



Aurora

\*Computer-rendered imagery provided for illustrative purposes only

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Delivering the benefits of self-driving technology  
safely, quickly, and broadly



# The Aurora Driver enables the digitalization of transportation



# Delivering the benefits of self-driving technology safely, quickly, and broadly



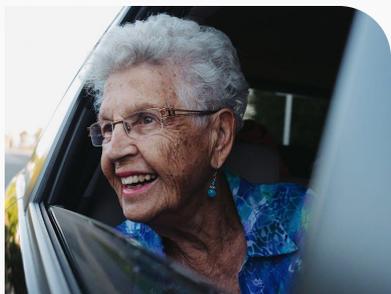
## Increase safety

Every hour **154 people** lose their lives<sup>1</sup> on the world's roads



## Transform logistics

In the U.S., trucking accounts for **300B miles annually** & **65% of total goods<sup>3</sup> movement**



## Expand access

**25.5 million people<sup>2</sup>** with a disability in the U.S. have difficulty traveling outside of the home



## Improve lives

The average driver spends **54 minutes<sup>4</sup> each work day commuting**—the equivalent of 10 days a year

SOURCES: <sup>1</sup> 1.35m people die per year in road fatalities (WHO 2018) [https://www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2018/en/external\\_icon](https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/external_icon) <sup>2</sup> In the 2017 NHTS, an estimated 25.5 million people report having disabilities that make traveling outside the home difficult. (3-20, USDOT Transportation Statistics Annual Report 2018). <sup>3</sup> Trucks moved 65% of Goods by weight in 2017 (<https://www.bts.gov/topics/freight-transportation/freight-shipments-mode>) <sup>4</sup> 27min one-way commute (US Census Bureau, 2018)

# Aurora expects to address the entirety of an enormous transportation market



**\$700bn**  
Trucking market (US)<sup>1</sup>



**\$4tn**  
Global<sup>4</sup>



**\$35bn**  
Ride-hailing market (US)<sup>2</sup>



**\$1tn / \$5tn**  
Personal mobility TAM (US / Global)<sup>5</sup>



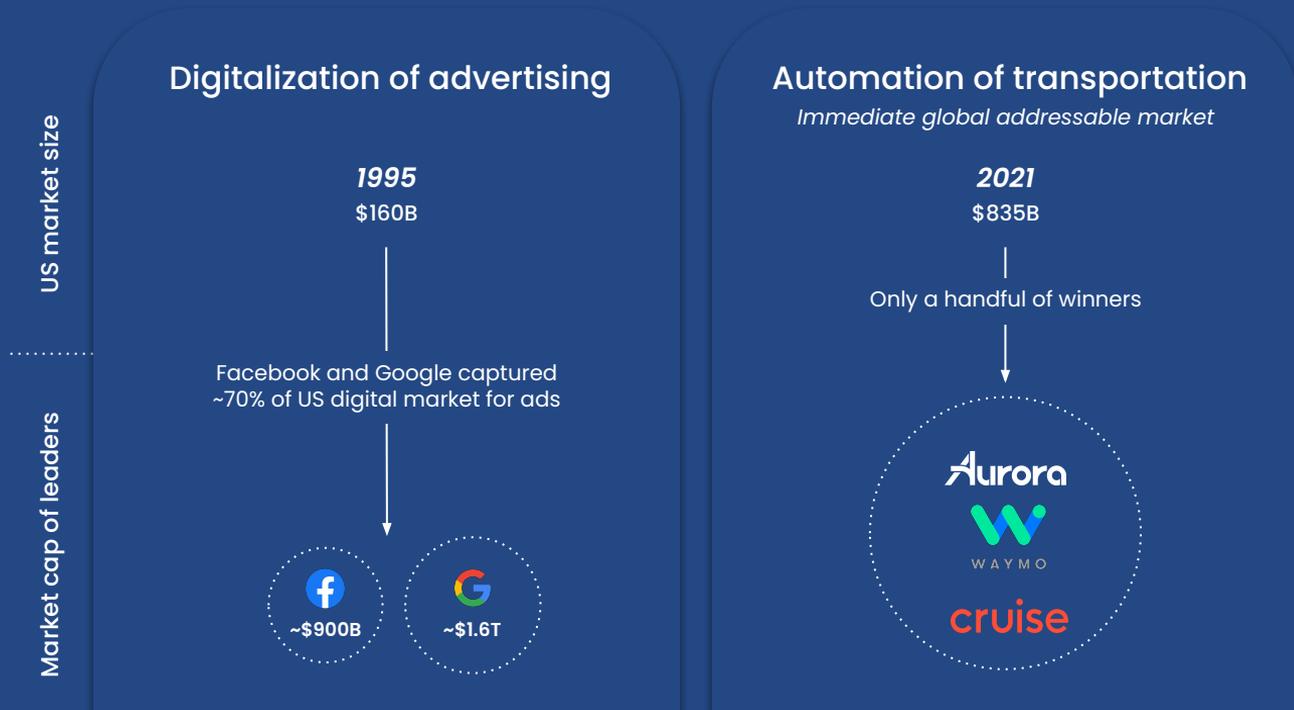
**\$100bn**  
Local goods delivery market (US)<sup>3</sup>



