



INFORMATIONAL REPORT

Getting Ready for Driverless Operations

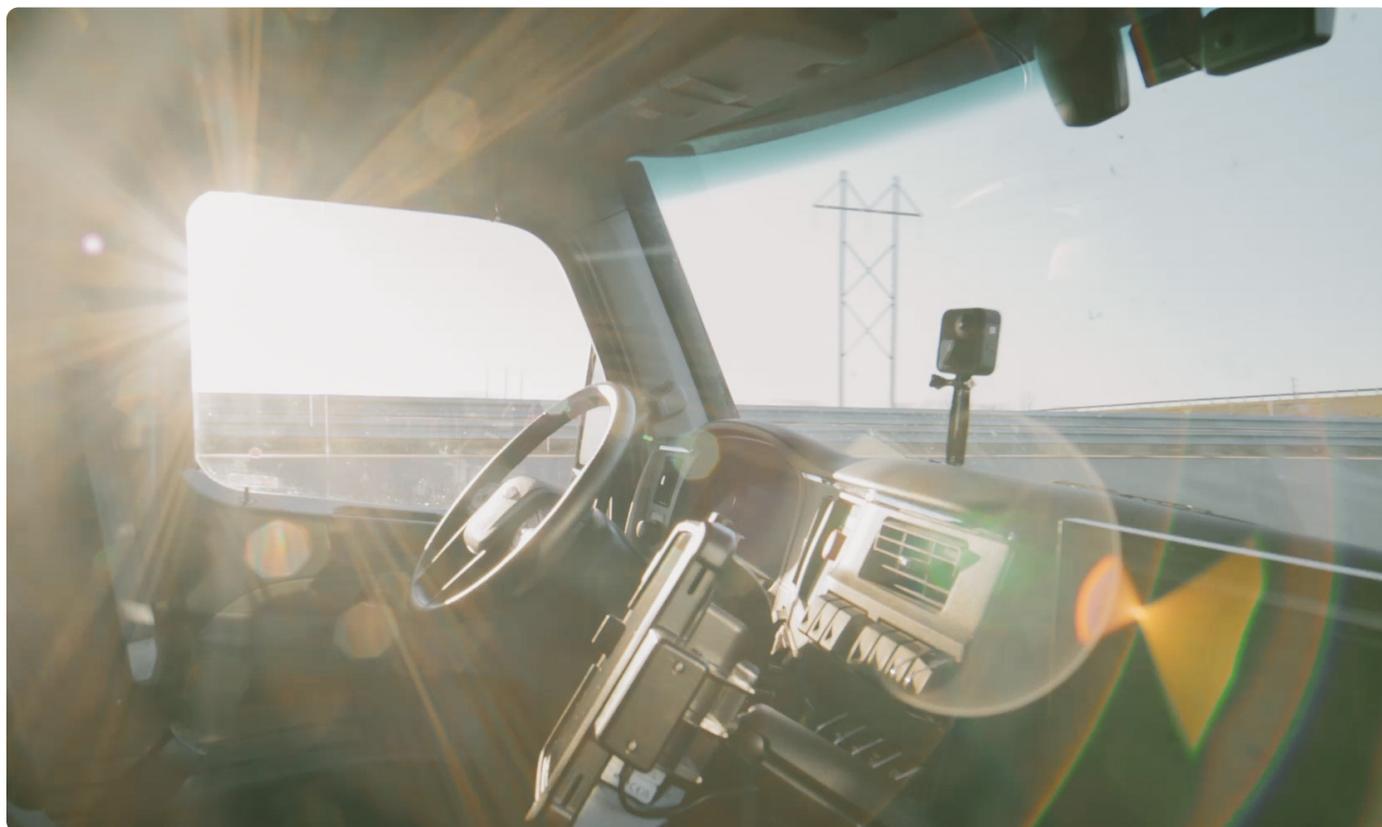
Aurora

Preparing for Driverless Operations

Since Aurora was founded in 2017, we have worked diligently to deliver the benefits of self-driving technology safely, quickly, and broadly. We believe improving road safety is a big responsibility and have been deliberate in how we deliver on our mission.

We are advancing quickly toward one of the most significant milestones on that journey: deploying driverless trucks to move goods for customers. To date, we have had vehicle operators present when operating autonomously on public roads, and preparing to go driverless has demanded years of safety-focused development and testing.

Our final steps before launching driverless operations are built around closing our safety case, including completing final validation, and making the formal decision to launch. We call this our release process, and it is built upon a safety-first approach.



