

# Pricing Algorithms and Collusion

## Implications for EU Antitrust Compliance

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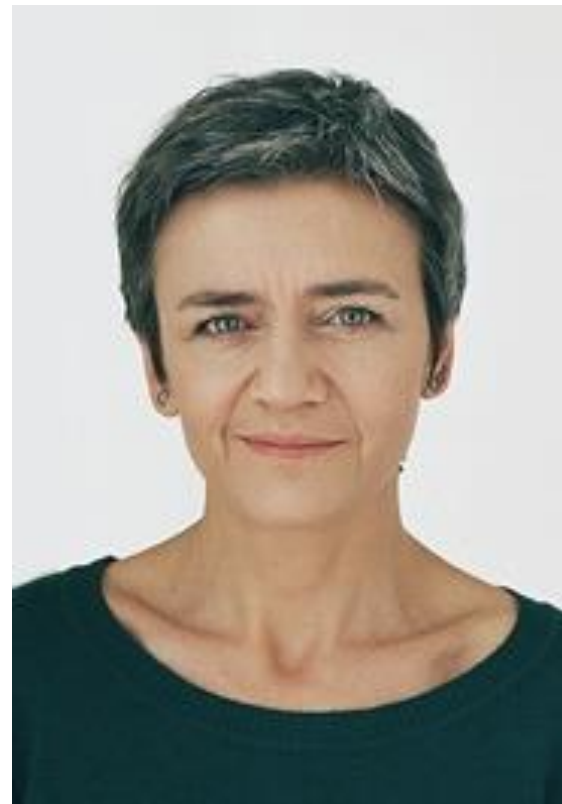
**Competition Law and Regulation in the TMT**  
Sector Conference  
Brussels, 18 October 2017



*What business can – and must – do is to ensure antitrust compliance by design.*

*That means pricing algorithms need to be built in a way that doesn't allow them to collude.*

*Like a more honourable version of the computer HAL in the film 2001: A Space Odyssey, they need to respond to an offer of collusion by saying "I am sorry, I'm afraid I can't do that."*



**Margrethe Vestager, European Commissioner for Competition, Algorithms and Competition,  
Speech of 16 March 2017**

1.

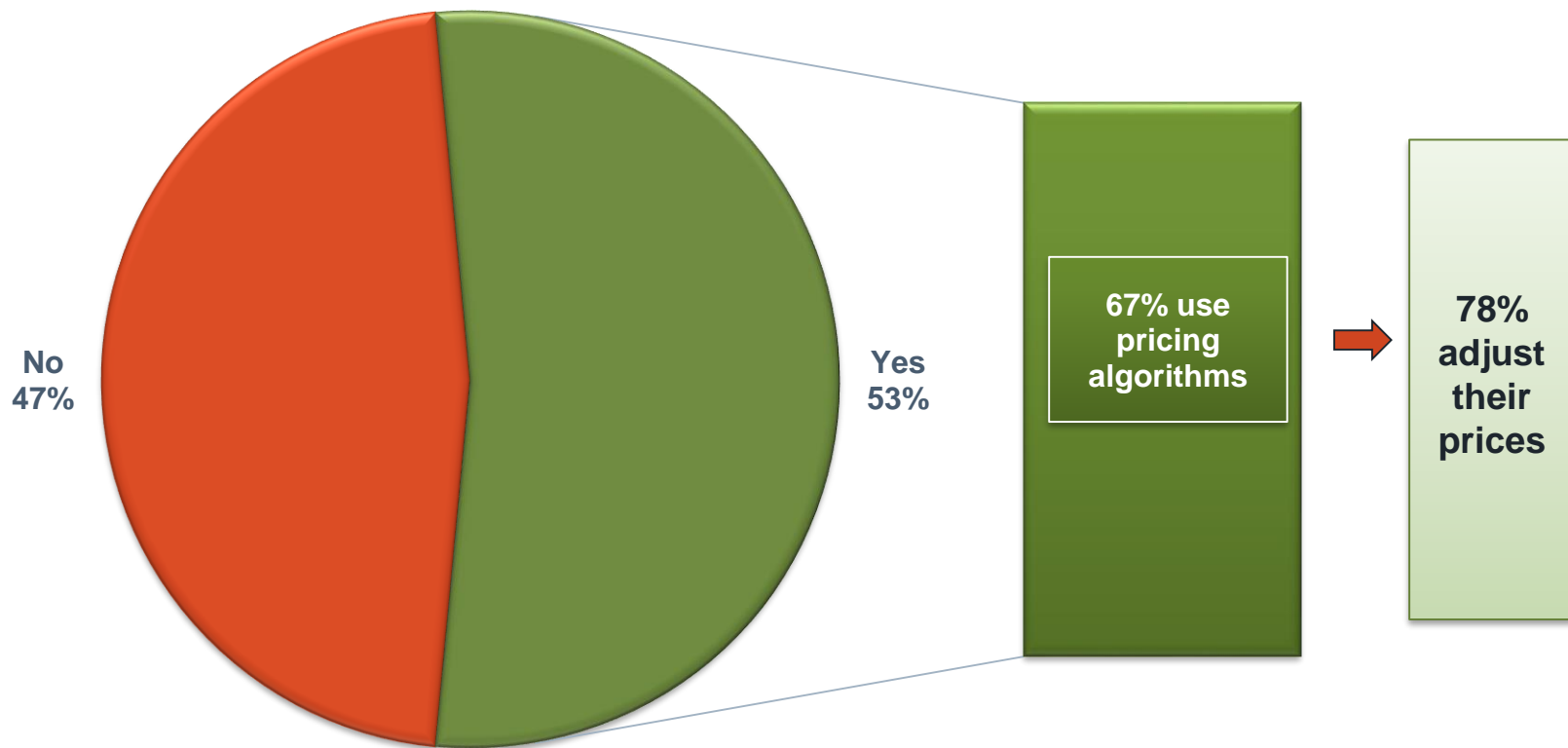
*If pricing practices are illegal when implemented **offline**, there is a strong chance that they will be illegal when implemented **online***