**\$400bn**  
Global<sup>6</sup>

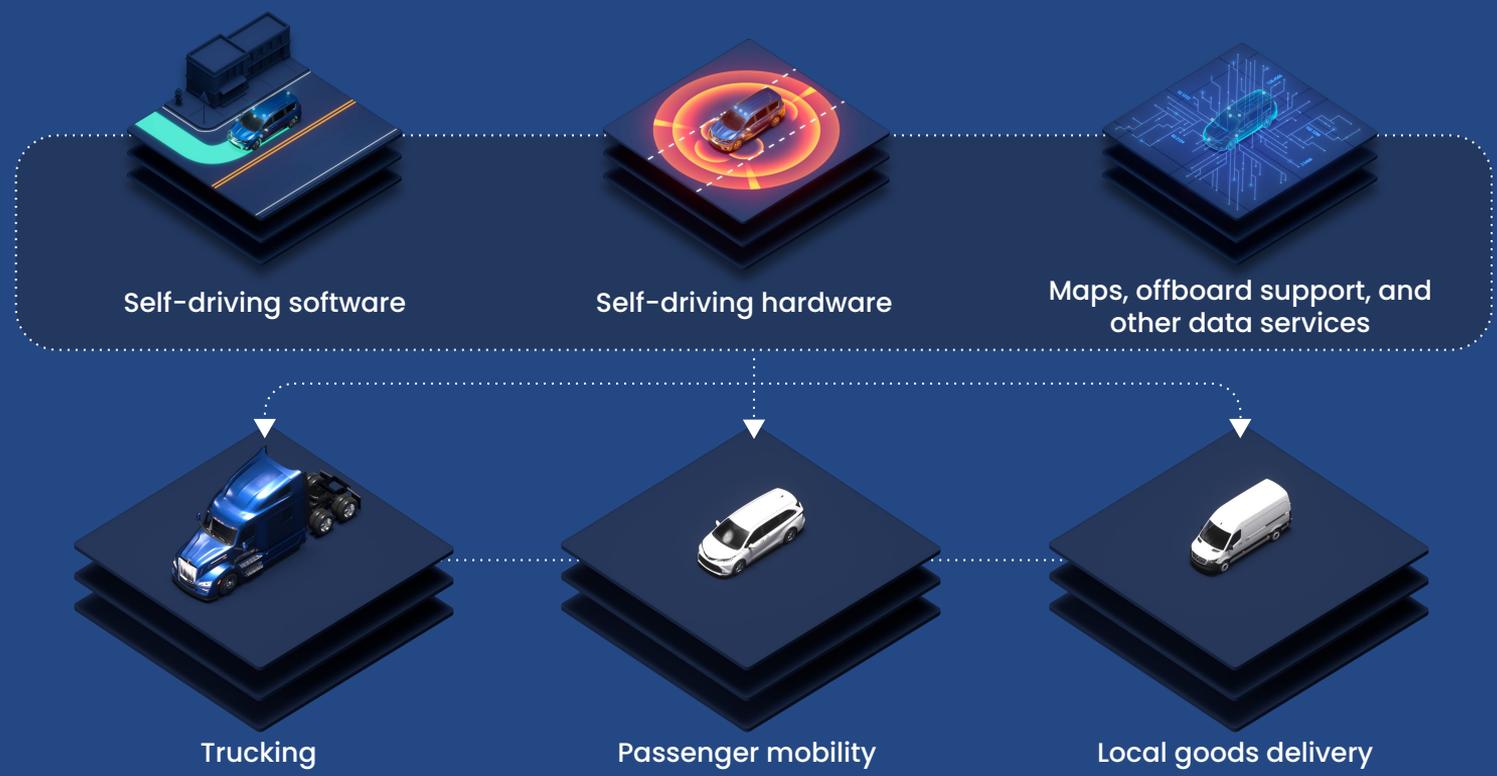
SOURCES: <sup>1</sup> A.T. Kearney State of Logistics, 2020. <sup>2</sup> Public filings of ride-hailing companies. <sup>3</sup> Pitney Bowes, Parcel Shipping Index Report; analysis of public filings from e-delivery companies. <sup>4</sup> Armstrong & Associates, Global Third Party Logistics, 2019. <sup>5</sup> RAND, The Future of Driving in Developing Countries; Autocosts.info World Statistics; AAA, Your Driving Costs; IRS; Bureau of Transportation Statistics, Household Spending Survey, 2019. <sup>6</sup> Derived from US share of global GDP

# The automation of transportation is analogous to the digitalization of advertising





# The Aurora Driver is a common platform across transportation verticals



# The Aurora Driver is set up to be delivered as a service and monetized on a usage basis

The Driver as a Service business model enables:



**Focused  
development**



**Rapid scaling through  
partnerships**



**High-margin  
revenue**



# The Optimal Path to Market

# Aurora's differentiated market entry sequence starts in trucking

## Trucking



## Passenger mobility



## Local goods delivery



US market revenue today

\$700bn<sup>1</sup>

\$35bn ride-hail<sup>2</sup>

\$100bn<sup>3</sup>

Value proposition for self-driving

Increased vehicle operating hours, driver access, network uptime/efficiency, and safety

Increased vehicle operating hours, driver access, network uptime/efficiency, and safety

Increased driver access and safety

Technical considerations

Infeasible without long-range, multi-modal perception  
Little need for ride comfort  
Heavy technology reuse on consistent, high-volume routes

Drafts on truck technology  
Emphasizes ride comfort and human interaction  
Leads trucking in road complexity

