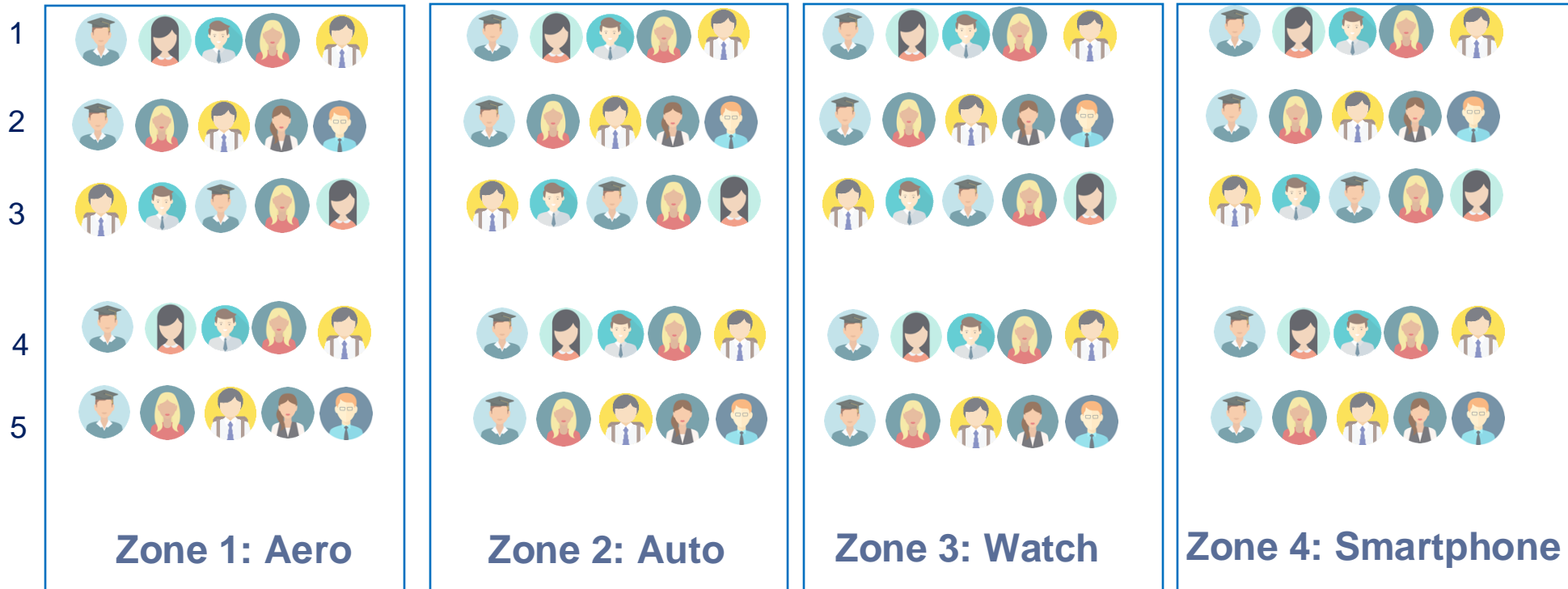


Class Layout – Please Sit with Your Group

Screen



The last row of the class are reserved and must remain empty!

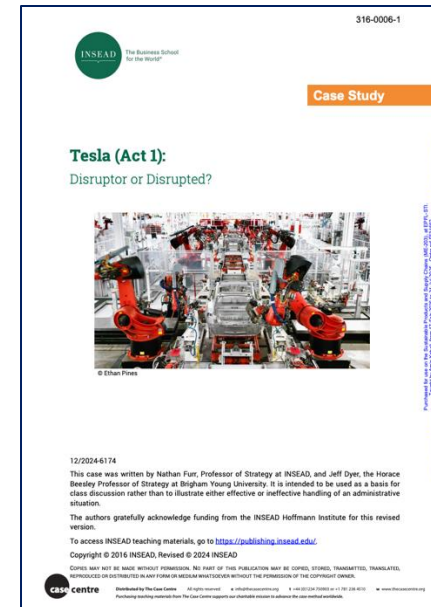


Sustainable Products & Supply Chains (ME-203)

Case Study: Tesla

Amin Kaboli

Week 4 – March 13th, 2025



Mobility



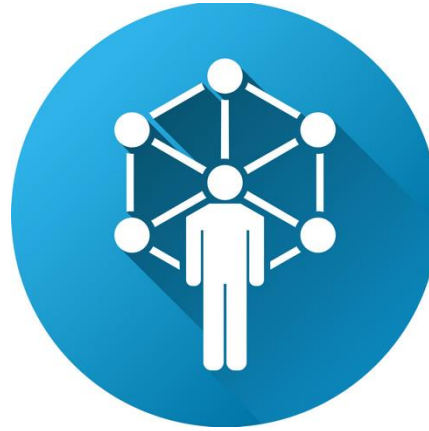
Image Source: World Bank Blog

Disruptions in Mobility



Changing the fuel:
Electrification

Challenges:
Battery costs
Charging times
Distance per charge
Charging infrastructure



Changing ownership:
Sharing

Challenges:
Digital barriers
Cultural barriers
Safety



Changing the driver:
Automation

Challenges:
Technology development
Quality data collection
Legal approval
Geographic restrictions