2.

*An algorithm remains under a firm's **direction and control** and therefore the firm is liable for the actions taken by the algorithm*

Algorithms and Collusion – Note from the European Union (DAF/COMP/WD(2017)12)

## Retailers tracking online prices of competitors



Commission Staff Working Document, Final Report on E-Commerce Sector Inquiry  
(SWD(2017)154)

Supplier A



Buyer A

## Monitoring algorithm to

- Detect deviations from a fixed or minimum resale price
- Monitor compliance with maximum or recommended price

# Resale Price Maintenance (RPM)

Supplier A



Buyer A

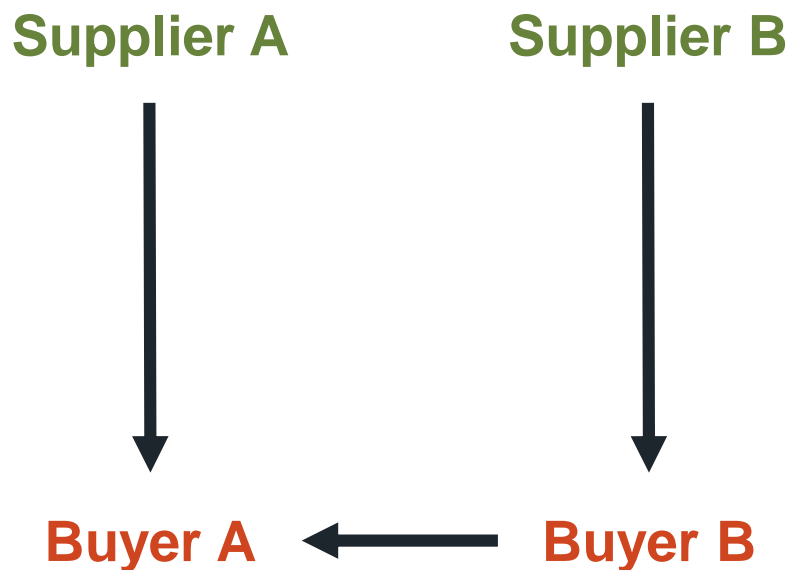
## Don't

- Fix prices or set minimum resale prices
- Put pressure on buyer to follow maximum or recommended prices

