The Future of **Mobility**

ADKS

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Executive Summary

Situation	Leader in radar technology with operations starting in 2015	Product has yet to be manufactured at scale	Robotaxis are natural customers but most operate sub-scale globally

Questions	Which US Robotaxi company to partner with?	What is the value proposition of Arbe to the Robotaxi company?	What is the impact on volumes, revenues and profits in the partnership?	How would the partnership be ESG compliant?

Recommendations	Partner with Waymo to make Arbe's technology ubiquitous	Target Waymo + Arbe together dominating the ridesharing market on the Waymo One / Lyft / Uber platforms	Focus on driving efficiency of Waymo + Arbe cars to reduce CO_2 emissions

Impact by 2030 for Waymo + Arbe	**$3.6bn** revenues	**$2.5 bn** Operating margins	**15,000 tonnes** Reduction in CO_2 Emissions	**30%** AV market share	**70%** margin %

Impact by 2030 for Arbe	**$120mn** ~ 20% additional revenues	**$50 mn OPEX** Offset by investment by Waymo	**45%** Operating margins

Arbe faces several challenges in meeting its stated strategic goals

Strategic Goals

Enter and Dominate the US Market
- First nation adopter of Autonomous Vehicle (AV) technology
- Tap into the largest shared mobility economy

Partner with a US-based Robotaxi firm
- Tap into shared mobility companies as first adopters
- Scale rapidly, accelerate path to steady state operating margins of 40%+ with ecosystem partners

Reduce CO2 Emissions and work closely with regulators
- Leverage technology & data to improve efficiency of mobility
- Improve safety of cars with breakthrough technology

Challenges

Experimental technology in early commercialization

Perceived competition from adjacent technologies, e.g., cameras, LiDAR

Low/decreasing adoption of robotaxis within top US shared mobility companies

Nascent market => unknown scalability, revenues and margins

Upfront investment necessary to set up co-located factory in the US

We analysed the robotaxi supply chain in the US, and believe Waymo is Arbe's best partner

"The best course of action is to target an AV integrator since they offer AV subscriptions to rideshare platforms." - *Expert interview*[1]
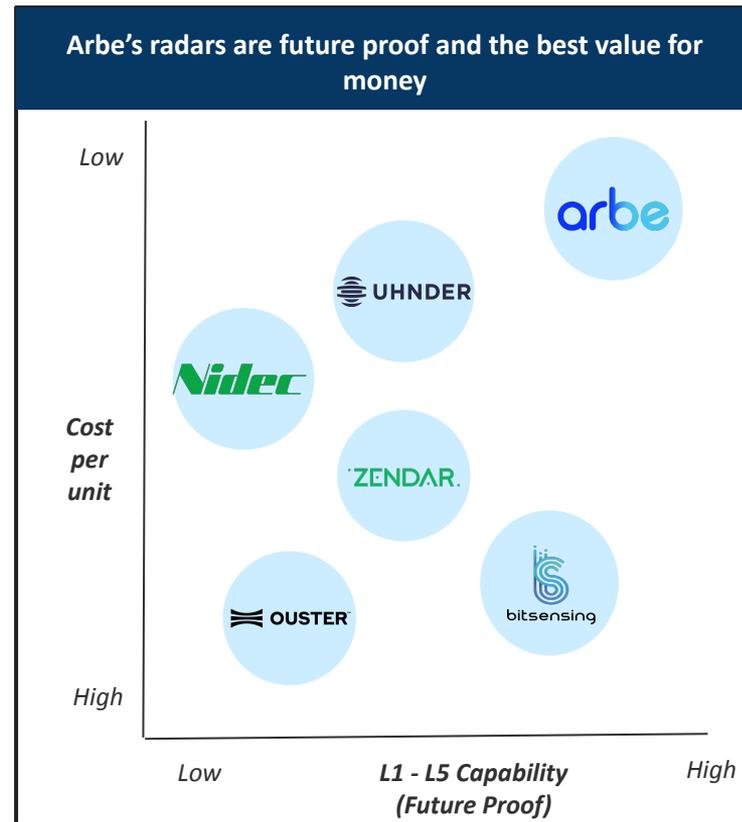
Traditional Auto/EV OEMs	**AV Equipment Integrators**	**Ridesharing Platforms**
Manufacture EV/ICE passenger vehicles	Use proprietary hardware and software to convert passenger vehicles to AVs	2-way marketplace connecting users with vehicles

