



Aurora

\*Computer-generated imagery provided for illustrative purposes only

## Cautionary statement regarding forward-looking statements

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





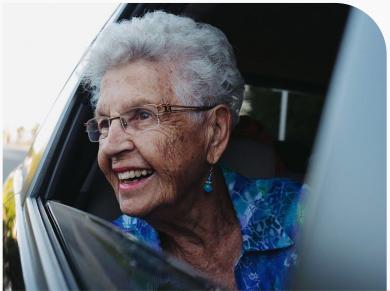
## Increase safety

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)



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



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



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



**~1600**  
Employees

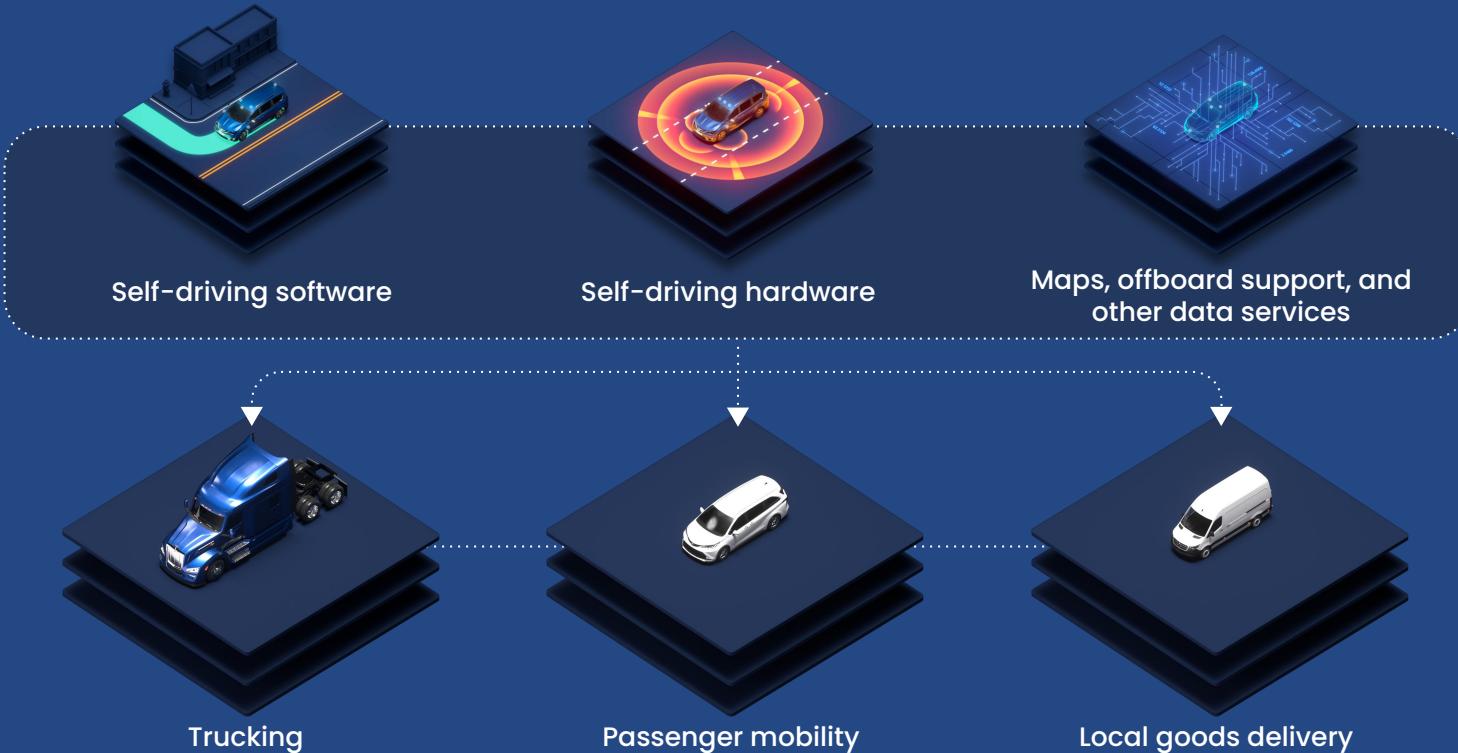
**1400+**  
Product & Engineering

**1100+**  
Patents<sup>1</sup>

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

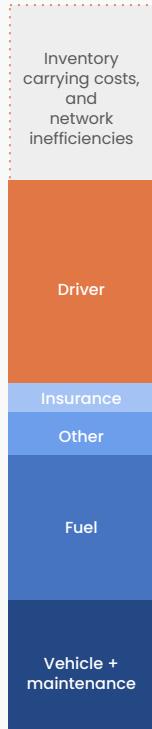


# The Aurora Driver is a common platform across transportation verticals





# The Aurora Driver can create immense value for trucking partners



## 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> CDLlife '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

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

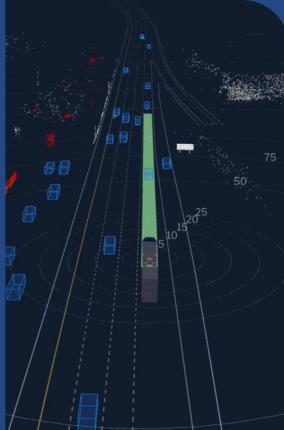
## Phase I

Lay the foundation



## Phase II

Develop & refine



## Phase III

Validate



## Phase IV

Launch



## Phase V

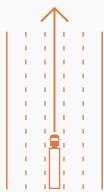
Expand



# Aurora's 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

The diagram features a dark blue background with a central white rectangular area containing the text "FirstLight Lidar". Below this, a horizontal dashed line represents a sensor array. Above the array, several colored wavy lines (blue, green, red) represent different beams of light emitted by the lidar. The entire assembly is set against a dark background with faint, concentric circular patterns emanating from the center.