Industries Facing Disruption



Auto Manufacturers



Technology

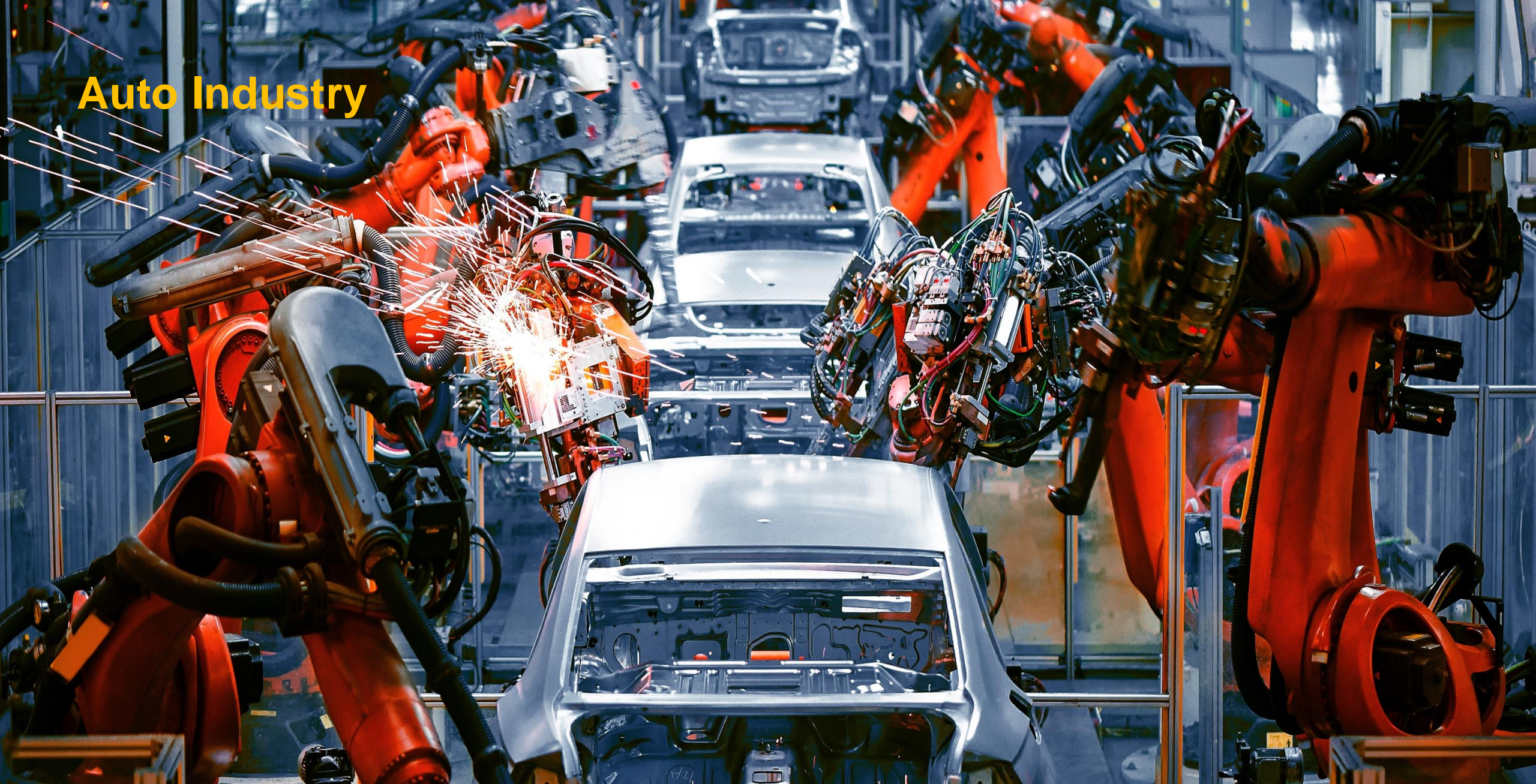


Energy



Transportation &
Distribution

Auto Industry



Tesla Motors – Disrupting the Auto Industry?



The Learning Outcomes

By the end of this case study, the student must be able to:



Analyze Tesla's products and supply chains



Evaluate Tesla's role in auto industry transformation



Assess Tesla's impact on sustainability

Case Questions

Case Question



30 Min

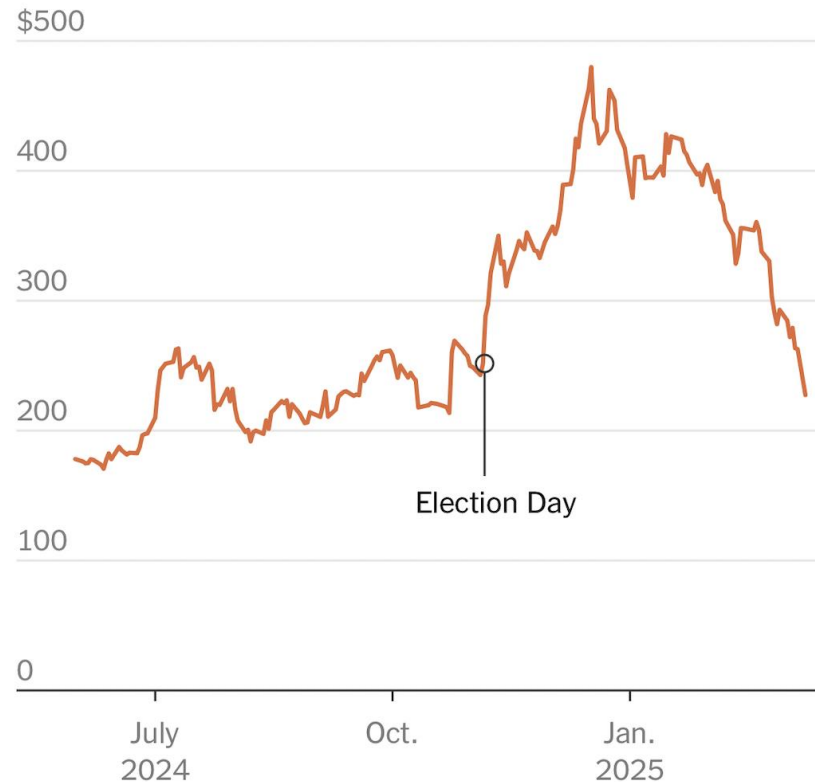
- Q1:** Why would Tesla enter such an unattractive industry? What are the risks to Tesla in entering such a difficult industry?
- Q2:** What are the elements comprising Tesla's business model? How did Tesla's business model change over time?
- Q3:** How is Tesla different from its rivals? How does Tesla deviate from the business model of a traditional auto maker?
- Q4:** What is the "system" that impacts Tesla and its ability to succeed?
- Q5:** Is Tesla foolish to pioneer a new architecture and do it all in house or Tesla should outsource? Why? What are the risks?
- Q6:** What are pros/cons of Tesla open patents? why are there no tours of the Gigafactory?
- Q7:** Tesla is making its own components should it have diversified into Tesla Wall? Is this a distraction or a plus?
- Q8:** What factors are most important for predicting Tesla's future success?