Benefits from trucking and passenger development

Selected partners

**PACCAR**



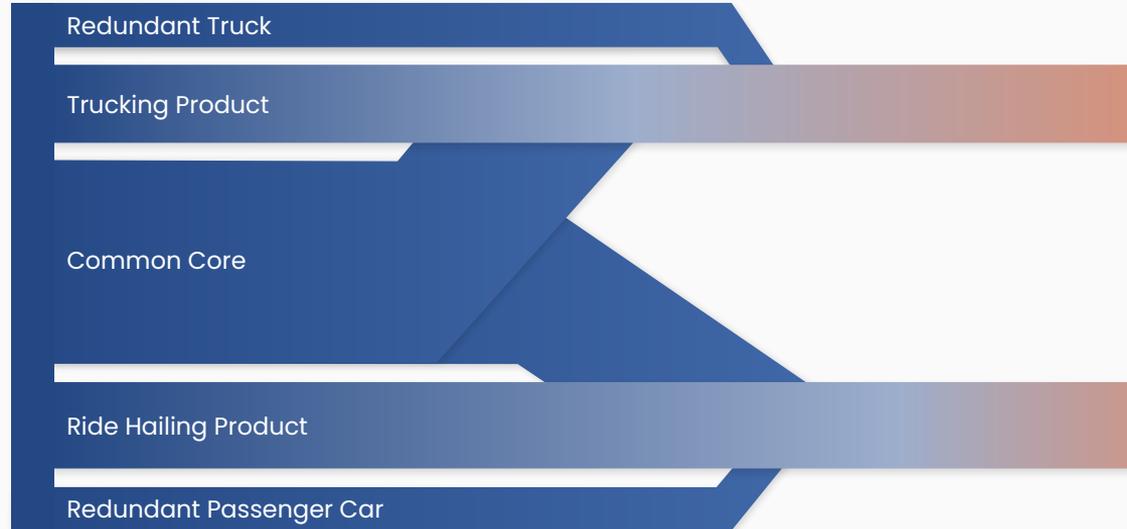
**Uber**



SOURCES: <sup>1</sup> A.T. Kearney State of Logistics, 2020. <sup>2</sup> Derived from public filings of ride-hailing companies. <sup>3</sup> Pitney Bowes, Parcel Shipping Index Report; analysis of public filings from e-delivery companies.

# The common core of the Aurora Driver facilitates efficient development and rapid adaptation to trucking and ride-hailing

- ▶ The Aurora Driver's common core requires only minor adaptations for different vehicles and use cases
- ▶ Trucking is the “tip of the spear”, enabling Aurora to rapidly and efficiently move into adjacent verticals



# Development, launch, and scale of the Aurora Driver is expected to happen in five phases

## Phase I

Lay the foundation

## Phase II

Develop & refine

## Phase III

Validate

## Phase IV

Launch

## Phase V

Expand



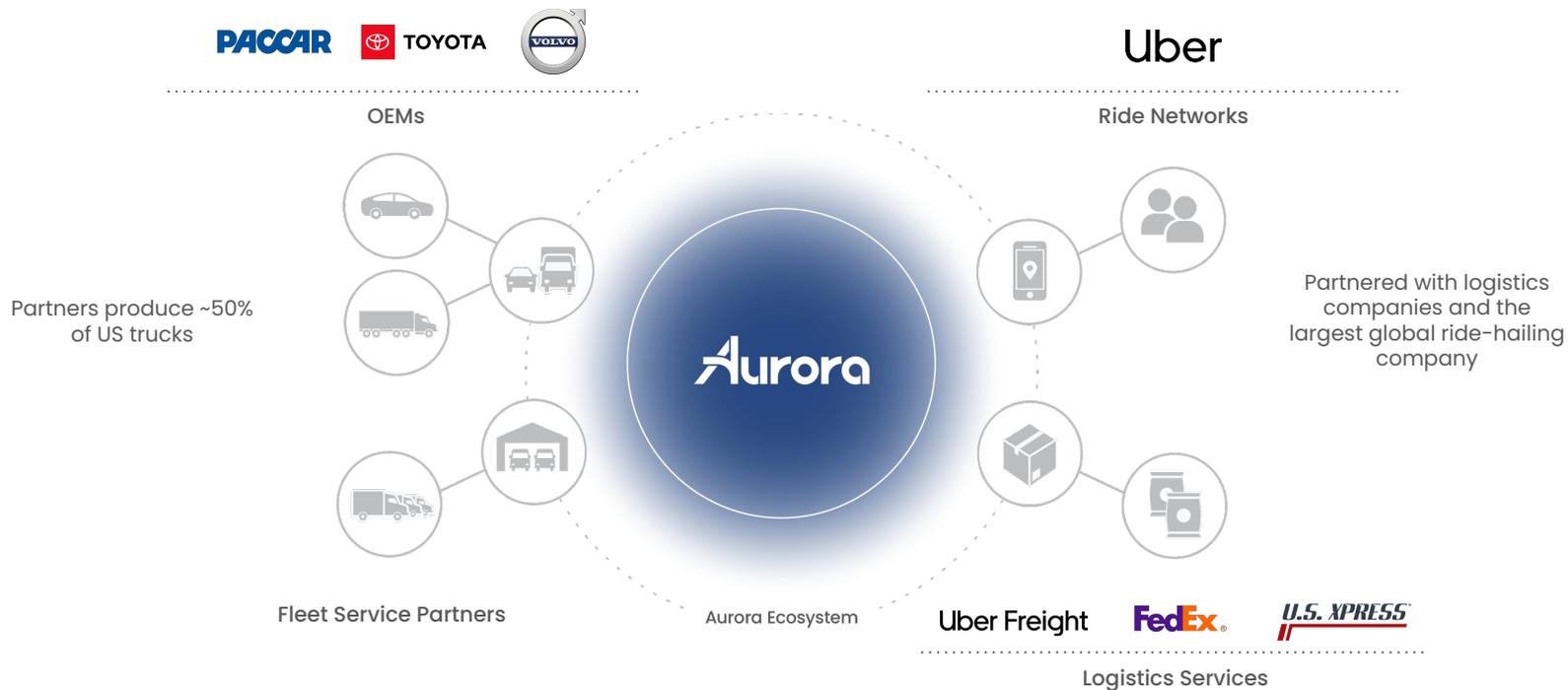
# Aurora's trucking product is expected to expand across the continental US over eight years



# Industry-Leading Partnerships



# Aurora's partnerships accelerate the commercialization of the Aurora Driver



# The Aurora Driver can create immense value for trucking partners



Trucking cost of operation

## Speed up service and supply chains

- ▶ The Aurora Driver can operate **24 hours/day** vs a traditional truck's 11
- ▶ Moving a load from LA to Houston drops from **2+ days to a single day**
- ▶ Can reach **entire US within a day** with only 2-3 distribution centers<sup>1</sup>

## Alleviate driver shortage

- ▶ **80,000+ driver shortage** set to rise to 160,000 by 2030<sup>2</sup>
- ▶ **Aging workforce** as fewer enter a difficult job, with 54% of truckers above 45 years old in 2020, compared with 31% in 1994<sup>3</sup>
- ▶ **92% turnover** for large truckload for-hire carriers<sup>4</sup>

