Revenue Management for Airline Alliances
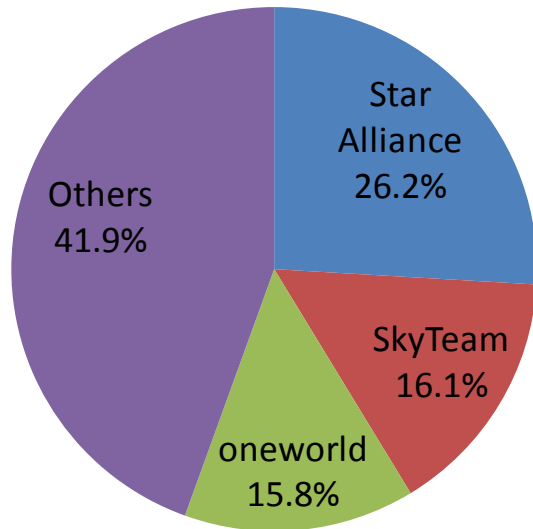
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November 4, 2010

Global Alliance Market Shares
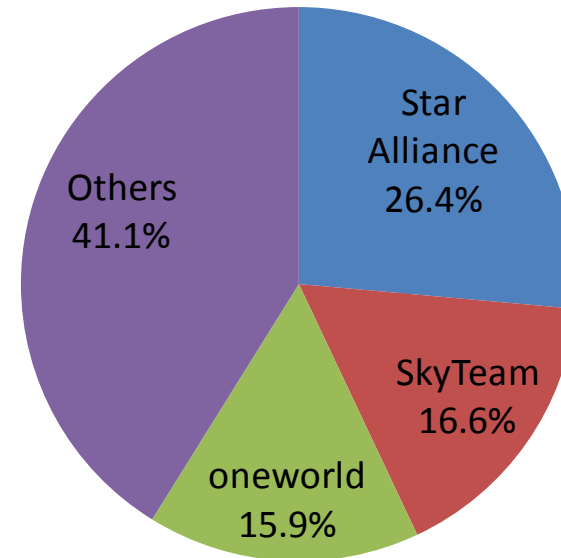
Available Seat Kilometres 2010

Star Alliance 26.2%
Others 41.9%
SkyTeam 16.1%
oneworld 15.8%

ASK(Bn)

Star	SkyTeam	oneworld
1569.1	963.9	944.6

Revenue Pass. Kilometres 2010

Star Alliance 26.4%
Others 41.1%
SkyTeam 16.6%
oneworld 15.9%

RPK(Bn)

Star	SkyTeam	oneworld
1205.1	755.1	725.1

Source: Airline Consolidation, Dr. Olaf Backofen, Deutsche Lufthansa AG, MIT, June 12, 2010

Revenue Management for Alliances

- Alliances formed with a goal of increasing revenues for the member airlines
  - Alliance partners expand their network coverage by use of codeshare on each other's flights

- Sub-optimal benefits or potentially negative effects can arise from:
  - Lack of joint network optimization solution
  - Partners using arbitrary codeshare valuation in their Revenue Management (RM) systems
  - Different RM capabilities of each partner, technical distribution system constraints