Question 1:

**Why would Tesla enter such an unattractive industry?
What are the risks to Tesla in entering such a difficult industry?**

Tesla's Share Price & Market Capitalization

Tesla's share price



Source: FactSet • By The New York Times

Tesla's rally runs out of gas













Source: LSEG

Market Capitalization – Auto Manufacturers (March 2025)











Largest automakers by market capitalization

Companies: 63 total market cap: \$2.379 T

Rank by	Market Cap	Earnings	Revenue	P/E ratio	Dividend %	Operating Margin	Employees	More +
Rank	Name	Market Cap	Price	Today	Price (30 days)	Country		
1	 Tesla TSLA	\$800.83 B	\$248.98	-7.98%		USA		
2	 Toyota TM	\$246.30 B	\$185.79	-0.68%		Japan		
3	 Xiaomi XIACF	\$167.94 B	\$6.70	-3.60%		China		
4	 BYD 002594.SZ	\$137.56 B	\$48.49	-0.18%		China		
5	 Ferrari RACE	\$80.39 B	\$450.42	-2.08%		Italy		
6	 Mercedes-Benz MBG.DE	\$63.58 B	\$66.03	-0.43%		Germany		
7	 Volkswagen VOW3.DE	\$61.28 B	\$120.01	-0.92%		Germany		
8	 BMW BMW.DE	\$56.96 B	\$91.99	-0.05%		Germany		
9	 Porsche P911.DE	\$55.83 B	\$60.23	-2.99%		Germany		
10	 General Motors GM	\$47.56 B	\$47.80	-0.99%		USA		














Top publicly traded automakers by revenue

Companies: 63 total revenue (TTM): \$2.828 T

Rank by	Market Cap	Earnings	Revenue	P/E ratio	Dividend %	Operating Margin	Employees	More +
Rank	Name	Revenue	Price	Today	Price (30 days)	Country		
1	 Volkswagen VOW3.DE	\$354.86 B	\$120.01	-0.92%		Germany		
2	 Toyota TM	\$305.78 B	\$185.55	-0.55%		Japan		
3	 General Motors GM	\$187.44 B	\$47.80	-0.99%		USA		
4	 Ford F	\$184.99 B	\$9.59	-1.03%		USA		
5	 BMW BMW.DE	\$162.84 B	\$91.99	-0.05%		Germany		
6	 Mercedes-Benz MBG.DE	\$161.20 B	\$66.03	-0.43%		Germany		
7	 Honda HMC	\$142.45 B	\$29.05	-0.38%		Japan		
8	 Hyundai HYMTF	\$127.81 B	\$47.00	-3.87%		S. Korea		
9	 Stellantis STLA	\$101.32 B	\$12.31	-1.36%		Netherlands		
10	 Tesla TSLA	\$97.69 B	\$246.88	-7.07%		USA		

Top automakers by operating margin

Companies: 63 average operating margin (TTM): 10.21%

Rank by	Market Cap	Earnings	Revenue	P/E ratio	Dividend %	Operating Margin	Employees	More +
Rank	Name	Operating Margin	Price	Today	Price (30 days)	Country		
1	 Ferrari RACE	28.29%	\$448.30	-1.60%		Italy		
2	 Kia 000270.KS	15.81%	\$68.24	-0.71%		S. Korea		
3	 Porsche P911.DE	15.64%	\$60.23	-2.99%		Germany		
4	 Toyota TM	15.44%	\$185.55	-0.55%		Japan		
5	 Maruti Suzuki India MARUTI.NS	13.86%	\$133.55	-0.06%		India		
6	 Hotai Motor 2207.TW	13.60%	\$18.10	-0.67%		Taiwan		
7	 Hyundai HYMTF	13.29%	\$47.00	-3.87%		S. Korea		
8	 Subaru 7270.T	12.68%	\$18.67	-4.65%		Japan		
9	 Mahindra & Mahindra M&M.NS	11.76%	\$30.44	-0.29%		India		
10	 Yulon Motor Company 2201.TW	11.59%	\$1.39	-0.66%		Taiwan		
11	 Mercedes-Benz MBG.DE	10.86%	\$66.03	-0.43%		Germany		
12	 Force Motors FORCEMOT.NS	10.65%	\$82.22	-1.40%		India		
13	 Tesla TSLA	9.56%	\$246.60	-6.95%		USA		

