



# THE ECONOMICS OF (BIG) DATA

PROF. DR. FLORIAN STAHL

# The Economics of (Big) Data

I What about Data?

II What about Economics?

III What about Economics of Data?

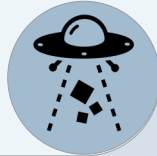
IV What about Privacy?

V What about Data Governance?

VI The Importance of Economics of (Big) Data

# Four Growing Policy Challenges for Economics of Data and Analytics

Incumbents **hoard data** and thereby harm competition, **reducing overall utility**



Across companies that handle data, **cyber-security levels differ severely**



Intransparent data markets **focus on data collection** while they **neglect privacy**



Threat of **fragmented global data markets** puts large gains at risk

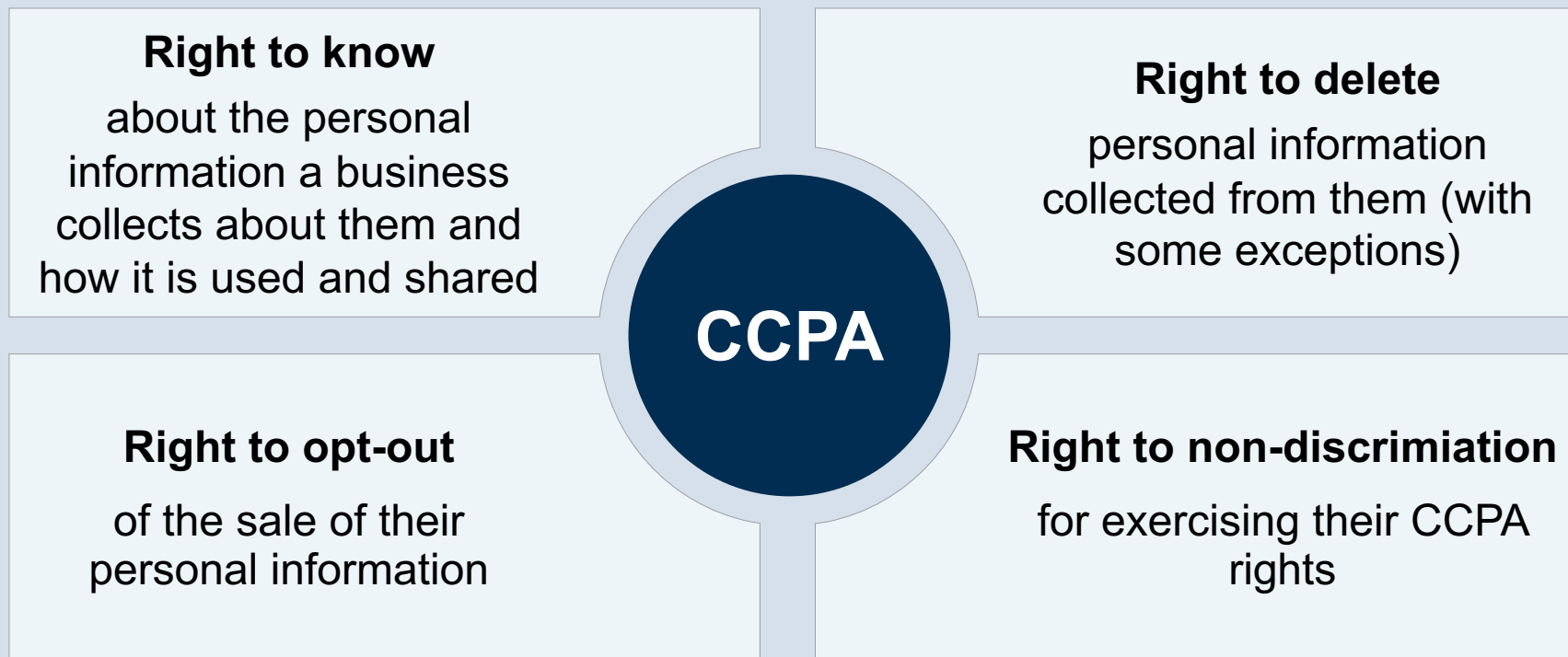


**Policy needs to be modernized to tackle current and future challenges!**

# Europe's Data Legislation - GDPR



	Right to <b>be informed</b>		Right to <b>restrict processing</b>
	Right of <b>access</b>		Right to <b>data portability</b>
	Right to <b>rectification</b>		Right to <b>object</b>
	Right to <b>erasure</b>		Rights in relation to automated decision making and profiling



# An Unsolved Issue Data Concentration

# Alphabet



# yahoo!

“Facebook and its elite brethren will do anything to make sure they are not the next Yahoo or Radio Shack, killed by disruption and failure to innovate. This translates into paying obscene sums for technology that might challenge their dominance one day.”