## Increase safety

- ▶ **Half a million US large truck crashes** are reported each year<sup>5</sup>
- ▶ Truck Drivers had the **most fatalities of any occupation group in 2018**<sup>6</sup>
- ▶ Human factors like recklessness, fatigue and distraction are attributed to **94% of crashes**<sup>7</sup>

## Improve energy efficiency

- ▶ **>10% fuel and emissions reduction potential** through eco-driving, off-peak deployment, and capping peak speeds<sup>8</sup>

## Optimize vehicle utilization and design

- ▶ Maximum, near **24 hour** utilization potential without Hours of Service limitations
- ▶ **Optimized truck configuration** does not require heavy, expensive creature comforts

SOURCES: <sup>1</sup> Deloitte 'Autonomous trucks lead the way' [link](#), <sup>2</sup> Bureau of Labor Statistics. 2020. Employed persons by detailed industry and age; Analysis of Truck Driver Age Demographics Across Two Decades (2014) White paper, <sup>3</sup> ATA Truck driver shortage analysis 2021, <sup>4</sup> [Turnover Rate at Large Truckload Carriers Rises in Third Quarter](#), ATA, <sup>5</sup> [Large Truck and Bus Crash Facts 2018](#), <sup>6</sup> CDLife 'Driving a truck is the deadliest job in the U.S.' [link](#), <sup>7</sup> NHTSA 2015 Critical Reasons for Crashes Investigated in the National Motor Vehicle Crash Causation [Survey](#), <sup>8</sup> ICCT 'Automation in the long haul: challenges and opportunities' paper

# Aurora's strategic truck OEM partners collectively represent ~50% of the US market

## Partnerships with two of the top three truck OEMs

- ▶ **Long-term commitments** to build and deploy self-driving trucks at scale, with all parties making significant investment in the success of the programs
- ▶ **Deep technical integration** to accelerate the development and validation of compelling, driverless-capable trucks
- ▶ **Built to scale**, allowing the autonomous solution to expand quickly through existing dealer and service networks

PACCAR

Peterbilt



DAF

VOLVO  
VOLVO GROUP



Partnerships



# The Aurora driver is key to a significant expansion in the ride-hailing market

Safety



Cost

Step change reduction in shared mobility cost

Service levels

Personalized customer experience

Supply access

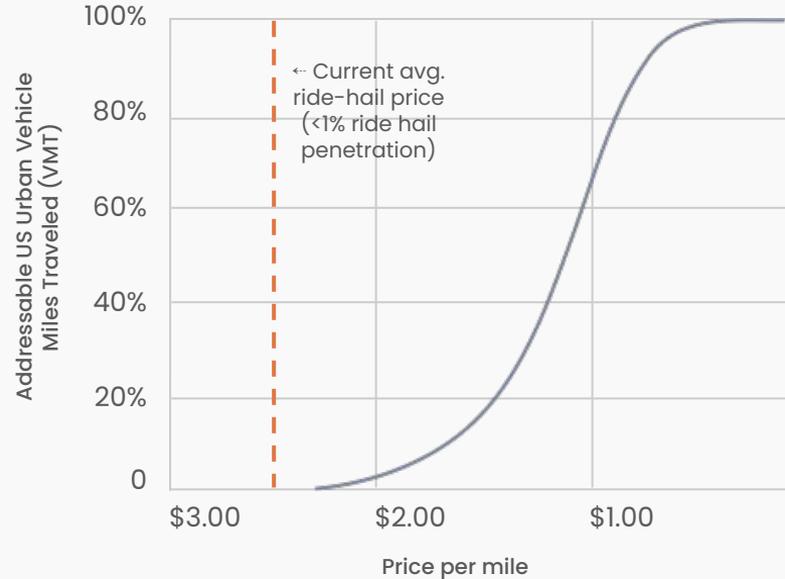
Driver supply constraints in key markets

Energy efficiency

Accelerates electrification

SOURCES: Aurora internal analysis derived from AAA, Your Driving Costs; US Department of Transportation, National Household Travel Survey. Includes direct driver vehicle ownership costs, parking, and value of time.