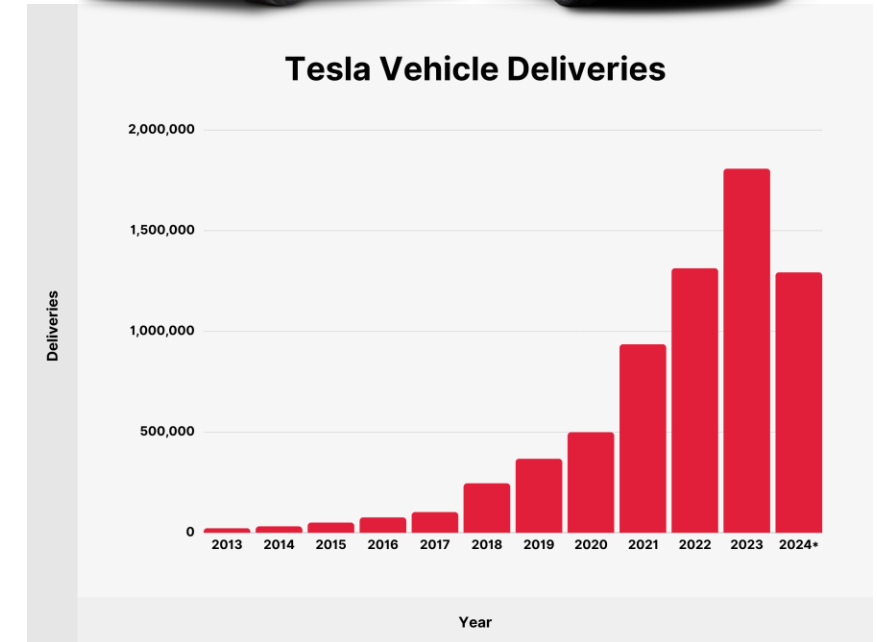
yahoo!finance

Elon Musk insists Tesla isn't a car company as sales falter

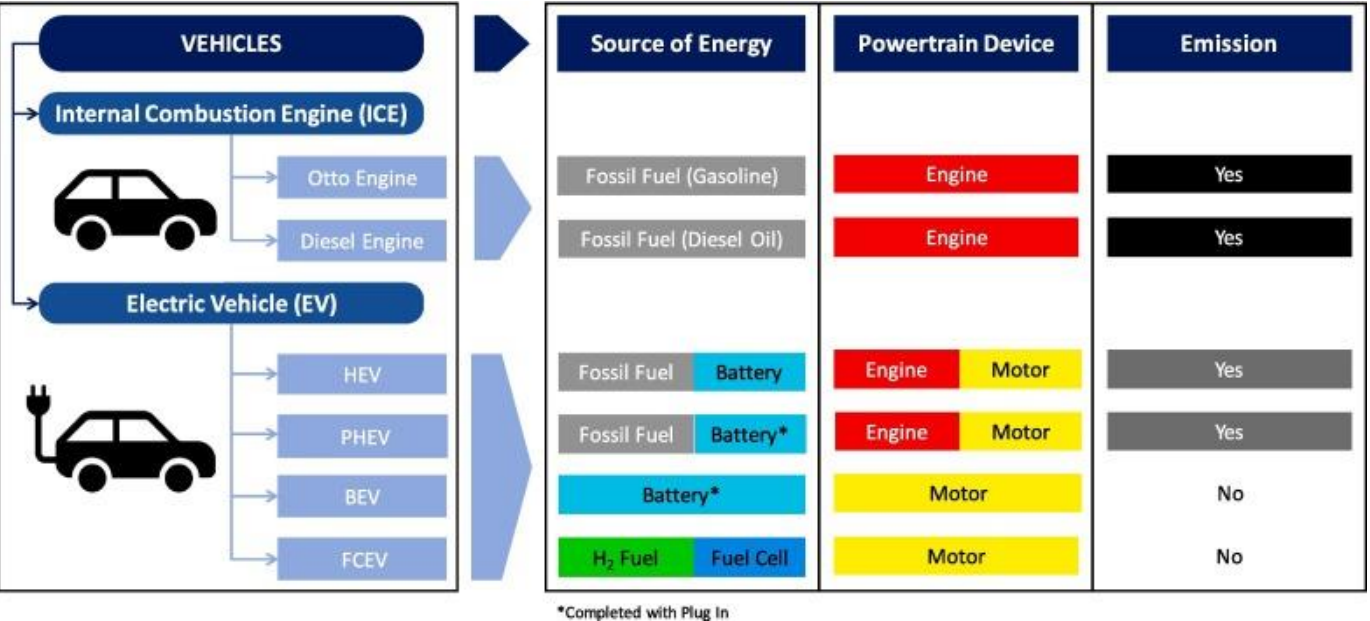
Source: <https://companiesmarketcap.com/automakers/largest-automakers-by-market-cap/>

Auto Manufacturers (Sales 2024)

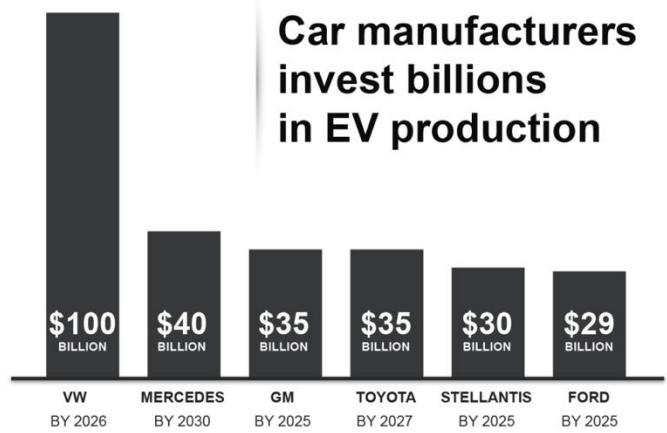
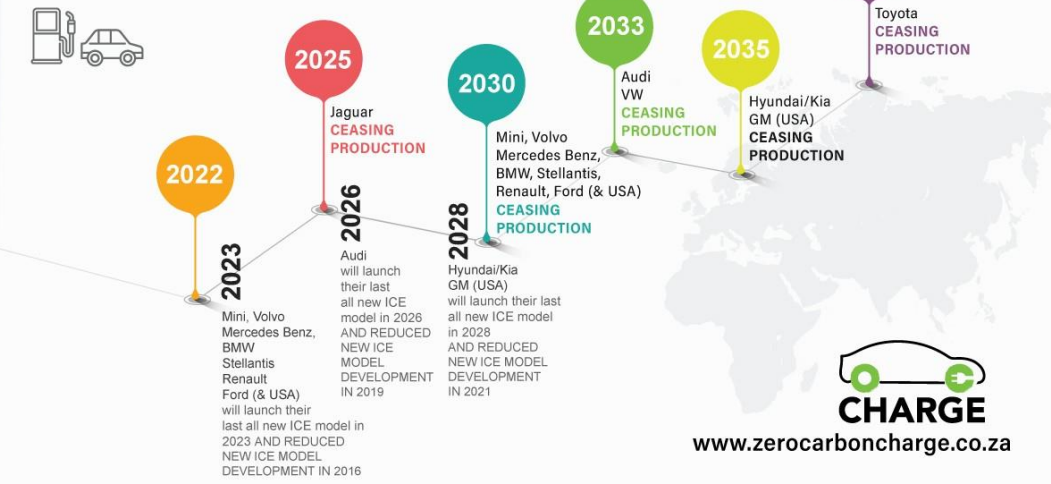
Rank	Manufacturer	Sales (Mio units)
1	Toyota Group	10.39
2	Volkswagen Group	8.48
3	Hyundai-Kia	6.82
4	Renault Nissan Alliance	6.24
5	General Motors	5.96
6	Stellantis	5.32
7	Honda Motor	3.88
8	Ford Group	3.87
9	BYD	3.82
10	Suzuki	3.09



