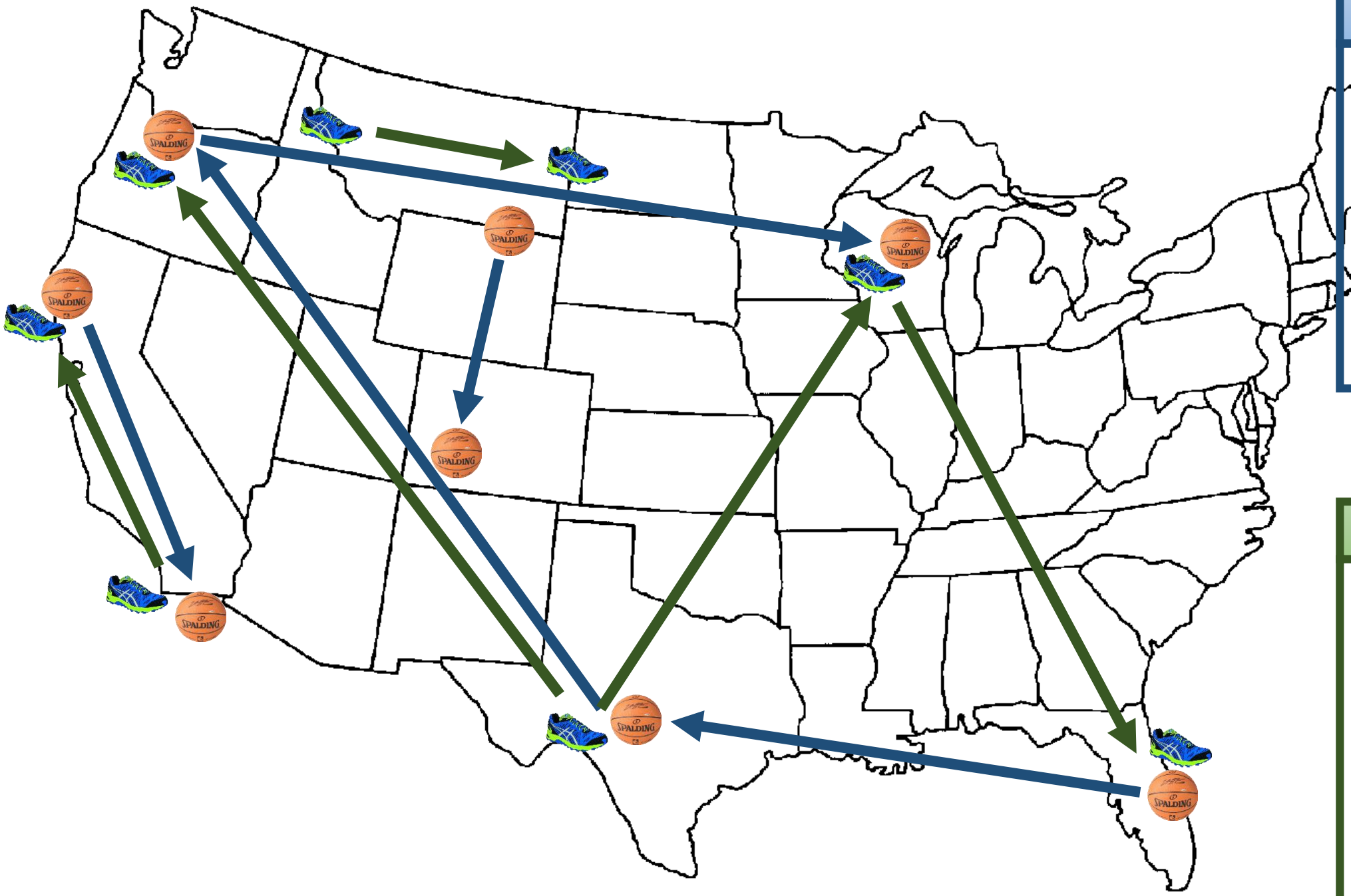
Stefan



Complex Collect and/or Drop

Jeroen

Stefan



Jeroen

Stefan

What is a **good** opportunity?