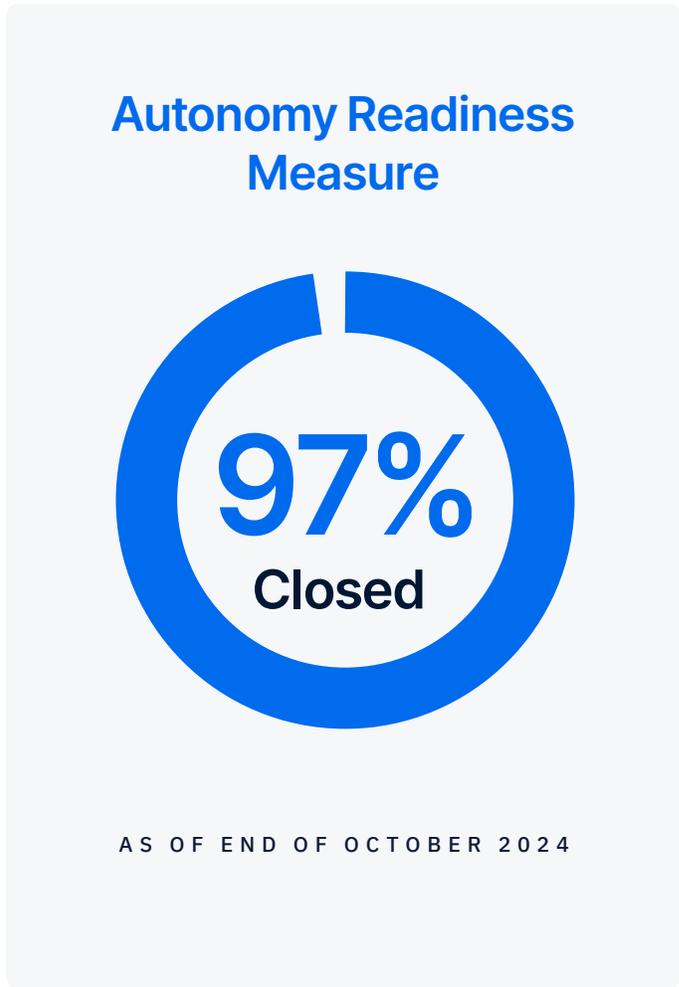
Closing our Safety Case

Safety is a core metric by which we measure the progress of our product. We do so via our [safety case](#) – the structured argument of claims and supporting evidence that show how and why our autonomous vehicles are acceptably safe for public roads. We will not launch driverless operations until our safety case is closed.

Our Autonomy Readiness Measure tracks progress toward closing our safety case, and it has reached [97%](#) as of the end of October 2024. We anticipate sharing updates to this metric prior to launching our product.

Just as we use safety as a tool to track the progress of our product, we also use product performance to gauge readiness for launch. Today, [over 80%](#) of the commercial loads on our Dallas to Houston launch lane do not require any form of on-site support and we are estimating this number to reach approximately 90% when we launch driverless operations. We do not expect this indicator to ever reach 100% as some support will be needed to address issues beyond our product’s autonomous driving capability, like replacing blown tires. We anticipate this need for support to decline over time.

The process to close the safety case for our Dallas-Houston launch route has been methodical, and includes evidence affirming the [proficiency, resiliency, and fail safety of our technology, as well as the trustworthiness and commitment to continuous improvement of our organization](#).



To close an individual claim within our safety case, our team follows a formal process:

1. Establishing a Definition of Done

Our team defines early what it means for a claim to be satisfied, including detailing what evidence is necessary to show safety in the area the claim addresses.

2. Assembling Evidence

Teams from across Aurora assemble evidence showing the safety of our product and satisfying claims within our safety case. Evidence can include [strong on-road performance](#), successful tests in simulation, engineered hardware redundancies, and much more.