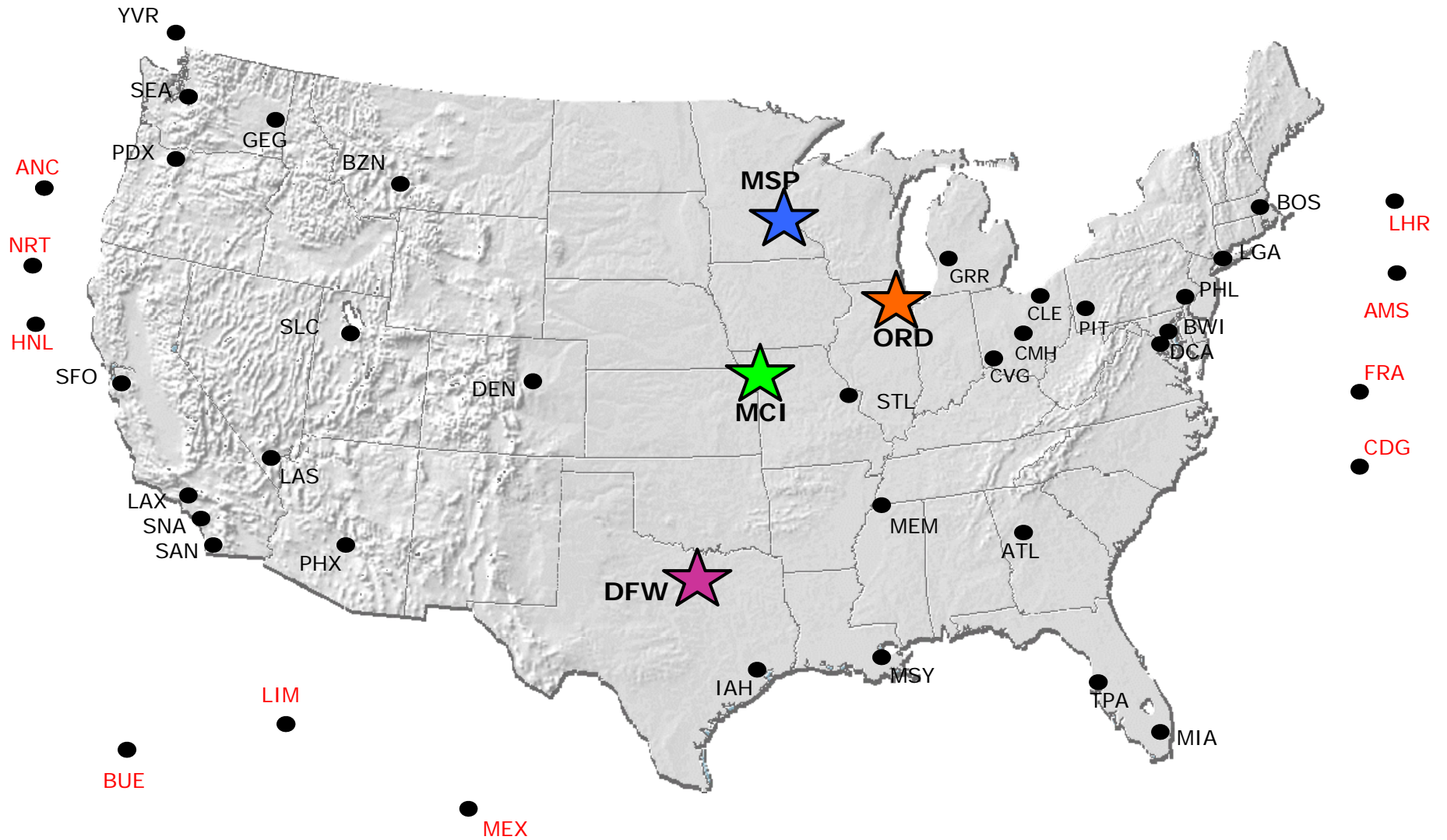Operated Flights: UA101   LH202

LAX ⟶ BOS ⟶ FRA

Codeshare: LH*2101   UA*1202