## Do

- Compliance training
- Message to Buyer that it is free to set prices independently

# Resale Price Maintenance (RPM)



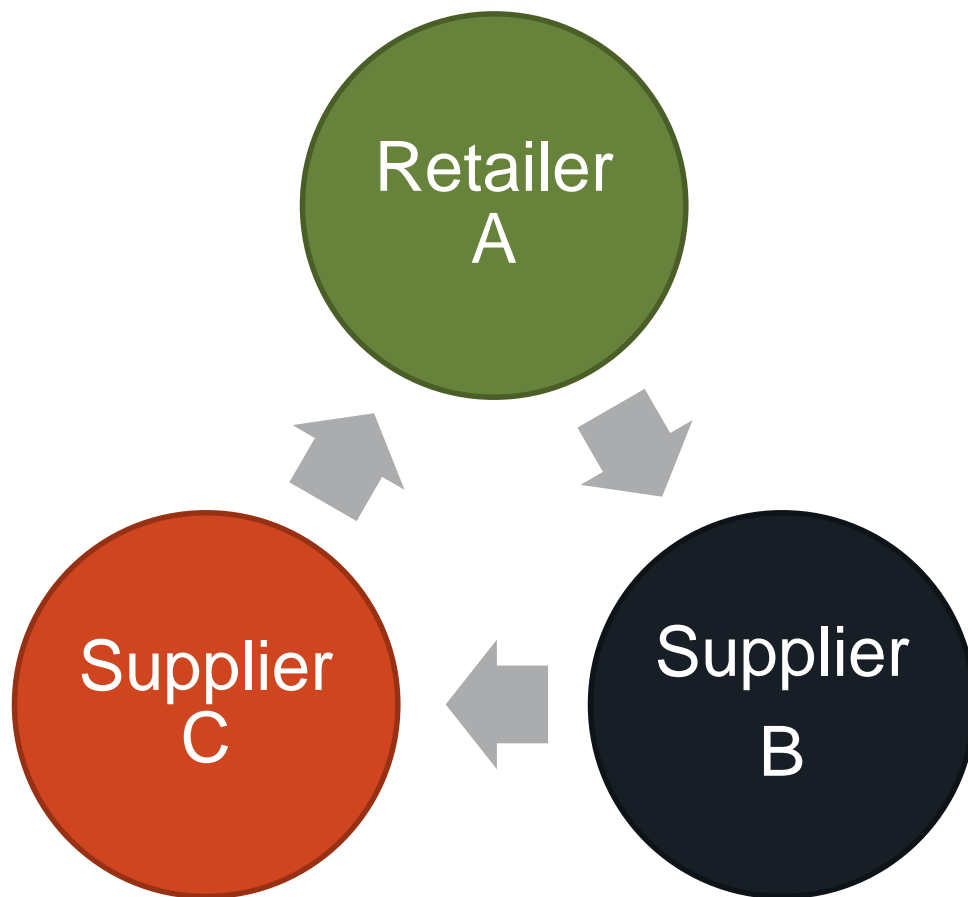
## Aggravating factor

- “The effect of these suspected price restrictions may be **aggravated** due to the use by many online retailers of pricing software that automatically adapts retail prices to those of leading competitors.”

## Mitigating factor

- **Compliance training**
- **Stop using monitoring algorithm where there is a risk of RPM?**

IP 17/201: retail price agreements investigation under the case numbers AT.40465 (Asus), AT.40469 (Denon & Marantz), AT.40181 (Philips), AT.40182 (Pioneer)