Source: <https://focus2move.com/world-car-group-ranking/>



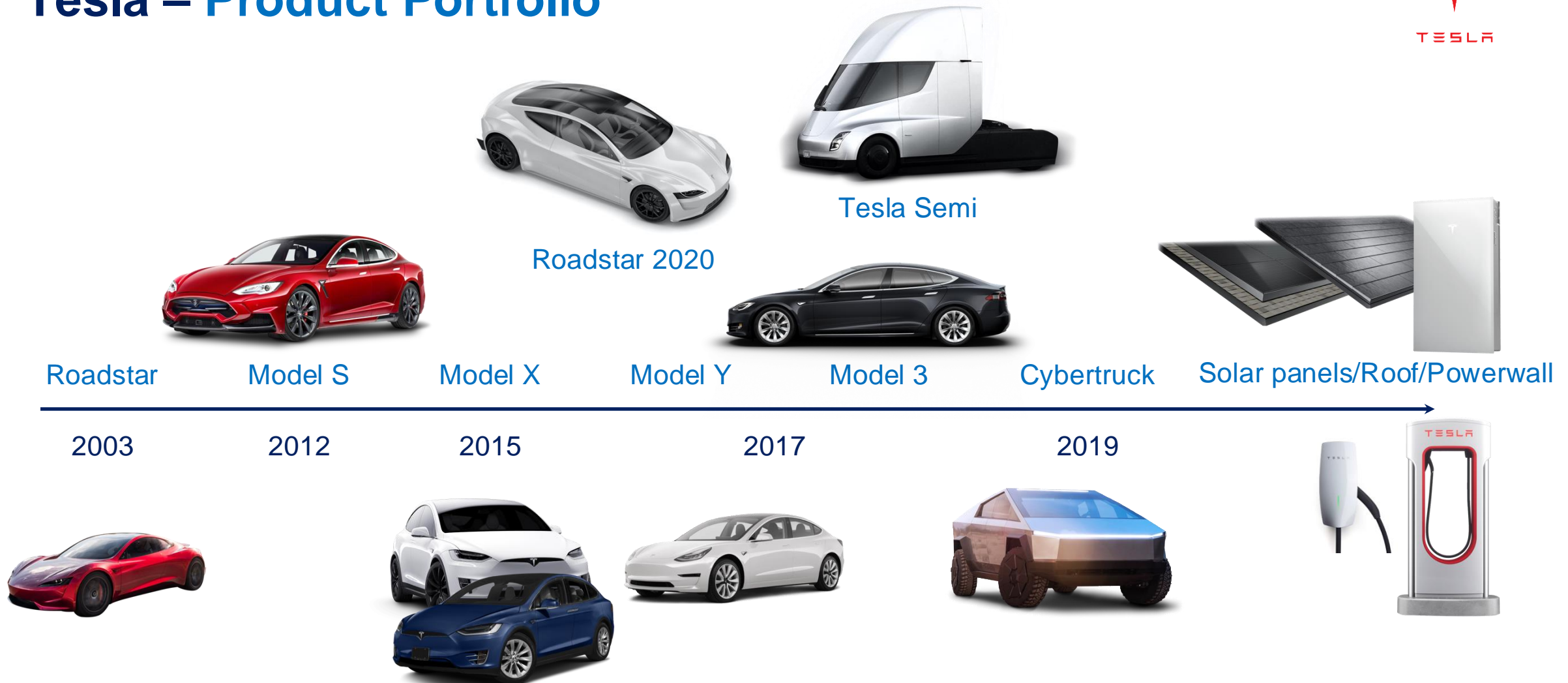
Manufacturers ceasing production of ICE vehicles in Europe



Question 2:

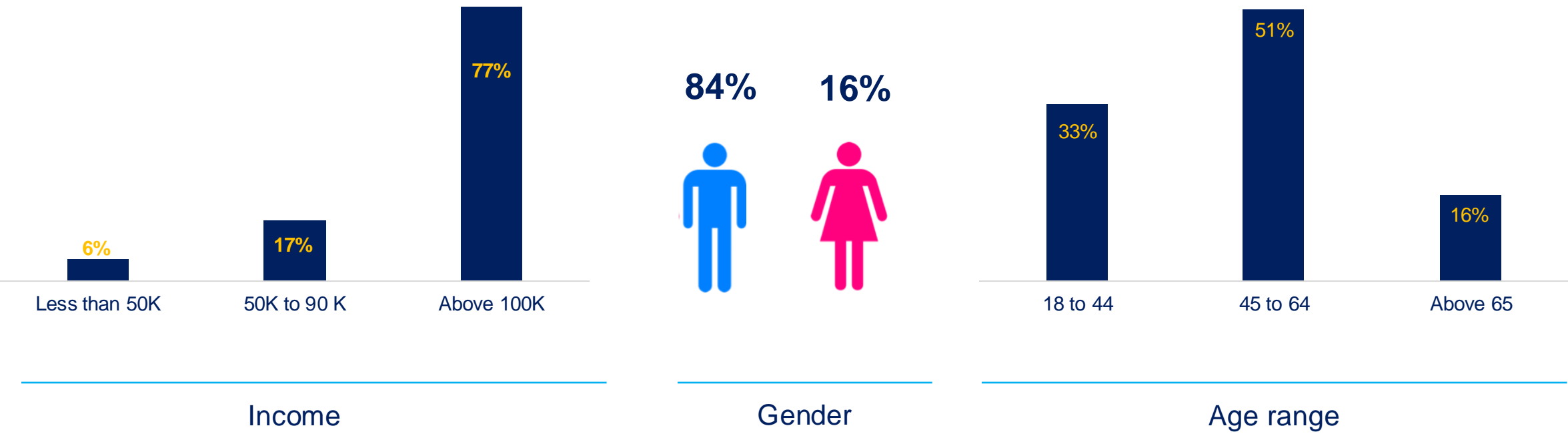
**What are the elements comprising Tesla's business model?
How did Tesla's business model change over time to
accommodate its development from niche to a mass-market
player?**

Tesla – Product Portfolio



Source: Tesla's website

Tesla's Customers



Source: <https://www.investopedia.com/articles/personal-finance/021715/what-drives-consumer-demand-tesla.asp>

Question 3:

**How is Tesla different from its rivals?
How does Tesla deviate from the business model of a
traditional auto maker?
Why does Tesla do it differently?**