Traditional Auto/EV OEMs
- ✗ Core business not contingent on AVs
- ✗ Very long development cycles
- ✓ Could eventually partner with Waymo

AV Equipment Integrators
- ✓ Key champion and early adopter of AV technology
- ✓ Already offers subscriptions to ridesharing platforms
- ✓ Most advanced AV company today with L3-4 cars
- ✓ Extremely powerful parent (Alphabet) with deep pockets

Ridesharing Platforms
- ✗ High marketing costs, competition and eroding margins question sustainability
- ✗ Still a relatively nascent industry, winner unknown
- ✗ Lack of commitment to the AV market
- ✓ Waymo only player with aspirations to become a full AV platform

Sources: [1] Appendix A

Arbe is the undisputed global technology leader in AV radars

Arbe offers the best and most flexible automotive vision technology globally

Arbe's radars are future proof and the best value for money

Sources: [1] Arbe Robotics [2] Ouster [3] Uhnder [4] Nidec Technology

Executive Summary | Issue Analysis | Key Players | Recommendations | Impacts | Risks | Synthesis

A Waymo-Arbe partnership could eventually be the most dominant Robotaxi company in the US

Arbe can help Waymo leapfrog into L5 compliance

✓ 100x more detailed image through high resolution radar sensing technology

✓ Almost ZERO false alarms

✓ Unique ability to identify a variety of objects under a variety of driving conditions

| L5 |
| L4 |
| L3 |
| L2 |
| L1 |

The Waymo+Arbe partnership can scale to 400k cars in just 8 years

	2022	2030
Partnership structure	Fleet supplier to Lyft[1] and Uber[2]	Independent robotaxi company[3]
No. of annual rides in the US ridesharing market (mn)	1,400**	2,400
Waymo + Arbe ridesharing market share	0.64%	10%
Average ride shares per car per day	8-10	15-20
Number of Waymo cars on road	3,000	4,00,000
Average fare per ride	$15	$15
Take-rate for Waymo+Arbe*	100%	100%
Total revenue ($ mn)	$135	$3,600

*versus 20% take-rate in traditional ridesharing with drivers **1.4bn = Uber + Lyft (Lyft is ¼ Uber) with an average ride at $25

| Executive Summary | Issue Analysis | Key Players | Recommendations | Impacts | Risks | Synthesis |

The partnership could structurally be the most profitable and ESG compliant Robotaxi company in the US

Waymo + Arbe robotaxis could be 4x as profitable as traditional shared taxis[1]