*Steven Davidoff Solomon (2016), Professor at Berkeley*



# Consumer Data Ownership Concept

## Status Quo

1010  
1010



Firm stores and owns data



Firm collects data



## Consumer Data Ownership Concept



Consumers sell their data to multiple firms



Consumers own their data

1010  
1010

# Consumer Data Ownership Concept Example

## If Tesla owners would own their driving data



The Tesla creates  
drive recordings  
while in use



The Owner sells  
the data to Tesla  
and Waymo for  
a profit



Every firm's AI  
improves and  
cars become  
safer

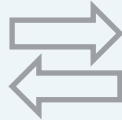


# Consumer Data Ownership Concept Feasibility

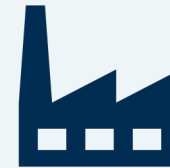
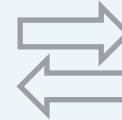
## Intermediaries could match consumer data with multiple firms



Consumer provide intermediaries with their data and selling preferences



Intermediary matches selling preferences with firms in need for data



Firms gain access to wider data

# Consumer Data Ownership Concept Simulation for Efficiency



**Data externalities** describe what information of a data subject's data reveals about other data subjects' data.

Welfare fully captured by firms if  
“substitutable data” is of interest

1.

Economically efficient for  
situations in which the firm is  
interested in specific data

2.

Welfare fully captured by  
consumers if “complementary  
data” is of interest

3.



How the firm and consumers divide the surplus created by data depends on the presence of data externalities.

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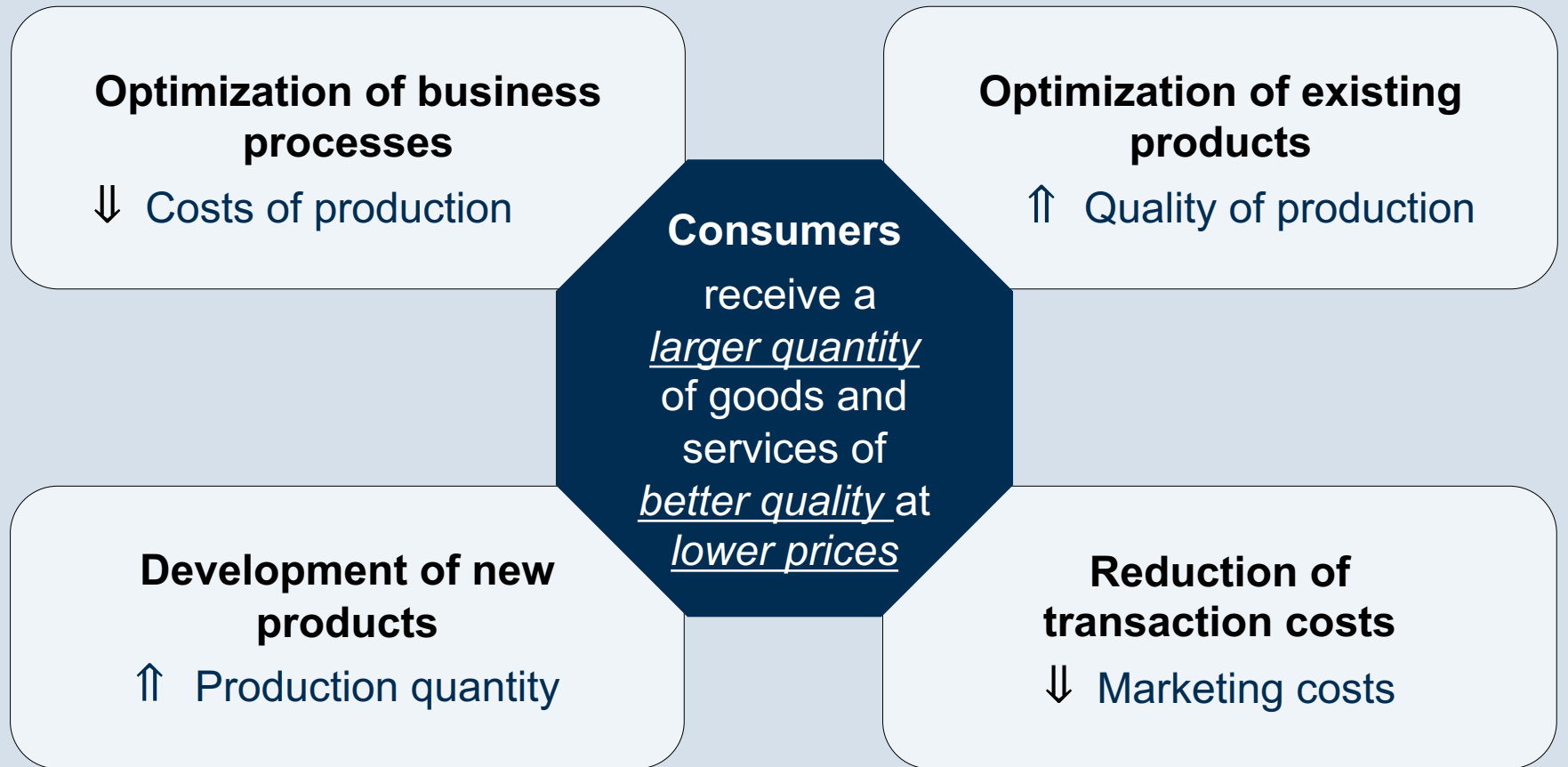
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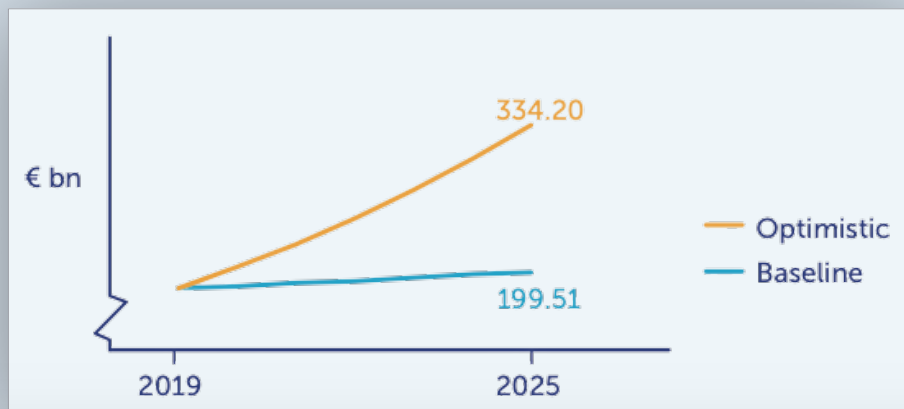
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# What for?