BEV, PHEV, EREV, HEV



Pure Electric / Battery-Powered Electric Vehicle **BEV**
Example: Chevrolet Bolt



Extended Range Electric Vehicle **EREV**
Example: BMW i3

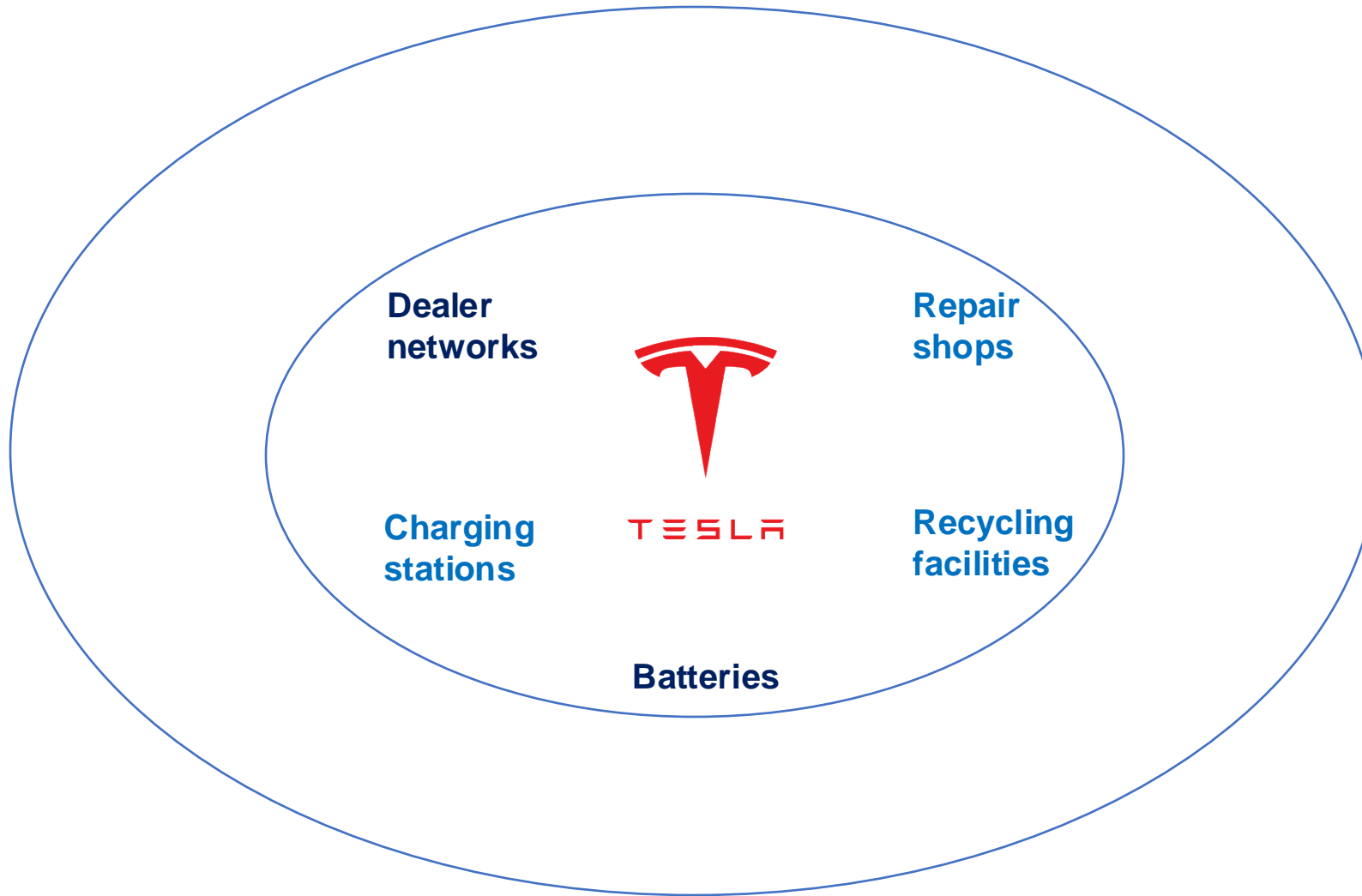


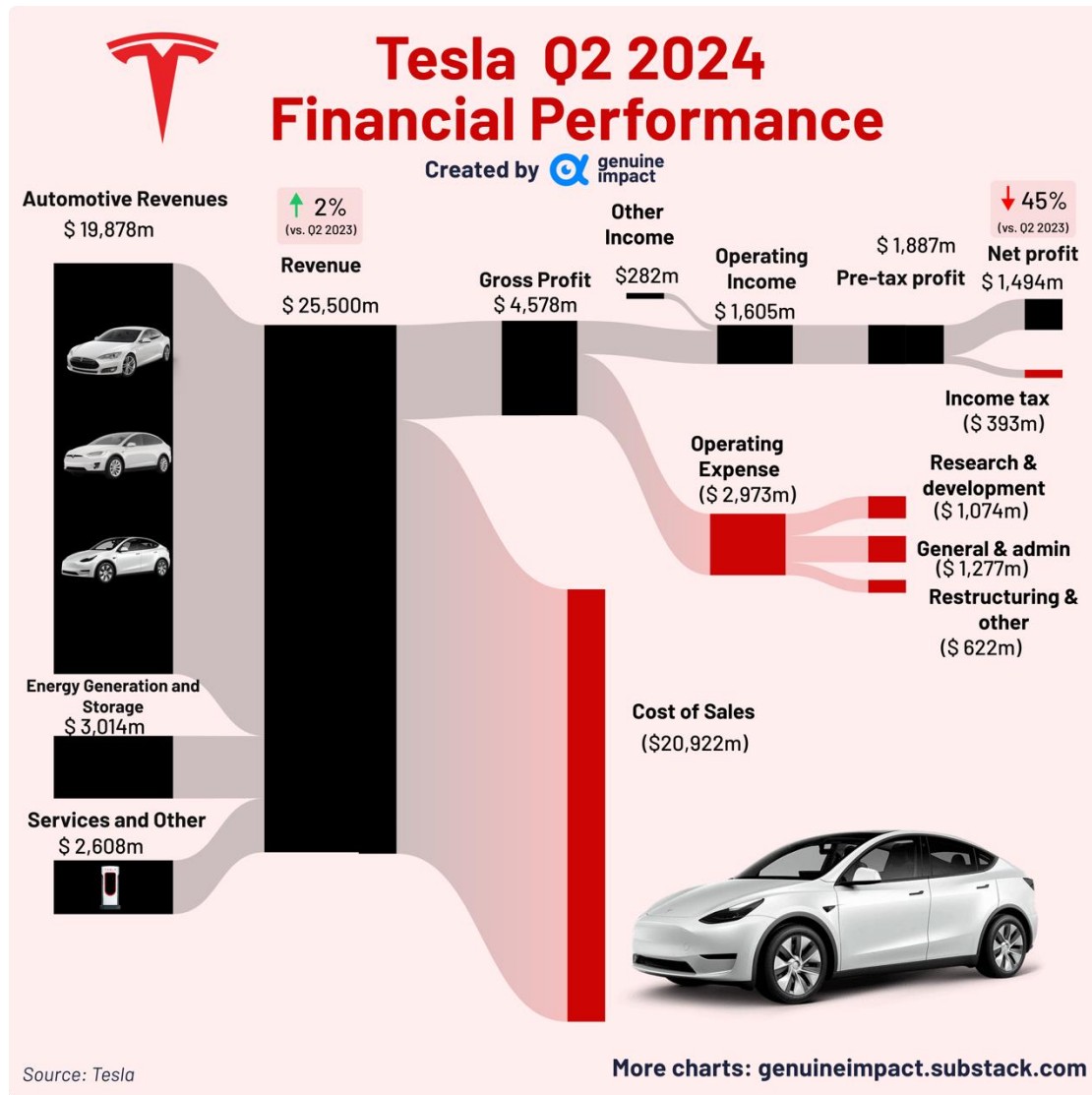
Plug-In Hybrid Electric Vehicle **PHEV**
Example: Kia Niro Plug-In