Uber/Lyft

Drivers keep about 60 - 70% of the ride fare **70%**

Gross Margin **20%**

Maintenance + Fuel **10%**

Waymo + Arbe

Cost of buying sensors from Arbe **<1%**

Gross Margin **79%**

Maintenance + Fuel **20%**
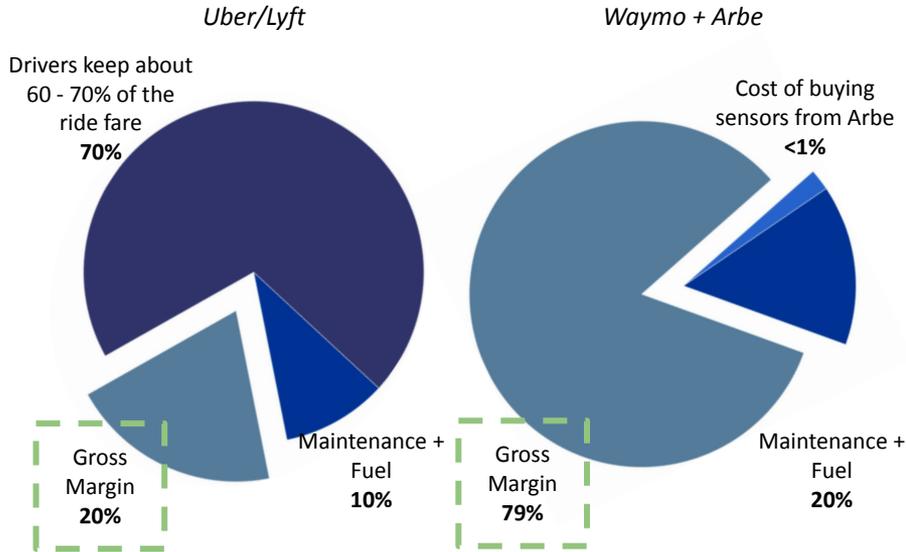
*Fare per year = $15 * 10 trips per day * 300 days = $45,000; Cost of buying sensors per car = $150; % of buying sensors per car = 150/45,000 = 0.3%; Cost of Maintenance + Fuel = 20%*

L3+ robotaxis will be the best equipped to meet ESG norms

1 Better efficiency results in better car mileage

"With an increasing number of AVs on the road with fully optimised movement, we will find fewer emissions and better mileage for vehicles." - *Expert Interview*[2]

2 Less private cars → Fewer emissions

3 Increased ridesharing → Fewer trips → Fewer emissions

Sources: [1] Appendix C [2] Appendix A

Executive Summary	Issue Analysis	Key Players	Recommendations	Impacts	Risks	Synthesis

Financials[1]: Waymo + Arbe partnership

No. of radars sold per year	Financials	Potential Operating Expenditure for a manufacturing facility

No. of radars sold per year

No. of radars sold (millions)

- 2022: 0.02
- 2023: 0.04
- 2024: 0.05
- 2025: 0.09
- 2026: 0.13
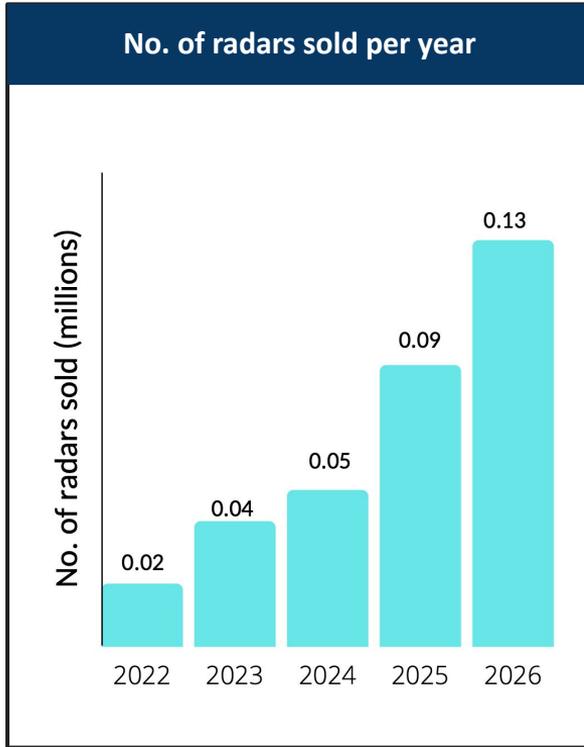
Financials

Total Revenues ($ mn)

Bear	Base	Bull
719	753	796

Operating Margin %

Bear	Base	Bull
40%	40%	41%

Potential Operating Expenditure for a manufacturing facility

	2022	2023	2024
Revenue ($ mn)	$15.2	$80.9	$175.5
Operating Margin %	-147%	16%	30%
Operating Expenditure %	247%	84%	70%
Total Operating Expenditure ($ mn)	$37.5	$68	$122.9

Cumulative Operating Expenditure for initial 3 years ~ $230 mn

Capital Expenditure - Cannot be estimated without more conversations with management