Estimated adoption of ride hail by price

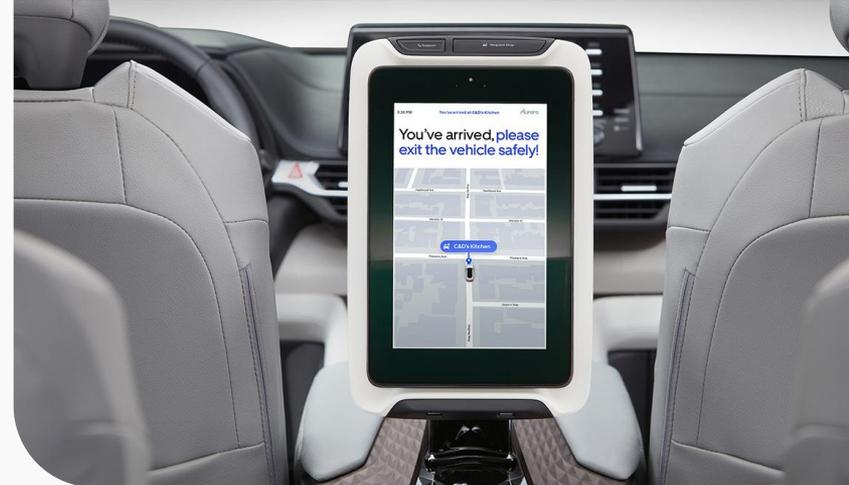




# Toyota and Aurora are committed long-term partners



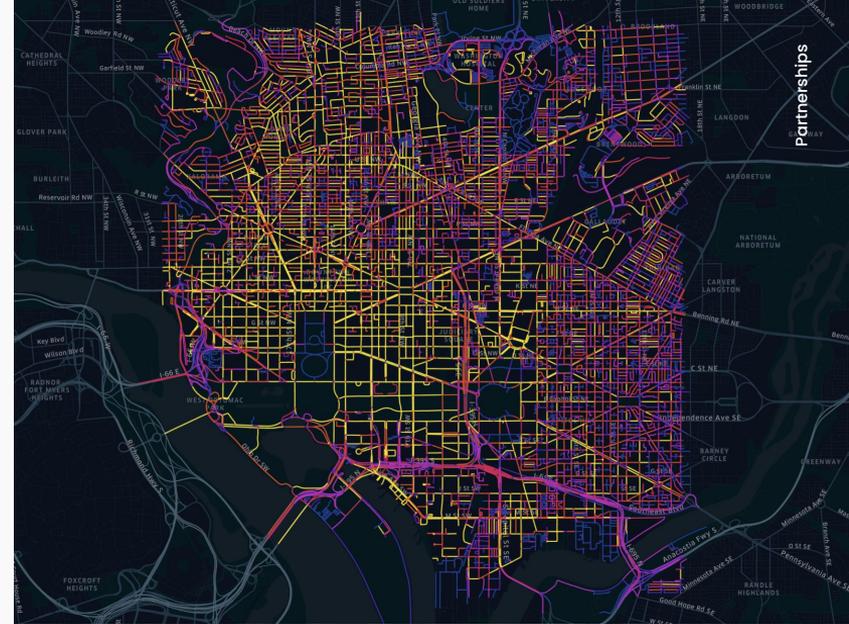
- ▶ Top global OEM & Tier 1 Supplier, respectively
- ▶ Long-term commitment: Large investor and major development partnership
- ▶ Structured for success: Relationship built on a strong framework supported at the highest levels



Aurora's partnership with Uber drives key competitive benefits

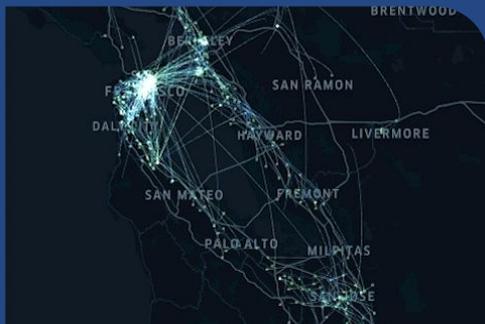
# Uber

- ▶ **Compelling commercial relationship:**  
Driven by mutually-beneficial economics and demand
- ▶ **Long-term commitment:**  
Uber is a large minority investor and CEO is on Aurora's Board of Directors
- ▶ **Unprecedented data advantage:**  
10 year agreement to receive Uber data



# Access to Uber data is a unique competitive advantage

## Refined market selection



Detailed marketplace data combined with regulatory understanding enables Aurora to select the best market entry sequence.

## Clear roadmap prioritization

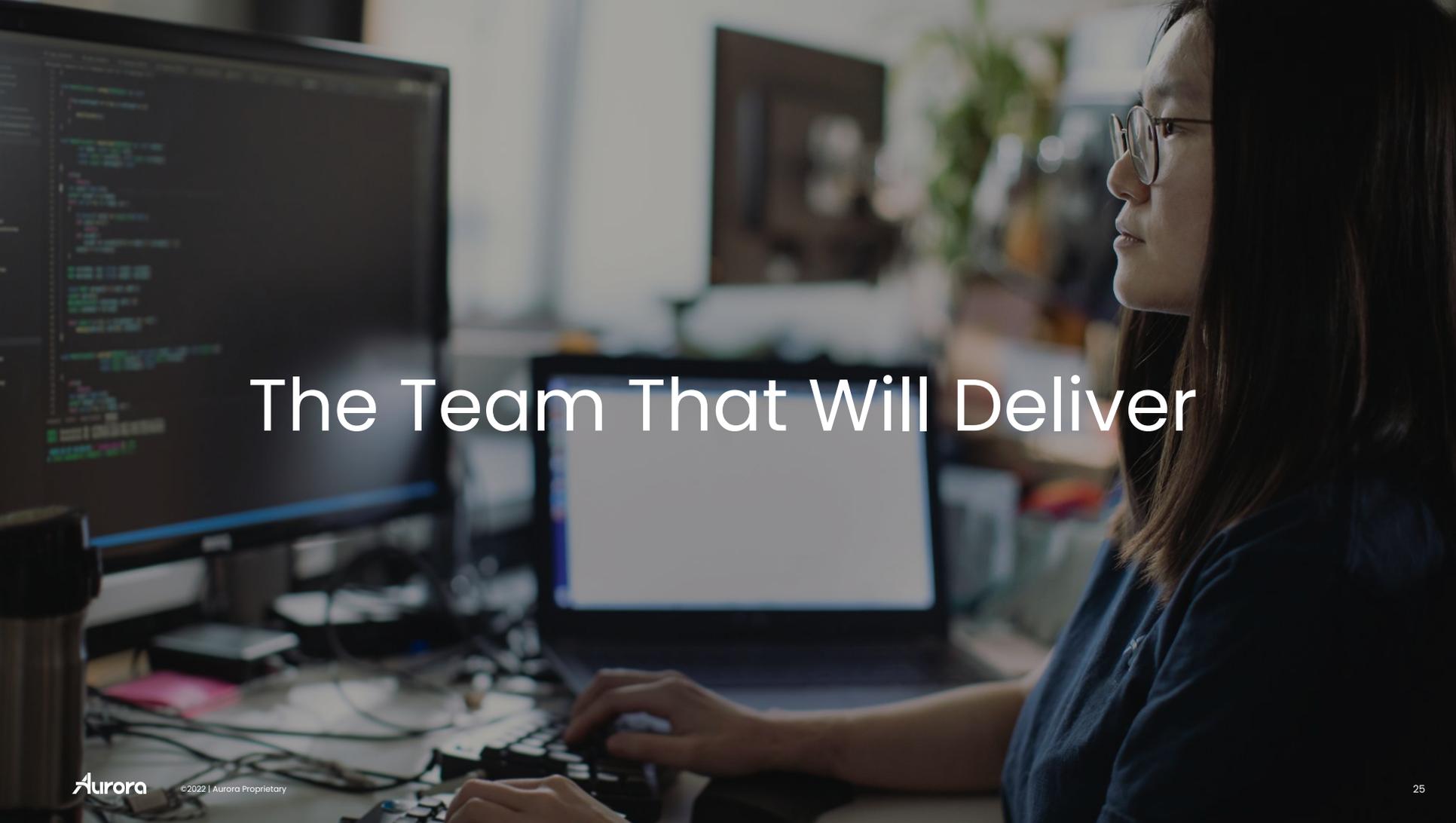


Not all self-driving capabilities are created equal. Knowing where trips take place and what roadways are traversed allows Aurora to prioritize capability development.