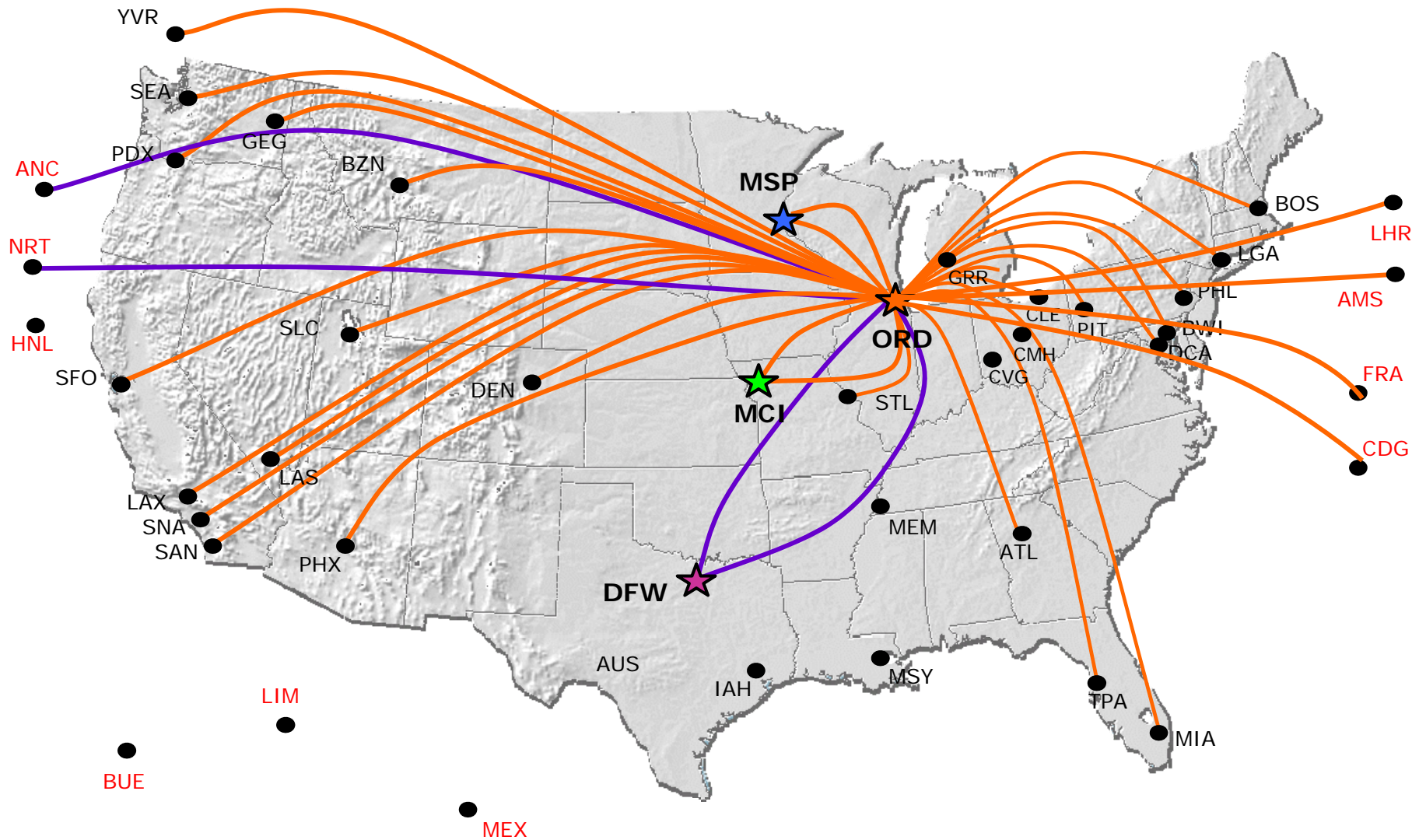✈ Seats must be made available by RM systems of both operating carriers to accept the codeshare booking: LAX-FRA