Sources: [1] Appendix C

Financials[1]: Arbe standalone

We expect a 20% uptick in Arbe's revenues from the Waymo partnership

Legend:
- Revenues without partnership with Waymo (pink)
- Revenues with partnership with Waymo (light blue)

Revenues ($millions):
- 2022: 13.03 / 15.21
- 2023: 76.46 / 80.90
- 2024: 168.98 / 175.53
- 2025: 304.17 / 315.24
- 2026: 395.42 / 411.13
- 2027: 474.50 / 501.21
- 2028: 521.95 / 571.31
- 2029: 574.15 / 656.26
- 2030: 631.56 / 753.16
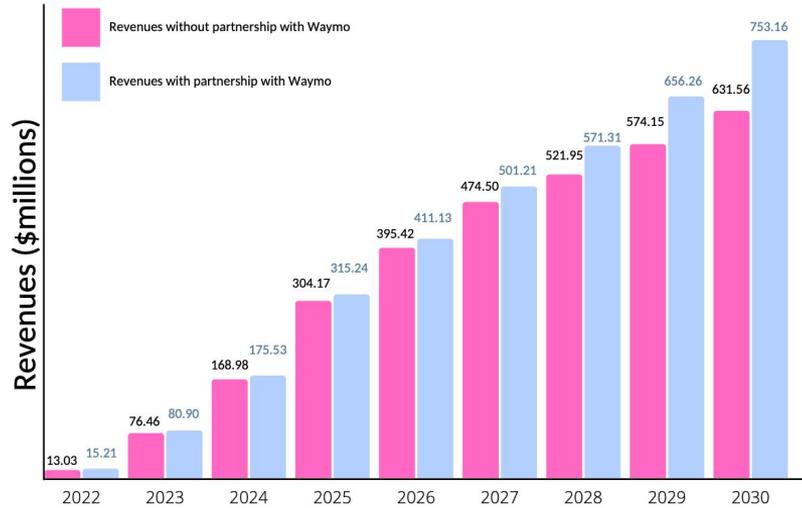
Operating Margins Breakdown

Operating Margin (%):
- 2022: -146.56
- 2023: 15.67
- 2024: 29.44
- 2025: 39.30
- 2026: 39.43
- 2027: 39.47
- 2028: 39.57
- 2029: 40.00
- 2030: 40.81

Sources: [1] Appendix C

Executive Summary | Issue Analysis | Key Players | Recommendations | Impacts | Risks | Synthesis

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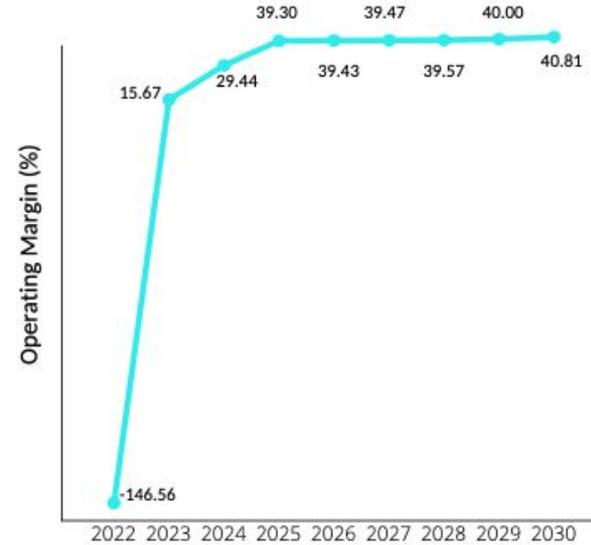
Risks and Mitigations

Risks	Likelihood	Impact	Mitigations
Continuing negative safety perception of AVs			• New and constant updates in our tech and sensors • Leverage significant driving data collected over the years to help reduce error rates • Run a nationwide public campaign with Waymo educating users about safety and affordability of AVs
Lack of adoption of AVs by ridesharing platforms			• Accelerate scaling up of the Waymo One ridesharing platform • Run a nationwide public campaign with Waymo educating users about safety and affordability of AVs
Semiconductor shortage impacting manufacturing			• Smaller manufacturers to create flexible supply chains • Create higher inventories, anticipating future shortages • Waymo has a large and dominant parent we can rely on
Loss of drivers' jobs creating political noise			• Introduce employee-training programs to upskill drivers into maintenance, customer support and administrative roles • Leverage Google's reach, resources and publicity muscle to provide these opportunities