Hybrid Electric Vehicle **HEV**
Example: Toyota Prius

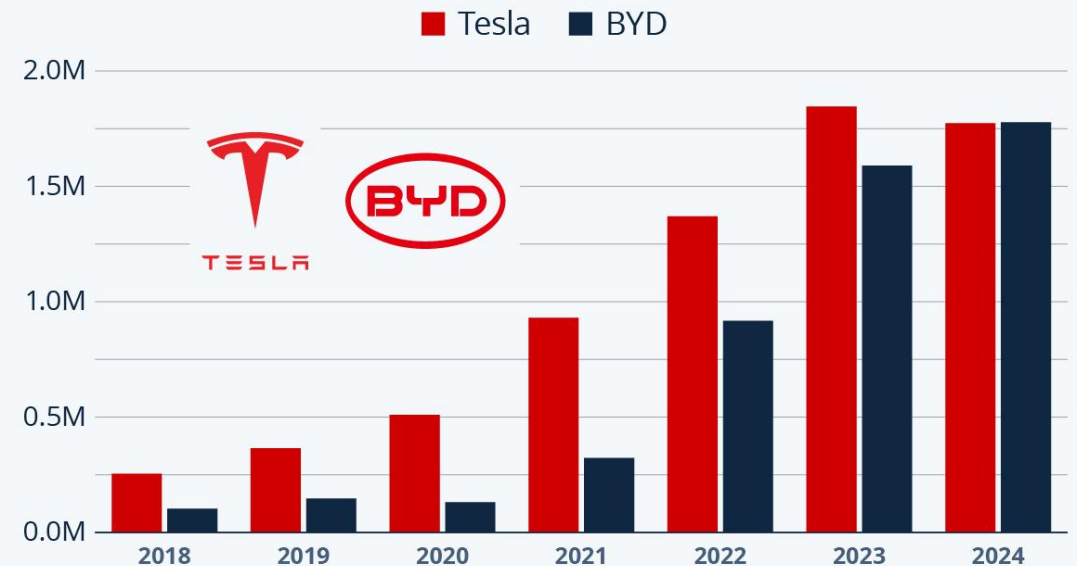
Tesla – Ecosystem ... How is Tesla different from its rivals?





BYD Pulls Ahead of Tesla to Become Largest EV Maker

Annual battery electric passenger vehicle production of Tesla and BYD*



* BYD figures for 2018 and 2019 are sales, as the companies didn't report production volume back then.