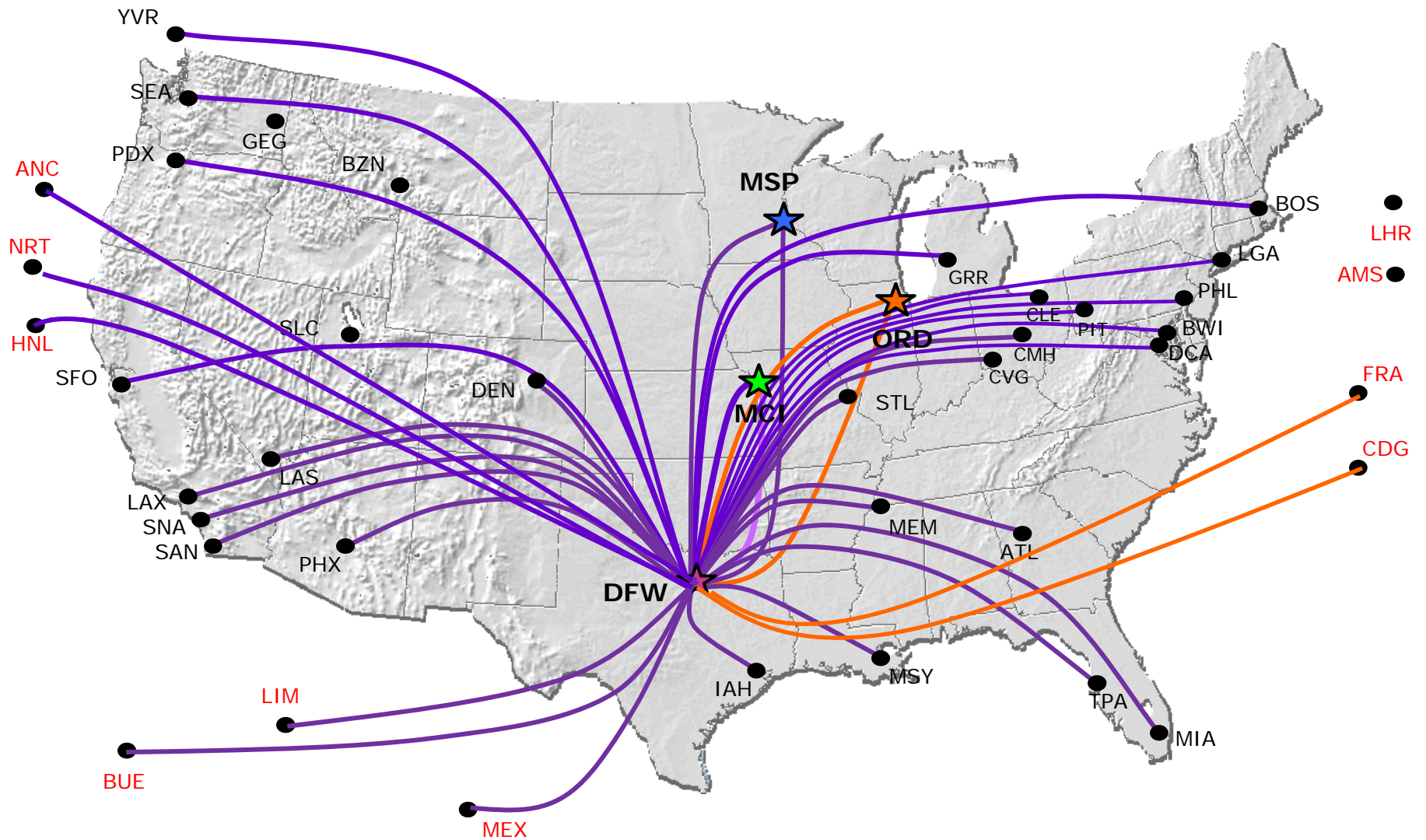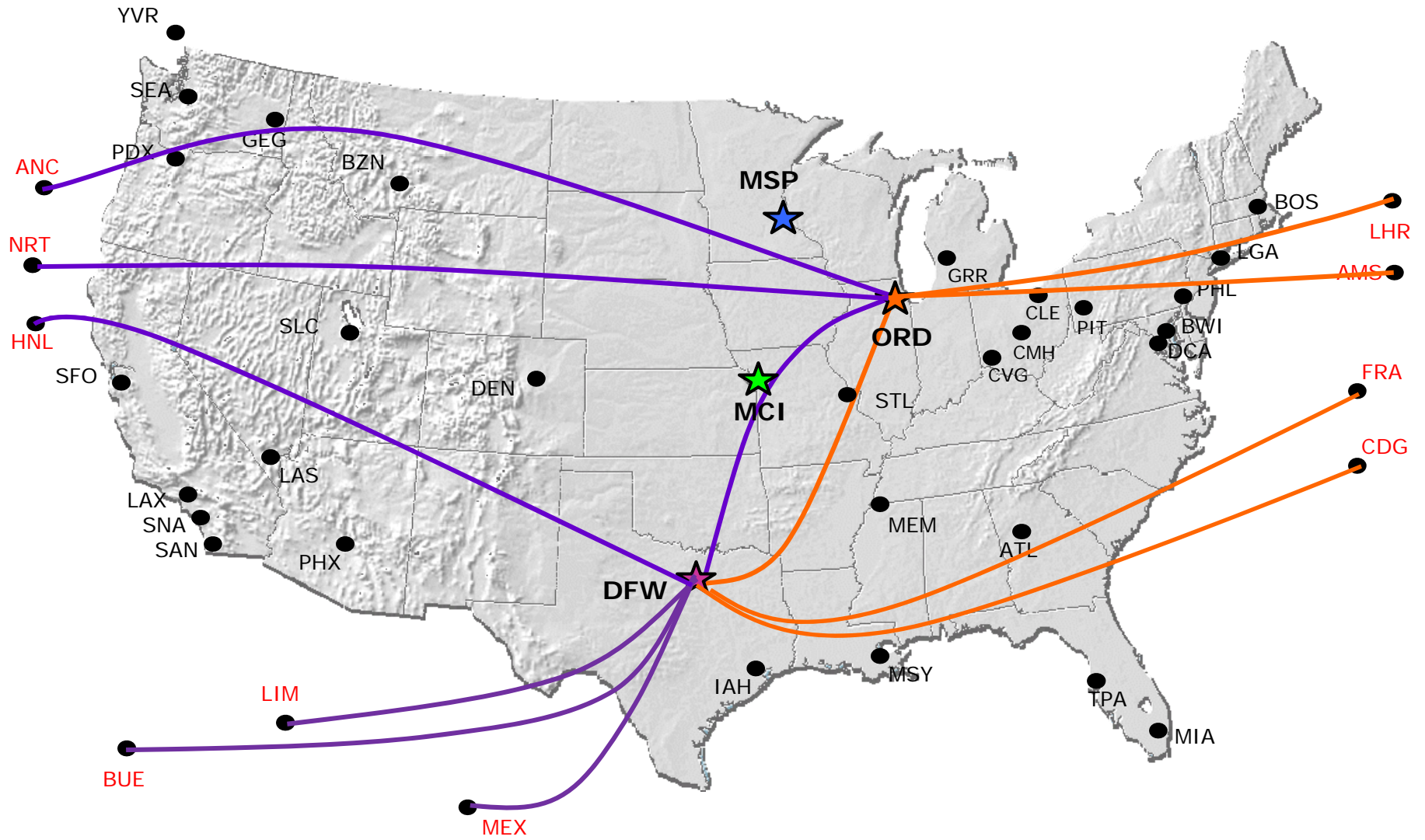
Code Share Paths via ORD Hub