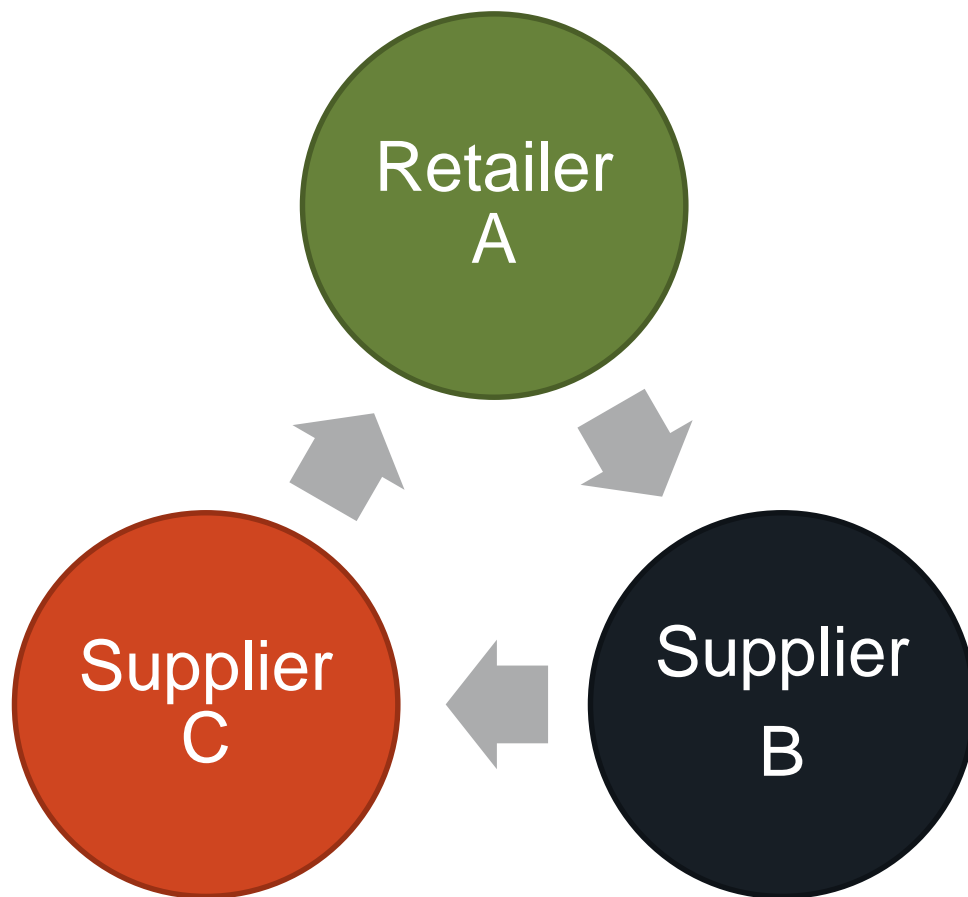


## Parallel algorithm

- Using the same pricing parameter and strategies
- Implementing prior concerted practice
  - Cartel
  - Hub-and-spoke
  - Third party agent

Algorithms and Collusion – Note from the European Union (DAF/COMP/WD(2017)12)



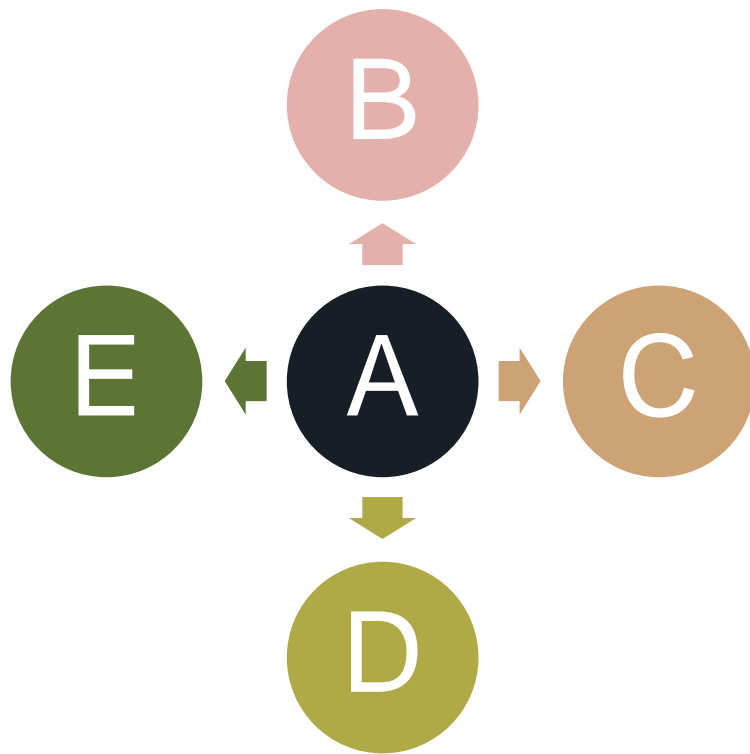


## Don't

- Jointly use the same pricing parameter and strategies
- Jointly program algorithms to follow the leader
- Coordinate through “hub-and-spoke”
- Outsource pricing decision to one and the same third party