Sources: Tesla, BYD

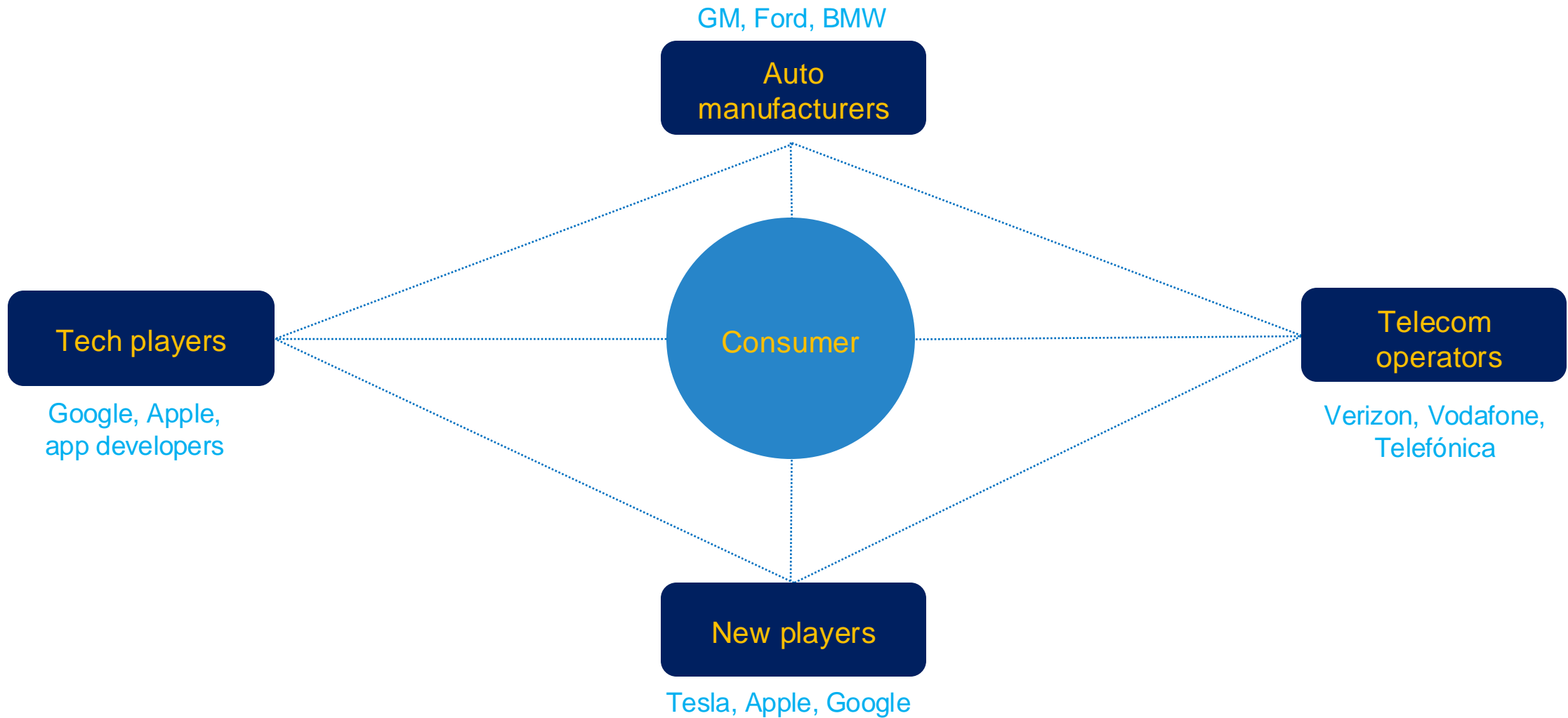


statista

Question 4:

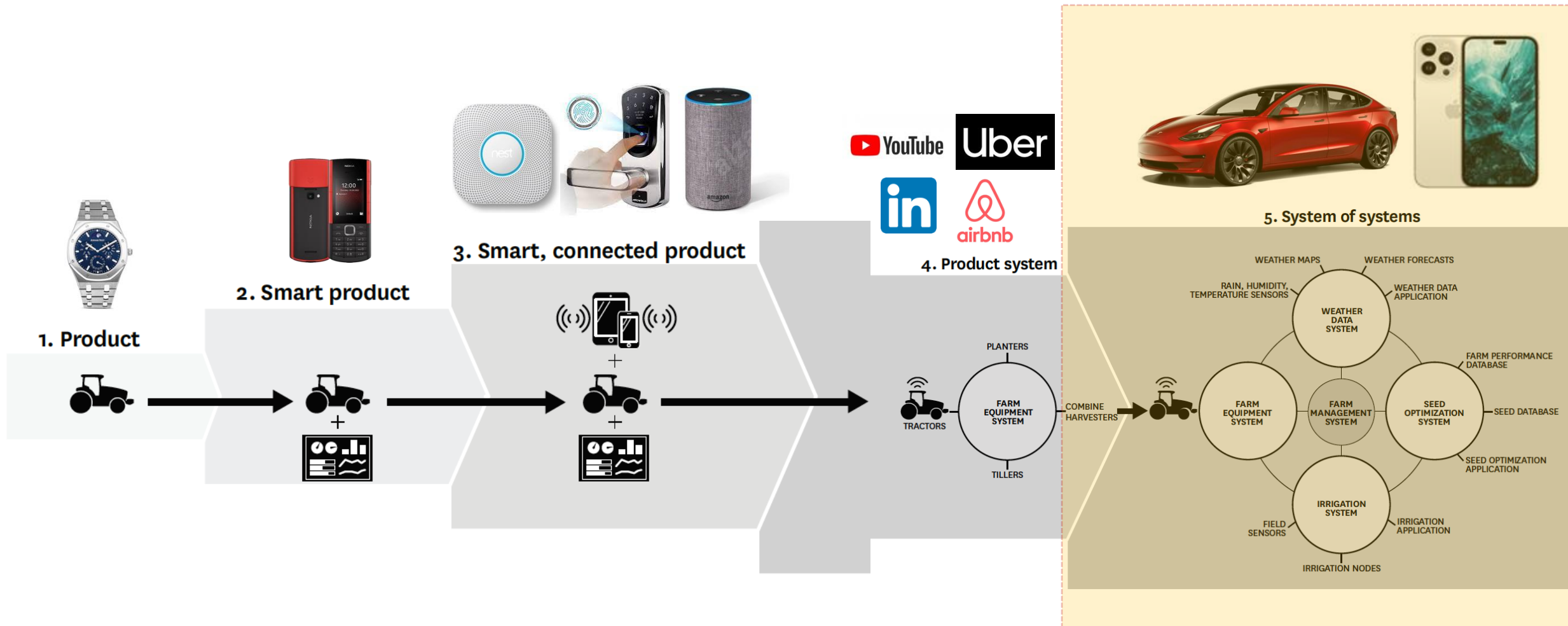
What is the “system” that impacts Tesla and its ability to succeed?

New Ecosystem of Auto Industry



Source: Sunil Gupta, Driving Digital Strategy, Harvard Business Review Press, 2017

From Product to System of Systems



Source: How Smart, Connected Products Are Transforming Companies, Harvard Business Review, 2014

Question 5:

Is Tesla foolish to pioneer a new architecture and do it all in house or Tesla should outsource? Why? What are the risks?

Question 6:

Why Tesla opened up its patents? What are the pros and cons? If it's willing to open the patents, why are there no tours of the Gigafactory?

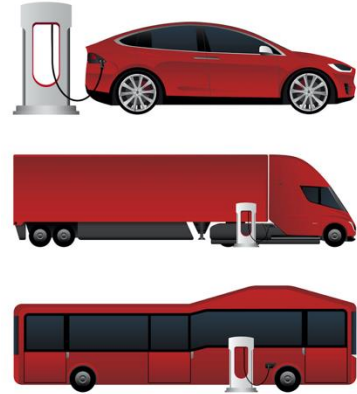
Question 7:

Tesla is making its own components, charging stations, dealerships and repair centers. Should it have diversified into Tesla Wall? Is this a distraction from the core, or it is a plus?

Tesla – Master Plan Part Deux



Creating stunning solar roofs with seamlessly integrated battery storage



Expand Tesla lines to fill other vehicle segments: pickup trucks, semi truck, buses, etc.



Develop a self-driving capability that is 10X safer than manual via massive fleet learning.



Enable autonomous Tesla cars to be part of a shared fleet, making money for Tesla owners while they aren't using their cars

Question 8:

What factors are most important for predicting Tesla's future success?

Assignment 3 – Best Carbon Footprint Materials

Read the questions in your booklet carefully and ask your coaches if you have any questions.