- Itinerary information (AVS and Cascading)
  - BASELINE: Under standard AVS practices, operating airline does not know complete itinerary
  - "Cascading" gives both partners complete itinerary information for making availability decisions

- Each alliance partner performs optimization for own network separately:
  - Separate network optimization assuming local fare valuation of code-share connecting passengers
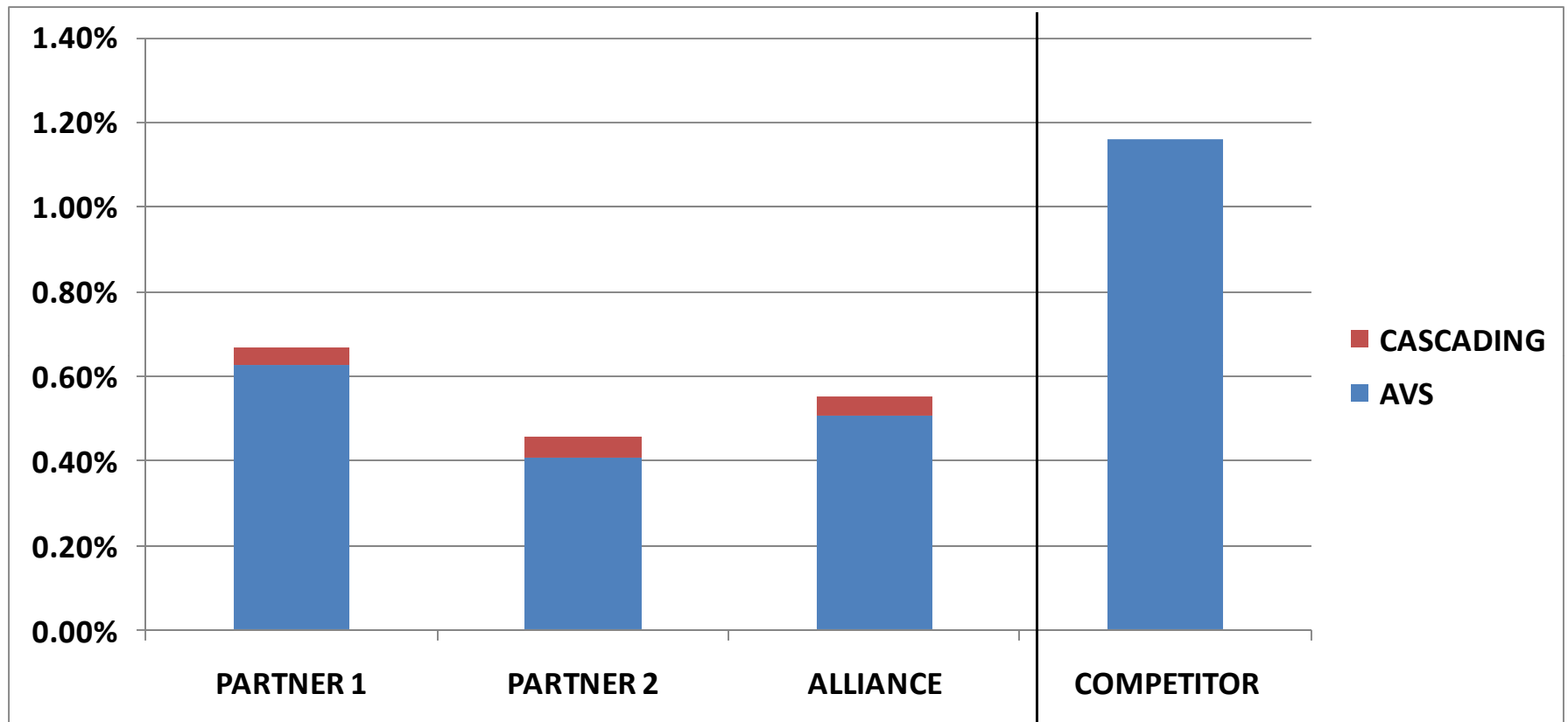
- The control is sub-optimal for the alliance because of the arbitrary local fare valuation on codeshare paths
- Cascading leads to slightly higher revenues than AVS (red stacks)

Valuation of CS bookings in RM systems affects:

- Own network because of potential displacement of own local and connecting traffic
- Partner's network due to interaction with their RM system and availability calculations for CS bookings

Two codeshare (CS) valuation schemes are compared:

- Local Fare Valuation: CS paths are valued at the local fares by each partner regardless of the total fare
- Y-Prorate Valuation: Total fare is divided exactly into two parts, in the ratio of the Y-Prorates (highest fares)

LAX ➡ BOS ➡ FRA

Booking (O-D)	Marketing Airline	OD Fare
LAX-BOS	UA	$ 200
BOS-FRA	LH	$ 500
LAX-FRA	Codeshare (UA/ LH)	$ 600