Executive Summary | Issue Analysis | Key Players | Recommendations | Impacts | Risks | Synthesis

Synthesis

Impact on partnership by 2030

400,000 Fleet size (unit AVs)

15,000 tonne decrease in CO2 emissions

$3.6 bn Total Revenues

$2.52 bn Profit

Impact on Arbe by 2030

$753 mn Total Revenues

41% Operating Margin

14% Consistent YoY Growth in Revenue

1.04 mn Number of radars sold

Key Enablers

1 Target setting up a manufacturing base-of-operations near Waymo's (Google) base

2 Invite Waymo to be a strategic investor in Arbe to fund initial OPEX+CAPEX

| Executive Summary | Issue Analysis | Key Players | Recommendations | Impacts | Risks | Synthesis |

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Thank you!

Appendix

1. *Expert Interviews*
2. *Primary Research Survey*
3. *Financials*
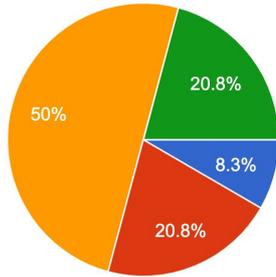
Expert Name	Role	Experience (Companies)
Jubin Verghese	CEO	Gegadyne
Vivek H	Founder	Bounce
Ranjith Unnikrishnan	Computer vision scientist	Lyft
Subodh Sangwan	Operations, South and East India + Sri Lanka	Uber
Ashwin Limaye	Product manager	Google / Waymo
Anindya Sundar Das	Designing services	Uber
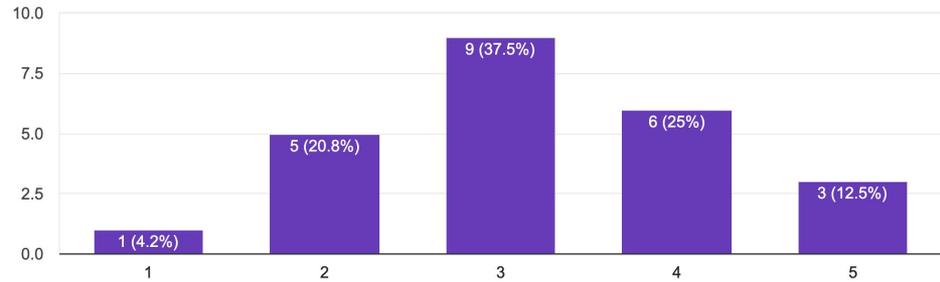
Details	2019A	2020A	2021P	2022P	2023P	2024P	2025P	2026P	2027P	2028P	2029P	2030P
Overall US Automobile Market For Passenger Cars (mn units)	4.70	3.40	5.45	5.89	6.36	6.87	7.42	7.71	8.02	8.34	8.68	9.02
Sales Growth over last year (Year 2021 is taken as 16% growth over 2019)			16%	8%	8%	8%	8%	4%	4%	4%	4%	4%
Levelwise Breakup of Autonomous car in (%)												
Level 3			2.02%	2.53%	3.18%	3.99%	5.00%	6.39%	8.16%	10.42%	13.31%	17.00%
Level 4			0.14%	0.22%	0.37%	0.61%	1.00%	1.43%	2.05%	2.93%	4.19%	6.00%
Level 5			0.01%	0.02%	0.05%	0.06%	0.07%	0.13%	0.19%	1.20%	2.19%	1.82%
Levelwise Breakup of Autonomous car in units Mn (Addressable Market)												
Level 3			0.11	0.15	0.20	0.27	0.37	0.49	0.65	0.87	1.15	1.53
Level 4			0.01	0.01	0.02	0.04	0.07	0.11	0.16	0.24	0.36	0.54
Level 5			0.001	0.001	0.003	0.004	0.005	0.010	0.015	0.10	0.19	0.20
Yearwise Levelwise Sales Growth												
Level 3				35%	35%	35%	35%	33%	33%	33%	33%	33%
Level 4				78%	78%	78%	78%	49%	49%	49%	49%	49%
Level 5				100%	200%	33%	25%	100%	50%	567%	90%	5%