## Optimized fleet positioning



Uber data informs our in-market tactics e.g. fleet rebalancing, placement of pick-up and drop-off zones and parking. These incremental improvements generate more efficient unit economics.

A woman with long dark hair and glasses is shown in profile, focused on her work. She is sitting at a desk with multiple computer monitors. The leftmost monitor displays lines of code in a dark-themed editor. The laptop in front of her has a blank white screen. The office environment is dimly lit, with a blurred background showing other desks and a plant. The overall mood is professional and concentrated.

# The Team That Will Deliver

# Aurora has proven leadership and expertise



**Chris Urmson**  
Chief Executive  
Officer, Co-founder



**Drew Bagnell**  
Chief Scientist,  
Co-founder



**Sterling Anderson**  
Chief Product  
Officer, Co-founder



**Yanbing Li**  
Senior VP of Software  
Engineering



**Richard Tame**  
Chief Financial Officer



**Sandor Barna**  
Senior VP of Hardware  
Engineering



**Nat Beuse**  
VP of Safety



**Gerhard  
Eschelbeck**  
Chief Information  
Security Officer



**Will Mouat**  
General Counsel



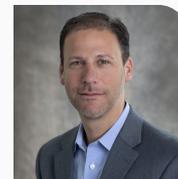
**Khobi Brooklyn**  
VP of Marketing &  
Communications



**Gerardo Interiano**  
VP of Government  
Relations



**Bart Nabbe**  
VP of Corporate  
Development &  
Strategic Partnerships



**David Maday**  
SVP of Business  
Development



# Aurora has the required scale to deliver self-driving

~1600

Employees

1400+

Product & Engineering

1100+

Patents<sup>1</sup>

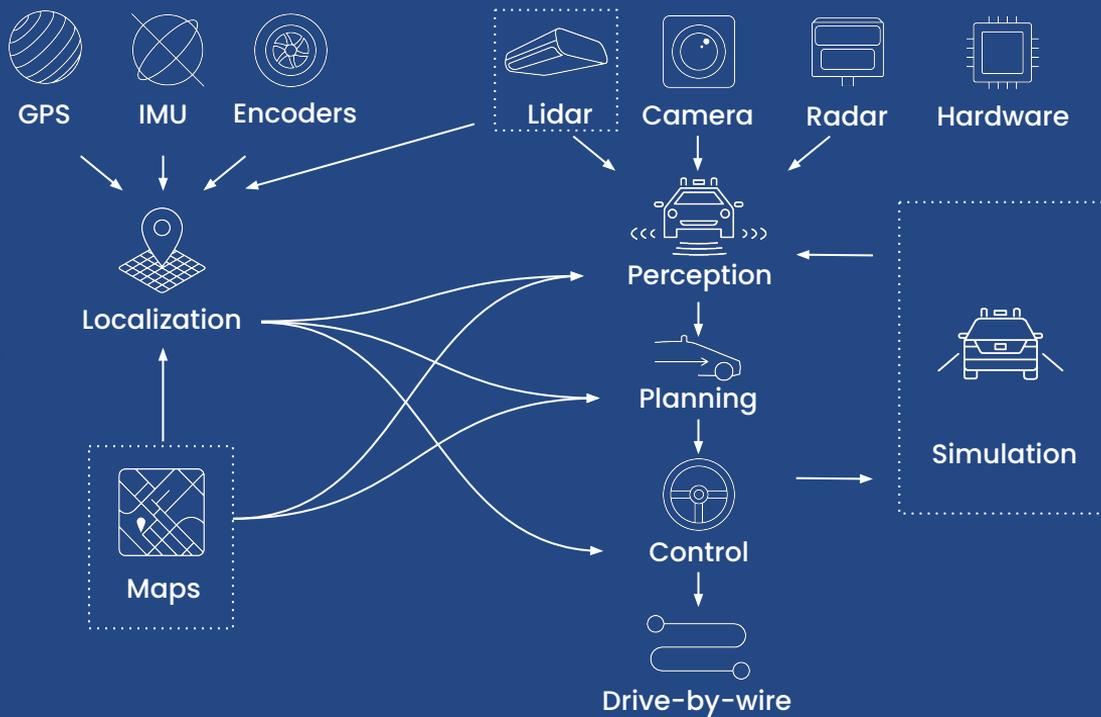


<sup>1</sup>Includes patents and pending applications worldwide



# Industry-Defining Technology

# Aurora is innovating throughout the self-driving stack

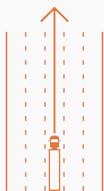


Indicates the technologies highlighted in this presentation

# Aurora's FirstLight Lidar is engineered for the needs of highway driving

## Multi-modal long-range sensing

The ability to see at distance with both Lidar & Camera—is crucial to unlocking safe autonomous operation at high speed. FirstLight FMCW Lidar enables quicker reaction and longer range for safer, more capable driving.