Local

Y-Prorate

Airline	Valuation of LAX-FRA
UA	$ 200
LH	$ 500
Total	$ 700

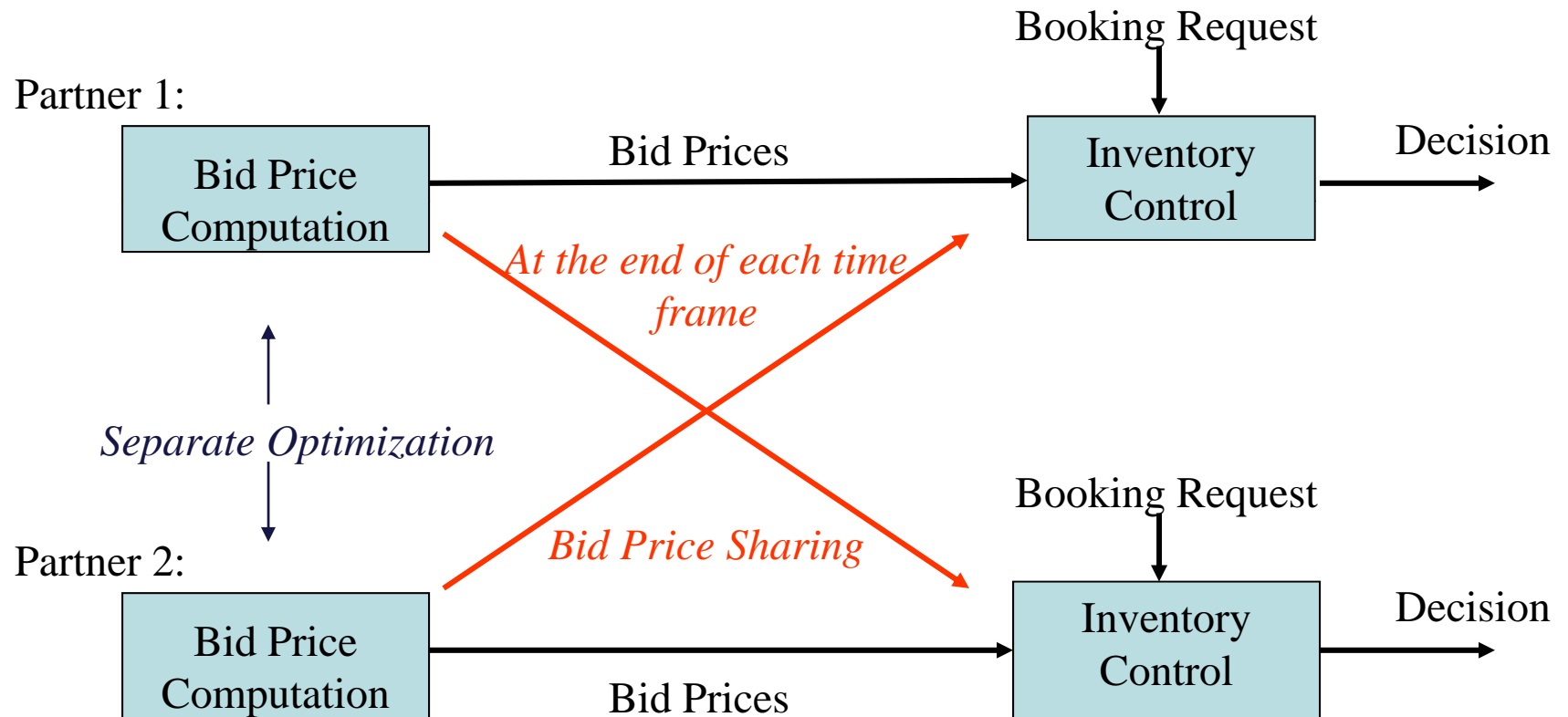| Airline	Valuation of LAX-FRA
UA	$ 150
LH	$ 450
Total	$ 600

- Y-Prorate leads to slightly higher gains for the alliance
- Though the difference in gains in small, the revenue components are quite different in the two schemes