3. Assessing Evidence

Dedicated Safety Case Leads within Aurora strictly evaluate evidence – looking to help ensure that submitted evidence satisfies the high bar for safety set

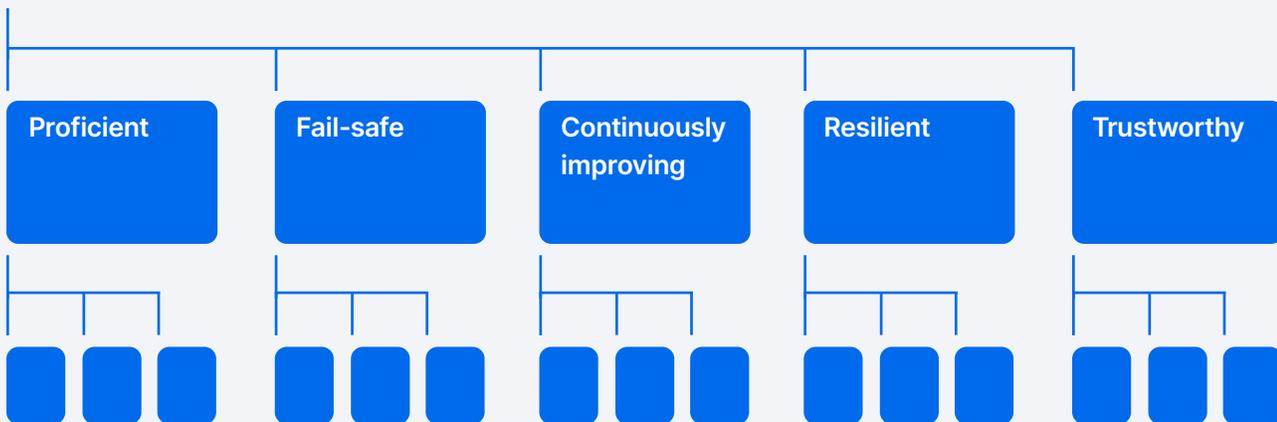
by our safety case, individual claims, and definition of done. This process is continuous, and Safety Case Leads have significant freedom to push for more evidence to satisfy claims they are evaluating.

4. Closing a Claim

Once evidence meets or exceeds expectations for an individual claim, the claim is closed. This contributes to the closure of the entire safety case.

TOP LINE STATEMENT

Aurora's self-driving vehicles are acceptably safe to operate on public roads



Aurora's [Safety Case Framework](#) organizes our safety case into categories of claims and evidence that substantiate why we believe our autonomous trucks are acceptably safe for operations on public roads.

Validation

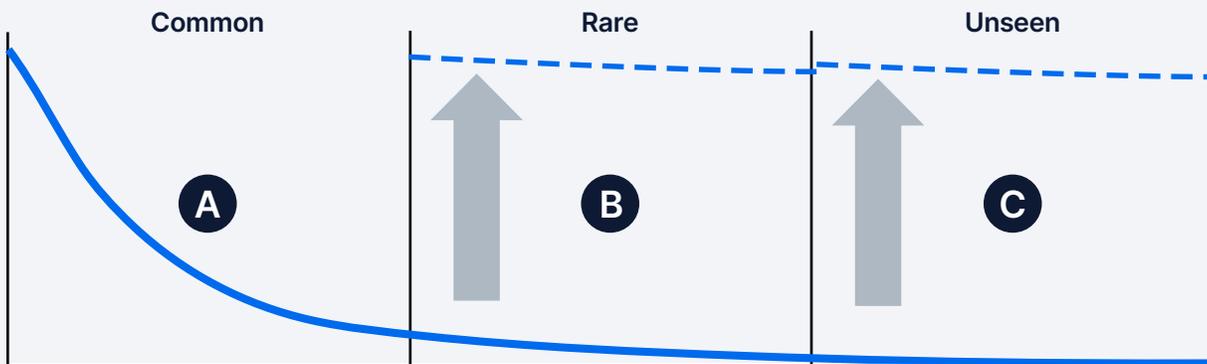
As part of closing our Safety Case, our team conducts extensive validation of our autonomous trucking product. This means confirming the strength of the Aurora Driver's performance in the common, rare, and incredibly infrequent, unseen scenarios our autonomous trucks may encounter on the road.

Validation has been a continuous process since early in Aurora's history. This process starts with identifying and building the test technologies needed to validate our product, like our industry-leading [Virtual Testing Suite](#), and determining how we approach evaluating product performance in a variety of on-road scenarios. From there, we have repeatedly tested the Aurora Driver against simulated scenarios that are representative of situations our autonomous trucks have encountered or could encounter in the real world.

Common scenarios are encountered at high frequency and, as a result, the Aurora Driver is naturally exposed to these scenarios on a regular basis. For rare and unseen events, we repeatedly expose the Aurora Driver to challenging driving scenarios in [simulation](#) – helping us better understand its responses. We make these tests highly challenging and vary different critical factors (such as speed, lane position, and distance) with the goal of finding deficiencies and directing resources toward solutions.