Appendix C.2 - Financial Models (Arbe)

All values are in ($, millions USD)	2019A	2020A	2021P	2022P	2023P	2024P	2025P	2026P	2027P	2028P	2029P	2030P
Standalone Revenues ($)	0.40	7.80	13.03	76.46	168.98	304.17	395.42	474.50	521.95	574.15	631.56	
YoY growth			1850.00%	67.00%	487.00%	121.00%	80.00%	30.00%	20.00%	10.00%	10.00%	10.00%
Cost of Goods Sold ($)	0.40	1.80	6.50	24.70	56.60	103.60	126.53	147.10	156.59	166.50	176.84	
Gross Profit ($)	0.00	6.01	6.51	51.99	111.53	203.79	268.88	327.41	365.37	407.65	454.73	
Gross Profit	0.00%	77.00%	50.00%	68.00%	66.00%	67.00%	68.00%	69.00%	70.00%	71.00%	72.00%	
Research & Development Costs ($)	11.50	21.50	22.99	31.53	41.02	54.29	55.36	55.04	46.98	53.40	60.63	
Percentage of Costs spent of R&D		80.83%	79.51%	79.29%	67.43%	66.11%	50.00%	40.00%	30.00%	30.00%	30.00%	
Sales & Marketing Costs ($)	1.00	1.40	1.50	2.70	5.90	9.83	33.22	55.04	62.63	71.19	80.84	
Percentage of Costs spent of S&M		5.26%	5.19%	6.79%	9.70%	11.97%	30.00%	40.00%	40.00%	40.00%	40.00%	
General & Administrative Costs ($)	1.70	3.70	4.42	5.53	13.91	18.00	22.14	27.52	46.98	53.40	60.63	
Percentage of Costs spent of G&A		13.91%	15.30%	13.92%	22.87%	21.92%	20.00%	20.00%	30.00%	30.00%	30.00%	
Total Operating Costs ($)	14.20	26.60	28.92	39.76	60.83	82.13	110.72	137.61	156.59	177.99	202.10	
Standalone Operating Margin ($)	(14.20)	(20.59)	(22.40)	12.23	50.69	121.67	158.17	189.80	208.78	229.66	252.63	
YoY growth			-45.01%	-8.80%	154.60%	314.38%	140.00%	30.00%	20.00%	10.00%	10.00%	10.00%
Standalone Operating Margin		-3550.00%	-264.00%	-172.00%	16.00%	30.00%	40.00%	40.00%	40.00%	40.00%	40.00%	40.00%

	2019A	2020A	2021P	2022P	2023P	2024P	2025P	2026P	2027P	2028P	2029P	2030P
Revenue from sellings radars to Waymo				2.19	4.44	6.55	11.07	15.71	26.70	49.36	82.12	121.59
Arbe Total Consolidated revenue				15.21	80.90	175.53	315.24	411.13	501.21	571.31	656.26	753.16
YoY Growth %					431.79%	116.97%	79.60%	30.42%	21.91%	13.99%	14.87%	14.76%
Arbe Total Operating Margin ($mn)				(22.30)	12.68	51.68	123.88	162.10	197.81	226.06	262.51	307.34
YoY Growth %					156.86%	307.62%	139.73%	30.85%	22.03%	14.28%	16.12%	17.08%
Operating Margin (%)				-146.56%	15.67%	29.44%	39.30%	39.43%	39.47%	39.57%	40.00%	40.81%
Total Consolidated Costs					68.22	123.85	191.36	249.04	303.39	345.26	393.76	445.81