Y-Prorate Valuation compared to Local

*Codeshare (CS) revenues are pre-resolution
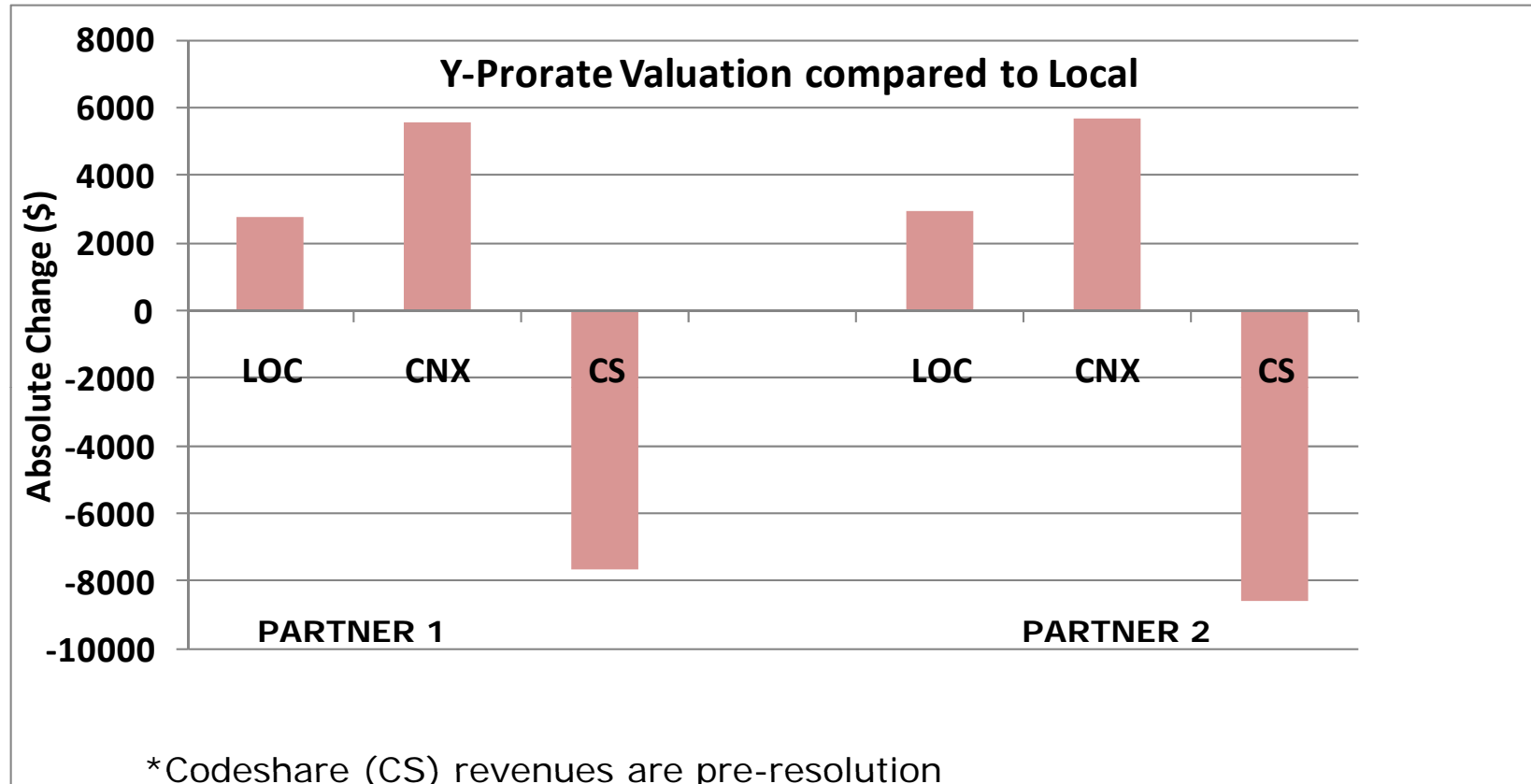
👉 Y-Prorate values the codeshare bookings at a lower value and hence take fewer codeshare bookings
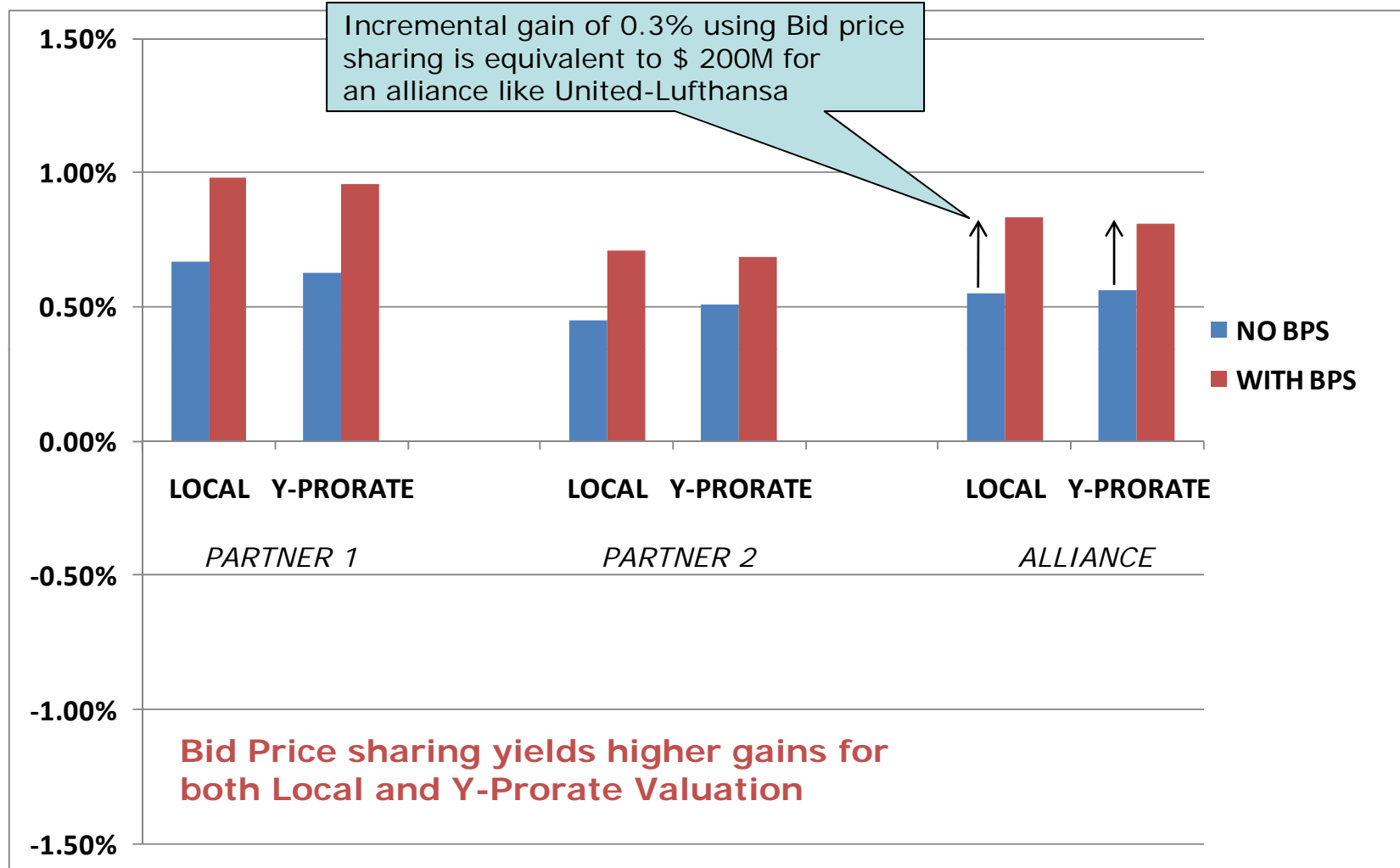
Bid price = marginal network revenue value of available seat on each leg