## Do

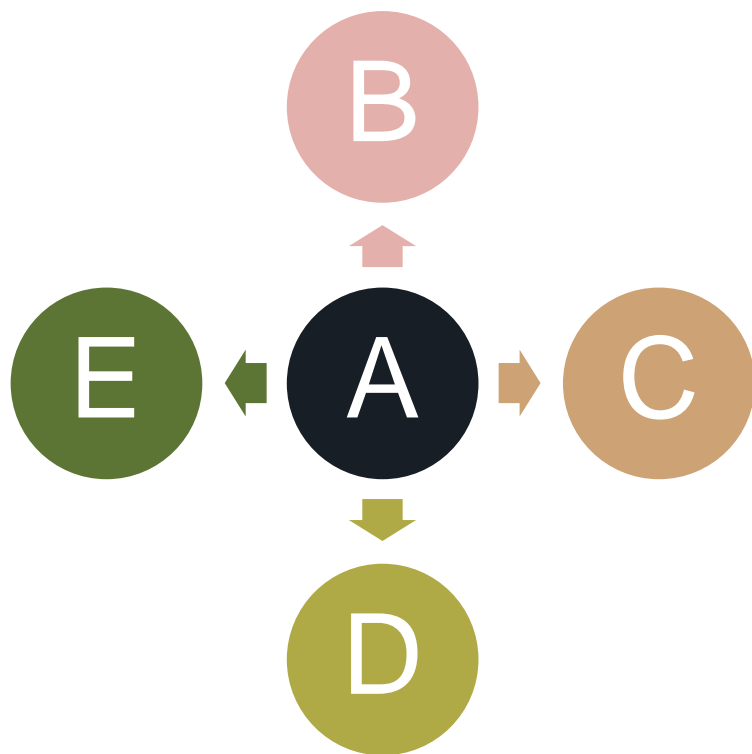
- Compliance training
- Take pricing decisions independently
- Intelligently adapt to market (*Wood Pulp II*)
- Implement clean team / operational separation measures, if necessary



## Signalling and self-learning algorithms

- **Invitations to collude** (*T-Mobile/Vodafone/KPN*)
- **Future pricing intentions** (*Shipping-Liner*)
- **Self-learning pricing** (“meeting of algorithms”?)

Algorithms and Collusion – Note from the European Union (DAF/COMP/WD(2017)12) and Horizontal Cooperation Guidelines