- Total Distance/volume/tkm
- Shared distance/volume/tkm
- Ratio of shared distance/volume/tkm
- Closed distance/volume/tkm

BBaRT: Bundling, Backhauling, and Roundtrip Tool

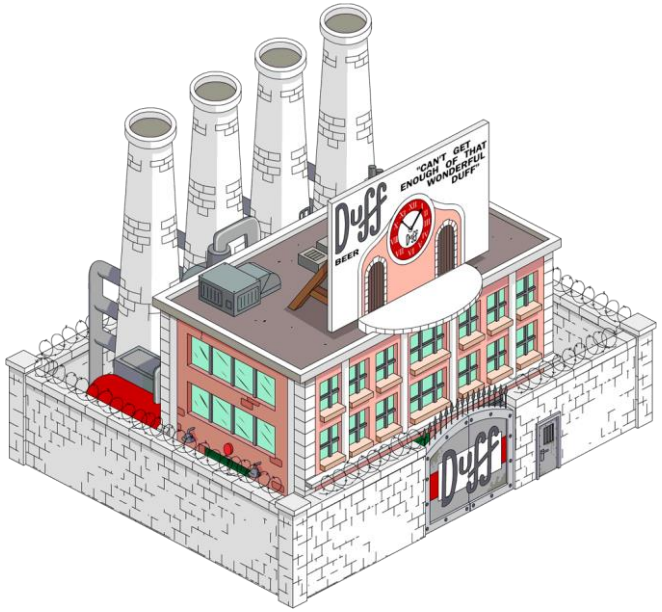
- **What** = tool that identifies bundling, backhauling, roundtrip, and collect and/or drop opportunities in a large database of transport lanes
- **Why** = impossible to analyze a database of 100,000 transport lanes manually (or even using Excel)
- **How** = clever combination of a bounding-box approach, sorting, and efficient search algorithms
- Collect and/or drop opportunities are found by rotating the system of coordinates
- Implementation of the opportunity itself is done at a later stage, we only care about identifying the best opportunities

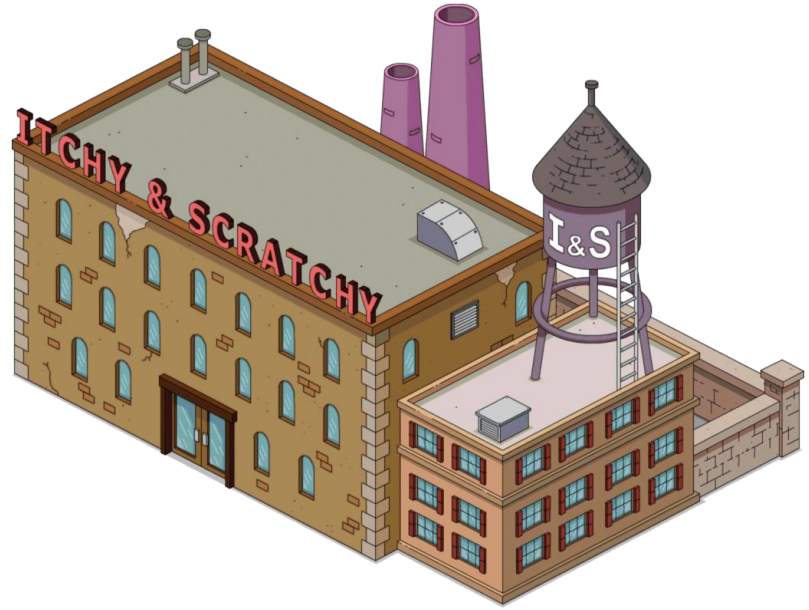
Interfaces

Creemers Stefan, Woumans Gert, Boute Robert, & Beliën Jeroen (to appear). Tri-Vizor uses an efficient algorithm to identify collaborative shipping opportunities. Interfaces.

TRI ≡ VIZOR

THE WORLD'S FIRST CROSS SUPPLY CHAIN® ORCHESTRATOR™





?