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

# 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:

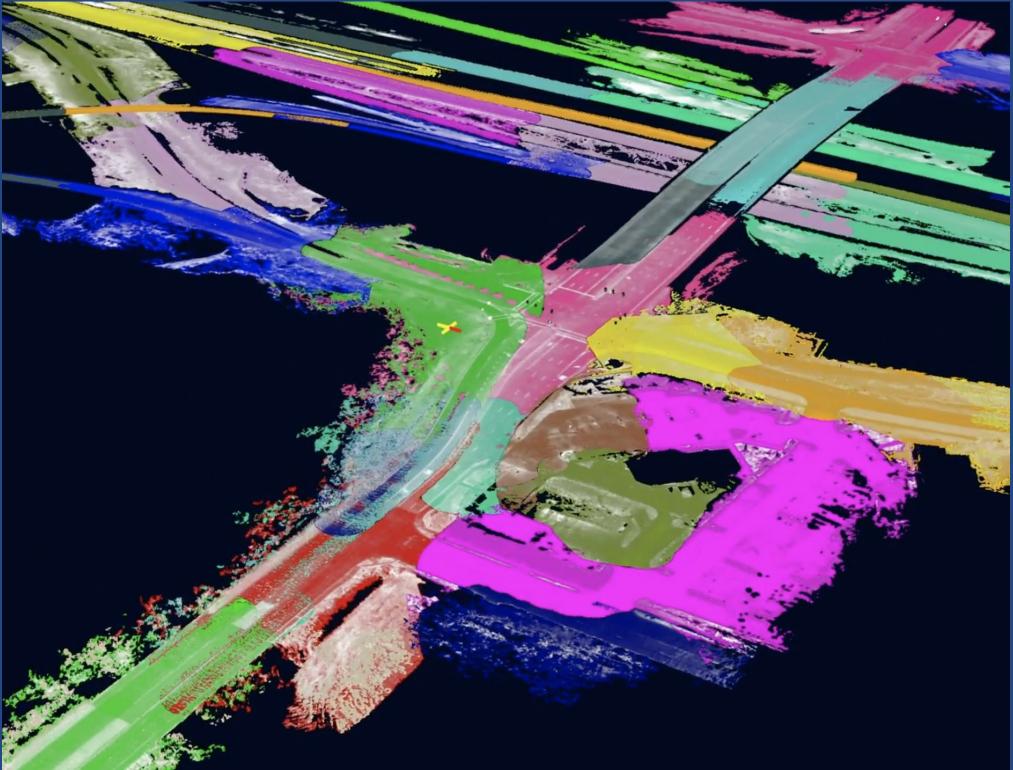
- ▶ **Safety:** Dramatically reduces the number of on-road miles needed to develop the Aurora Driver
- ▶ **Efficiency:** Aurora's motion planning simulation is 2,500x less expensive than on-road testing
- ▶ **Speed:** At scale, Aurora's Virtual Testing Suite can simulate in one hour, the equivalent of 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

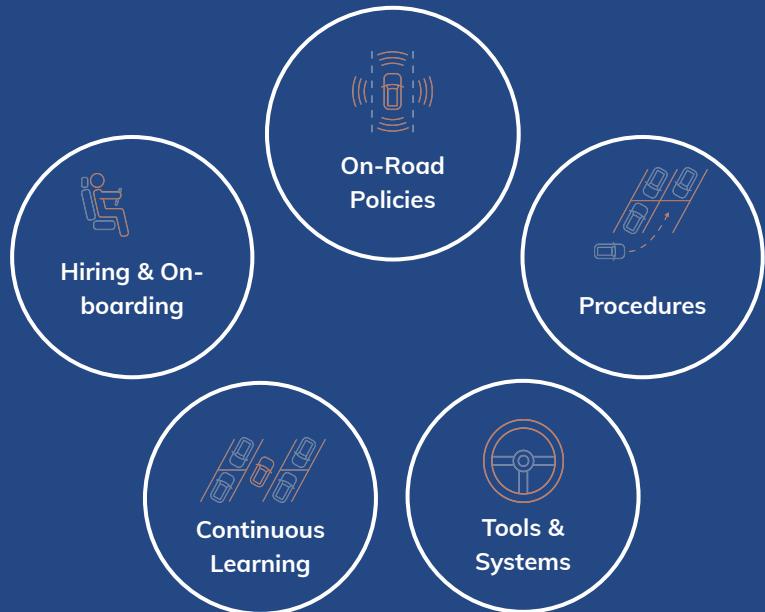
Aurora's Atlas architecture:

- ▶ 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



# Safety Focus

## Operational Safety



## Safety Case Framework

Aurora's self-driving vehicles are acceptably safe to operate on public roads<sup>i</sup>



# Our Pilots



Uber  
Freight

..... Industry collaborators .....





# Aurora