## Outcomes of Economics of Big Data

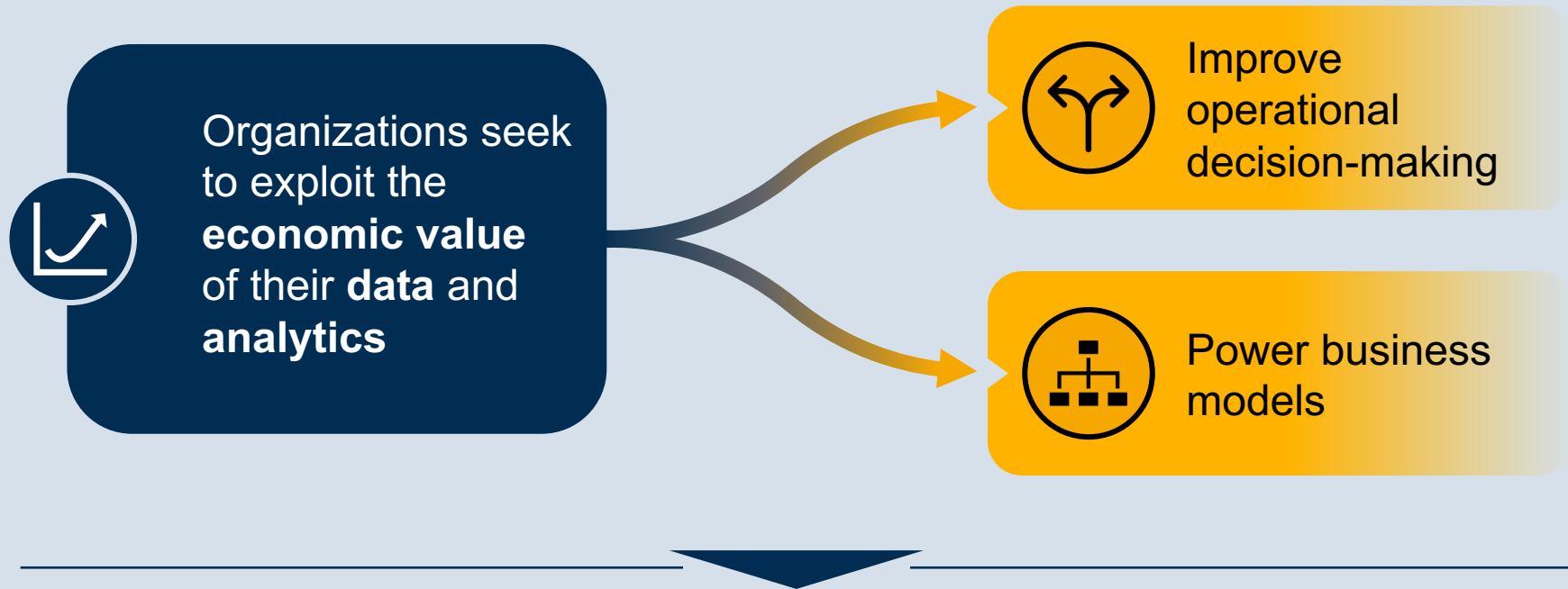


# Forecast for Valuation of Open-Data-Market in the EU



Year	2019	2020	2021	2022	2023	2024	2025
GDP in € billion for EU27+	15 539.24	15 694.63	15 898.66	16 121.24	16 346.94	16 575.80	16 807.86
ECB: expected real GDP growth in %	1.10	1.00	1.30	1.40	1.40	1.40	1.40
Baseline: open data market size in € billion for EU27+	184.45	186.30	188.72	191.36	194.04	196.75	199.51

# Summary



Applying economic concepts to data and analytics may help organizations as they seek to **prioritize** and **optimize** their **data** and **analytic investments**.