### Long Range Performance

Coherent light allows FirstLight to see more than twice as far as traditional lidar<sup>1</sup>



### Interference Immunity

Eliminates virtually all interference from sunlight and other sensors



### Simultaneous Range + Velocity

Doppler effect provides high velocity precision at every point

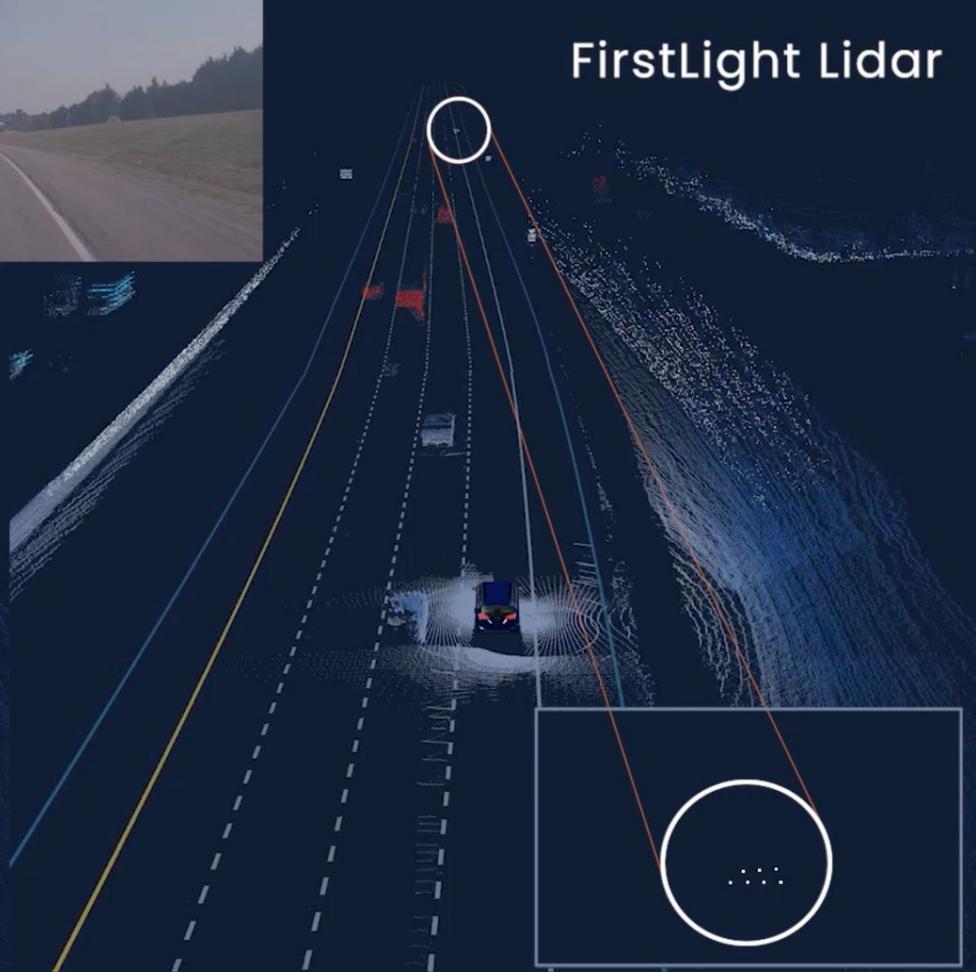
## FirstLight Lidar

- Not limited by solar loading
- Immune to sensor interference
- Provides instantaneous range and velocity

# Traditional Lidar



# FirstLight Lidar



# Developing lidar in-house has many advantages

## There are significant challenges relying on externally-developed lidar

- ▶ Lack of clarity in vision and requirements
- ▶ Risk of being left out via exclusivity
- ▶ Tier 1s have long cycle times

## Aurora is internally developing its lidar to meet the needs of self-driving

- ▶ Rapid iteration and feedback
- ▶ Synchronized development with fleet
- ▶ Vertically integrated to ensure supply



# Aurora's Virtual Testing Suite creates a paradigm shift in testing safety, efficiency, and speed

Aurora's Virtual Testing Suite (which includes simulation and data replay technologies) improves:

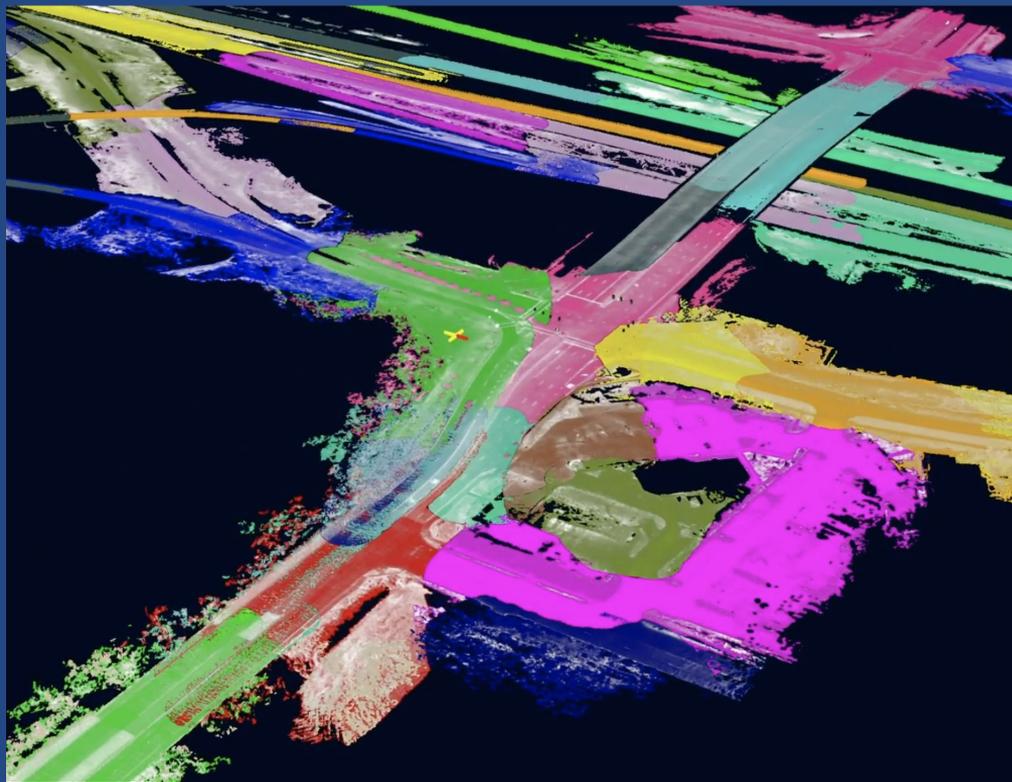
- ▶ **Safety:** Dramatically reduces the number of on-road miles needed to develop the Aurora Driver
- ▶ **Efficiency:** Aurora's motion planning simulation is 2,500x less expensive than on-road testing
- ▶ **Speed:** At scale, Aurora's Virtual Testing Suite can simulate in one hour, the equivalent of over 50,000 trucks operating on the road. Aurora was able to simulate 2.25M unprotected left hand turns before testing that capability on public roads.