## Compliance tips

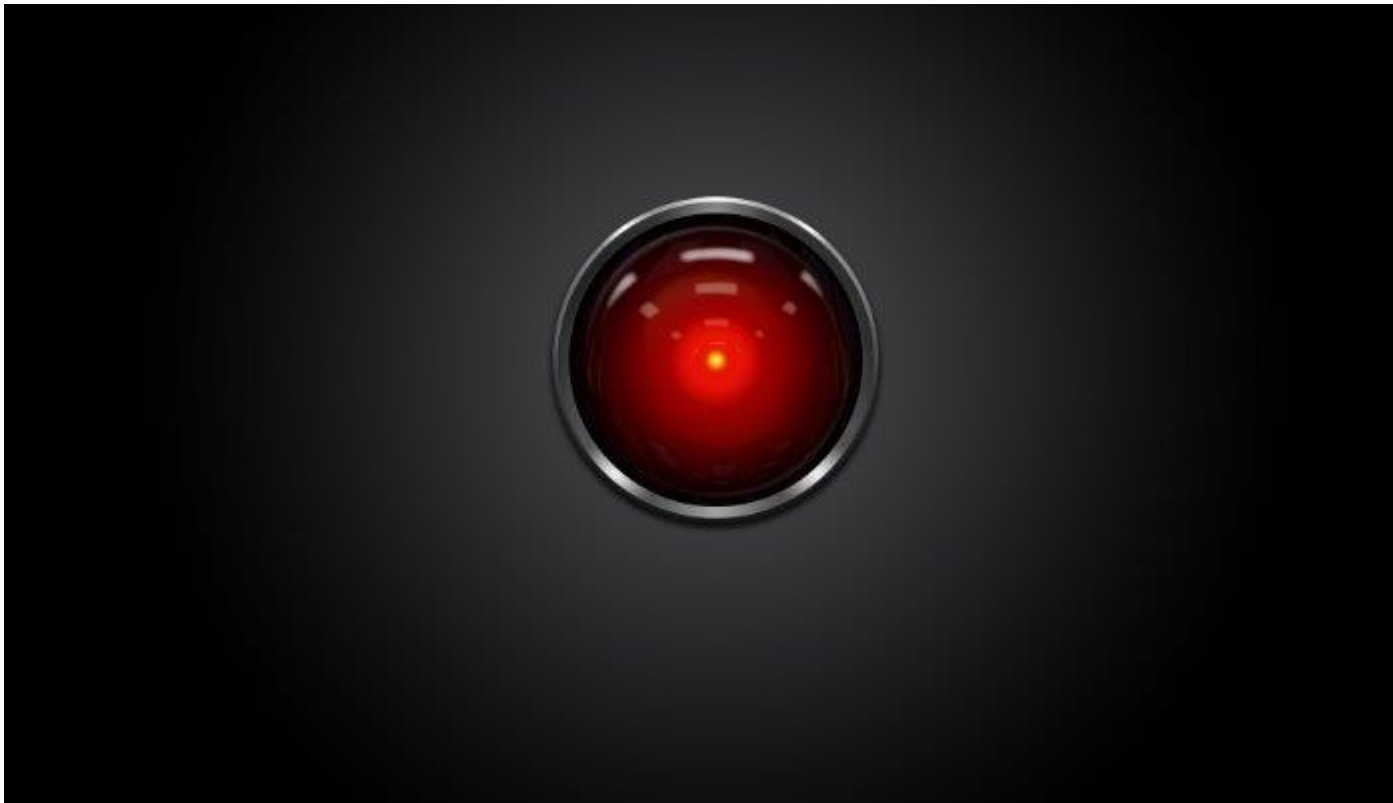
- Limited use for period of time
- Future maximum or committed prices
- Enable customers' switching
- Additional ad hoc compliance training
- Avoid “meeting of algorithms” – see next slide for examples

Algorithms and Collusion – Note from the European Union (DAF/COMP/WD(2017)12) and Horizontal Cooperation Guidelines

# “Meeting of algorithms” – examples

Offer	Acceptance
Firm intermittently sets a higher price for brief second	Competitor increases price to the value signalled
Firm programs algorithm to mimic the price of a leader	The leader, recognising this behaviour, increases the price
Firm publicly releases a pricing algorithm	Competitor downloads and executes the same pricing algorithm
Firm programs an anti-competitive price to be triggered whenever the competitor’s price is below a threshold	Recognising the algorithm, the competitor always keeps the price above the threshold
Firm uses algorithm to maximise joint profits (for instance, by accounting for the spillovers on competitors’ profits)	Competitor reacts with the same strategy

## (Highly Advanced Legal) Training and Audit Programme



# Global Coverage

Abu Dhabi	Houston	Santo Domingo	Africa	Italy
Beijing	Leeds	Seoul	Argentina	Mexico
Berlin	London	Shanghai	Brazil	Panamá
Birmingham	Los Angeles	Singapore	Chile	Peru
Böblingen	Madrid	Sydney	Colombia	Turkey
Bratislava	Manchester	Tampa	Cuba	Ukraine
Brussels	Miami	Tokyo	India	Venezuela
Budapest	Moscow	Warsaw	Israel	
Cincinnati	Newark	Washington DC		
Cleveland	New York	West Palm Beach		
Columbus	Northern Virginia			
Dallas	Palo Alto			
Darwin	Paris			
Denver	Perth			
Doha	Phoenix			
Dubai	Prague			
Frankfurt	Riyadh			
Hong Kong	San Francisco			

■ Office locations

■ Regional desks and strategic alliances