Booking Request

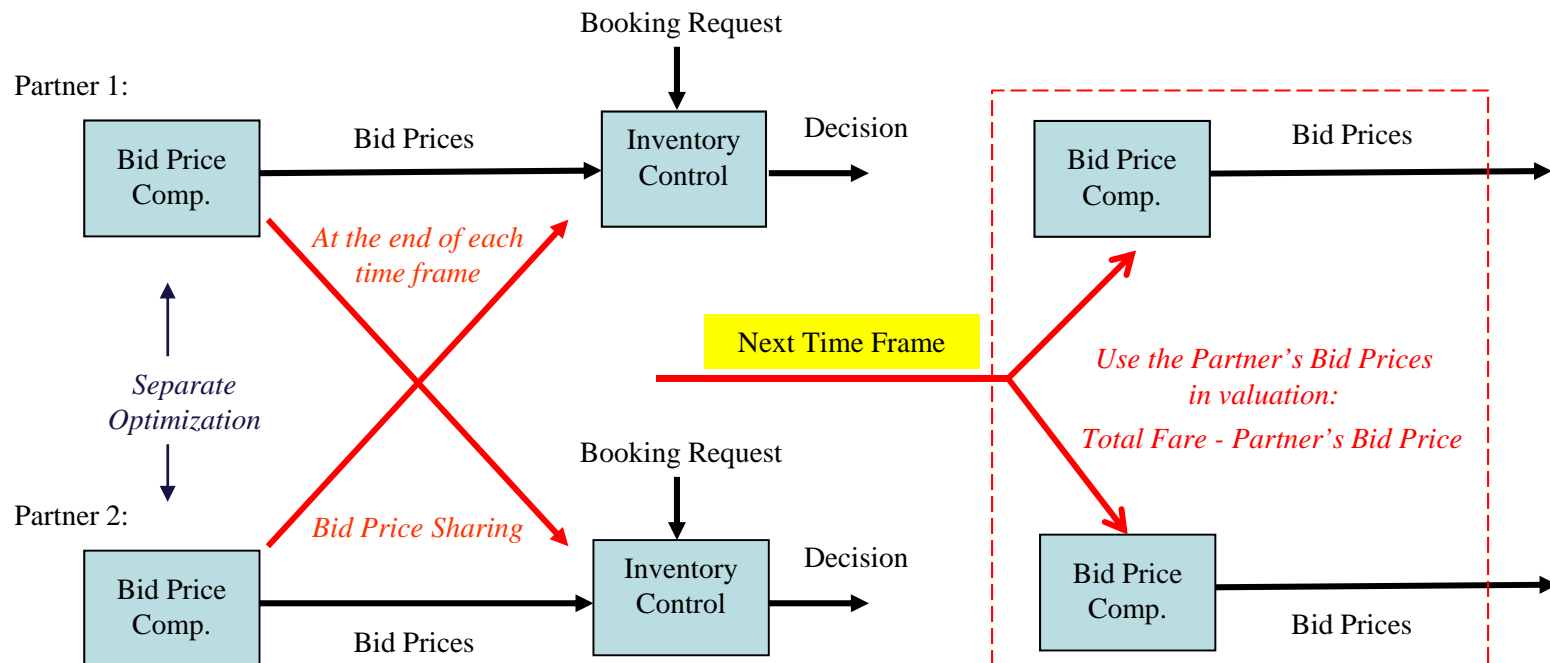Partner 1:

Bid Price Computation → Bid Prices → Inventory Control → Decision

At the end of each time frame

Separate Optimization

Bid Price Sharing

Partner 2:

Booking Request

Bid Price Computation → Bid Prices → Inventory Control → Decision

Incremental gain of 0.3% using Bid price sharing is equivalent to $ 200M for an alliance like United-Lufthansa

Bid Price sharing yields higher gains for both Local and Y-Prorate Valuation

Next Step: Dynamic Codeshare Valuation

✈ Until now, only own airline bid prices are used for the network optimization by each partner

✈ Incorporating estimates of the value of a partner's seat into own optimization gets closer to the joint network revenue solution

- Airline revenue gains can be affected by alliances:
  - Valuation scheme of code share passengers affects seat availability decisions on both partner networks
  - With separate and uncoordinated RM, one partner can benefit more than the other

- Information sharing improves revenues:
  - Cascading yields higher revenues than AVS
  - Bid price sharing yields substantially higher revenues, of the order of $ 100M (each) for big alliance carriers

- Dynamic codeshare valuation using bid prices can lead to even greater revenues