# The Aurora Atlas is HD mapping with exceptional maintainability

Aurora's Atlas architecture:

- ▶ Provides accuracy where it's needed most: near the vehicle
- ▶ Unlocks rapid (near-real-time) updates
- ▶ Enables efficient maintenance so that map data can always be up-to-date
- ▶ Shards data so that map building can be massively parallelized



A hand is holding a blue, rectangular device with the Aurora logo and name embossed on its surface. The device is held at an angle, and the background is a blurred, light-colored surface. The text 'Driver as a Service' is overlaid in white, sans-serif font across the center of the image.

# Driver as a Service

# Driver as a Service business model is highly capital efficient

<b>Description</b>	Aurora provides its technology to an external fleet owner and/or operator
<b>Revenue</b>	Fee per mile
<b>Costs borne by Aurora<sup>1</sup></b>	Variable: Insurance <sup>2</sup> , Aurora Driver hardware/maintenance cost <sup>3</sup> , Teleassist, Cloud, Telecommunications, and any variable fees paid to partners  Fixed: Development & extension of Aurora Driver
<b>Fleet Ownership</b>	Third Party
<b>Fleet Operation</b>	Third Party

<sup>1</sup> Cost allocations subject to change as we commercialize and further define sharing of costs with our partners.

<sup>2</sup> Insurance cost may be borne by our partners.

<sup>3</sup> Aurora Driver hardware cost expected to be leased, with cost passed through to customer.

Note: For the first 1-2 years of commercial operations, we expect to own and operate our own small fleet as we learn and develop the playbooks for our partners.



# Aurora's next-generation approach positions it to win

- ▶ Led by a management team with deep technical and industry experience
- ▶ A differentiated go-to-market strategy that enables rapid and efficient entry to multiple verticals
- ▶ Strong, strategic partnerships accelerate commercialization
- ▶ Driver as a Service model creates attractive unit economics





# Aurora



# Development, launch, and scale of the Aurora Driver is expected to happen in five phases

	<b>Phase I</b> Lay the Foundation	<b>Phase II</b> Develop & Refine	<b>Phase III</b> Validate	<b>Phase IV</b> Launch	<b>Phase V</b> Expand
<b>Product</b>	Minimally viable product defined & go-to-market strategy outlined	Commercial pilots expanded; customer support infrastructure developed	Trucking and rides products (Driver + Vehicle + Operational Infrastructure) validated	Driverless truck product launched on initial lane(s); rides product launched in initial geo(s)	Truck lane coverage, trailer types & use cases expands Rides product launches & trip coverage grows
<b>Driver</b>	Functional architecture designed; HW/SW foundational driving capability developed	Design-representative HW complete Software performance refined	HW & SW validated for initial operational domain	Additional vehicles, lanes, and markets begin development	Post-MVP SW capabilities added to incrementally unlock new lanes & trips
<b>Vehicle</b>	Platform partners & requirements developed	Driverless-capable truck and passcar platforms designed	Release candidate truck & passcar platforms validated	Start of scale vehicle production	Driver HW, truck platform & passcar platforms optimized for cost/scale
<b>Operations</b>	Development process established; commercial process prototyped/tested in first customer pilot	Development & commercial operations integrated Commercial infrastructure & ops established	End-to-end commercial pilots ramped; operational support infrastructure refined	Commercial engagements grown Operational presence & processes hardened Third parties trained	Select operational support workstreams transitioned to third-party partners

# Self-driving 2.0: Aurora is developing the next-generation approach to self-driving

	Self-driving 1.0	Self-driving 2.0	
Hardware	Vehicle interface	Highly customized/bespoke to a single vehicle	Widely adaptable/consistent platform approach
	Sensor suite	Limited range, resolution, and data	Advanced range, resolution, and data on multiple sensor modes (e.g FirstLight lidar, imaging radar, custom cameras)
Software	Structured learning	Machine learned and engineered approaches largely segregated	ML and engineering elegantly interleaved throughout the system (perception, forecasting, motion planning & controls)
	Virtual development	Heavily focused/reliant on slow, inefficient on-road testing to understand system performance	Leverages a full suite of simulation and log-based tests for both module and end-to-end performance. Extremely high fidelity sensor simulation; large-scale structured tests; every disengagement analyzed & turned into durable offline tests
	Localization	2-3 degree of freedom positioning	6 degree of freedom, highly-accurate/precise positioning
	Mapping	Globally-consistent at the expense of local consistency and maintainability. Difficult to edit and deploy localized changes	Sharded, lightweight, locally-consistent Aurora Atlas that enables high accuracy, localized changes, and rapid — even over the air — updates

# Historical Financial Summary

(\$ in thousands)

	Year End December 31, 2021	Year End December 31, 2020
<b>Collaboration revenue</b>	<b>\$82,538</b>	<b>-</b>
Operating expenses:		
Research and development	697,276	179,426
Selling, general and administrative	115,925	38,693
<b>Loss from operations</b>	<b>(730,663)</b>	<b>(218,119)</b>
Other income (expense):		
Interest and other income	525	3,717
Change in fair value of derivative liabilities	(20,116)	-
Transaction costs	(4,516)	-
Other expense	(5,184)	(45)
<b>Loss before income taxes</b>	<b>(759,954)</b>	<b>(214,447)</b>
Income tax expense (benefit)	(4,501)	2
<b>Net Loss</b>	<b>\$(755,453)</b>	<b>\$(214,449)</b>
Basic and diluted net loss per share – Class A and Class B	\$(1.22)	\$(0.79)
Basic and diluted weighted – average shares outstanding – Class A and Class B	620,816,420	270,940,197