TRUCKING OPERATIONS

Scenarios Encountered



We simulate common, rare, and unseen on-road scenarios in order to evaluate and advance the Aurora Driver's capabilities. The arrows and dotted lines represent our goal of overrepresenting rare and unseen events in validation – helping confirm and refine the safety of the Aurora Driver.

Importantly, this validation includes imminent collision testing – tests in which we put the Aurora Driver in a situation where, through no fault of its own, there is a high likelihood of a collision. We've used the National Highway Traffic Safety Administration's (NHTSA) [collision data set](#) to guide this process and help ensure both broad and deep examination of the types of collisions present throughout the road environments in which we operate.

This has included simulating what the Aurora Driver would have done had it been the initiating vehicle in [real human drivers' fatal collisions](#) on I-45 in Texas. We found that, had the Aurora Driver been in control, none of these fatal collisions would have occurred.

Understanding how our autonomous trucks can help prevent future collisions is important to our mission of improving road safety. It also provides valuable evidence for our team as we assemble and close our safety case.

We think of this validation as continuous – it doesn't start or end with our decision to go driverless. Instead, it is a regular process to maintain and refine the quality of our product. For an individual product release, like driverless operations, we know we've done enough validation testing when we can show high performance of not only a core capability, like a [lane change](#), but also other important aptitudes that contribute to that capability, like the Aurora Driver's ability to [maintain a safe distance from other vehicles on the road](#).



Final Release Process

We have invested in a dedicated, reliable, and efficient release process for making the decision to initiate driverless operations, which is important both for our first driverless launch and for future updates to our product.

Enacting an Inclusive Release Process

The release process is comprised of supporting analysis that helps determine when each new product release is safe and ready for launch. These include contributions from teams across Aurora and include review of our product goals and the needs of our customers.

One portion of this process focuses on the safety case. Another analyzes the strength of the Aurora Driver's performance in a commercial setting – helping us deliver a valuable product to customers. The final portion details business and legal considerations.

Final Decisionmaking

Aurora's leaders are an important part of the release process, which includes significant involvement from Aurora's accountable executive – CEO Chris Urmson – as well as experts from our Safety, Engineering, Business, Legal, and Product teams. Their role is to perform a final critical analysis of the decision to launch by flagging risks and reexamining safety case evidence as necessary. This group is diligent about making the implicit explicit – assessing and elevating concerns liberally.

This is part of our philosophy that everyone at Aurora is on our Safety Team – everyone has an ownership stake in the safety of our product.

Once this group is satisfied that all appropriate steps have been taken to prioritize the safety of the Aurora Driver, a final decision is made on launching driverless operations. This comes as the summation of years of work assembling safety case evidence and holding it to a high bar of scrutiny. Aurora has conducted this full process multiple times prior to readiness for driverless launch – hardening this system to help ensure it does not reach a “go” result when one is not appropriate.



Driverless Operations and our Crawl, Walk, Run Approach

After Aurora’s leadership has given a “go” authorization, the organization can initiate driverless operations. We plan to commercially deploy driverless trucks on our Dallas-Houston freight route in April 2025 and are committed to communicating openly with government leaders and first responders prior to this milestone. Our goal is to ensure that the launch of our driverless trucks is met with confidence and anticipation, with no surprises for our stakeholders.

Our guiding philosophy for this work is a “crawl, walk, run” approach. This means that we’ll start small and expand in a reasonable and measured manner – implementing practices that reflect how we intend to operate as a commercial business.

For our release process, we started by transitioning from two vehicle operators in each autonomous truck to a single vehicle operator. This operating model provides the discipline to fully implement our remote assistance capabilities and supports our analysis for remote assistance efficiency for driverless operations. From here and following the final release process, we’ll initiate driverless operations with an unloaded truck and then subsequently haul commercial loads driverlessly for customers.

In this same spirit, we’ll start driverless commercial operations with a single truck and then thoughtfully and sequentially expand our fleet from there. We believe this methodical approach is the most responsible and transparent way to commercialize our product.

We look forward to sharing more on our commitment to safety as we commence driverless operations and work with government leaders, first responders, and our customers to build a stronger, safer supply chain.

Disclaimer: Aurora’s safety case closure, validation, and release processes are nuanced and include representatives from teams throughout the company. The summary included here represents a high-level overview that is not comprehensive of every step undertaken by Aurora team members.

