UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, DC 20549

FORM 10-Q

(Mark One)

☒ **QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended September 30, 2023

OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission File Number: 001-40326

TuSimple Holdings Inc.
(Exact Name of Registrant as Specified in its Charter)

Delaware	**86-2341575**
(State or other jurisdiction of incorporation or organization)	(I.R.S. Employer Identification No.)
9191 Towne Centre Drive, Suite 150 San Diego, CA	**92122**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (619) 916-3144

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Class A Common Stock, par value $0.0001 per share	TSP	The Nasdaq Stock Market LLC (Nasdaq Global Select Market)

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☒	Accelerated filer	☐
Non-accelerated filer	☐	Smaller reporting company	☒
Emerging growth company	☐		

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act. ☐

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of October 31, 2023, the number of shares of the registrant's Class A common stock outstanding was 205,890,683 and the number of shares of the registrant's Class B common stock outstanding was 24,000,000.

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SPECIAL NOTE REGARDING FORWARD-LOOKING STATEMENTS

This Quarterly Report on Form 10-Q contains forward-looking statements within the meaning of the federal securities laws, which statements involve substantial risks and uncertainties. All statements other than statements of historical facts contained in this Quarterly Report on Form 10-Q are forward-looking statements. The words “believe,” “may,” “will,” “estimate,” “continue,” “anticipate,” “design,” “intend,” “expect,” “could,” “plan,” “potential,” “predict,” “seek,” “should,” “would,” or the negative version of these words and similar expressions are intended to identify forward-looking statements. Forward-looking statements contained in this Quarterly Report on Form 10-Q include, but are not limited to, statements about:

- our future performance, including our revenue, cost of revenue, and operating expenses;
- the sufficiency of our cash and cash equivalents to meet our operating requirements;
- our ability to scale our Autonomous Freight Network;
- our ability to attract new users to our products and services;
- our ability to effectively manage our business strategy and future expenses;
- the estimated timing for when additional routes will be available;
- our ability to compete in a market that is rapidly evolving and subject to technological developments;
- our estimated total addressable market, the market for autonomous truck and freight transport solutions, and our market position;
- our ability to successfully collaborate with business partners and the willingness of business partners to work with us;
- our ability to obtain, maintain, protect, and enforce our intellectual property;
- our ability to comply with modified or new laws and regulations applicable to our business or industry;
- our involvement in and ability to resolve on favorable terms, if at all, any regulatory or government actions, inquiries or investigations, or securities litigation;
- our ability to attract and retain employees with the technical skills we require and other qualified personnel;
- our ability to achieve our driver-out milestones on the timeline expected;
- our anticipated investments in research and development, sales, and marketing, and the effect of these investments on our results of operations;
- the increased expenses associated with being a public company; and
- the potential impact of inflation, rising interest rates, wars, and other global hostilities on our and our partners’ business and results of operations, and on the global supply chain and economy generally.

We caution you that the foregoing list may not contain all of the forward-looking statements made in this Quarterly Report on Form 10-Q.

You should not rely upon forward-looking statements as predictions of future events. We have based the forward-looking statements contained in this Quarterly Report on Form 10-Q primarily on our current expectations and projections about future events and trends that we believe may affect our business, financial condition, results of operations, and prospects. These forward-looking statements are subject to a number of risks, uncertainties, and assumptions, including those described in Part I, Item 1A, “Risk Factors” of the Annual Report on Form 10-K for the year ended December 31, 2022 and that are otherwise described or updated from time to time in our other filings with the Securities and Exchange Commission (the “SEC”). Moreover, we operate in a very competitive and rapidly changing environment. New risks emerge from time to time. It is not possible for our management to predict all risks, nor can we assess the impact of all factors on our business or the extent to which any factor, or combination of factors, may cause actual results to differ materially from those contained in any forward-looking statements we may make. In light of these risks, uncertainties, and assumptions, the forward-looking events and circumstances discussed in this Quarterly Report on Form 10-Q may not occur and actual results could differ materially from those anticipated or implied in the forward-looking statements.

Except as required by applicable law, neither we nor any other person assumes responsibility for the accuracy and completeness of the forward-looking statements. Moreover, the forward-looking statements made in this Quarterly Report on Form 10-Q relate only to events as of the date on which the statements are made. We undertake no obligation to update any forward-looking statements made in this Quarterly Report on Form 10-Q to reflect events or circumstances after the date of this Quarterly Report on Form 10-Q or to reflect new information or the occurrence of unanticipated events, except as required by applicable law. We may not actually achieve the plans, intentions, or expectations disclosed in our forward-looking statements and you should not place undue reliance on our forward-looking statements. Our forward-looking statements do not reflect the potential impact of any future acquisitions, mergers, dispositions, joint ventures, or investments we may make.

In addition, statements that “we believe” and similar statements reflect our beliefs and opinions on the relevant subject. These statements are based upon information available to us as of the date of this Quarterly Report on Form 10-Q, and while we believe such information forms a reasonable basis for such statements, such information may be limited or incomplete, and our statements should not be read to indicate that we have conducted an exhaustive inquiry into, or review of, all potentially available relevant information. These statements are inherently uncertain and investors are cautioned not to unduly rely upon these statements.

PART I—FINANCIAL INFORMATION

Item 1. Financial Statements.

TuSimple Holdings Inc.
Condensed Consolidated Balance Sheets
(in thousands, except share data)
(unaudited)

	December 31, 2022	September 30, 2023
ASSETS		
Current assets:		
Cash and cash equivalents	$ 615,386	$ 249,211
Short-term investments	377,312	525,960
Accounts receivable, net	1,377	—
Prepaid expenses and other current assets	13,477	17,993
Total current assets	1,007,552	793,164
Property and equipment, net	17,083	11,871
Operating lease right-of-use assets	44,952	39,003
Other assets	4,692	4,449
Total assets	$ 1,074,279	$ 848,487
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current liabilities:		
Accounts payable	$ 9,855	$ 3,745
Amounts due to joint development partners	5,753	3,176
Accrued expenses and other current liabilities	48,260	22,734
Short-term debt	1,645	1,423
Operating lease liabilities, current	6,007	6,129
Total current liabilities	71,520	37,207
Operating lease liabilities, noncurrent	42,169	37,078
Long-term debt	3,668	2,820
Other liabilities	2,441	12
Total liabilities	119,798	77,117
Commitments and contingencies (Note 4)		
Stockholders' equity:		
Preferred stock, $0.0001 par value; 100,000,000 shares authorized as of December 31, 2022 and September 30, 2023; zero shares issued and outstanding as of December 31, 2022 and September 30, 2023, respectively	—	—
Common stock, $0.0001 par value; 4,876,000,000 Class A shares authorized as of December 31, 2022 and September 30, 2023; 201,707,557 and 205,577,178 Class A shares issued and outstanding as of December 31, 2022 and September 30, 2023, respectively; 24,000,000 Class B shares authorized, issued, and outstanding as of December 31, 2022 and September 30, 2023, respectively	22	22
Additional paid-in-capital	2,567,723	2,606,204
Accumulated other comprehensive loss	(3,559)	(4,464)
Accumulated deficit	(1,609,705)	(1,830,392)
Total stockholders' equity	954,481	771,370
Total liabilities and stockholders' equity	$ 1,074,279	$ 848,487

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

TuSimple Holdings Inc.
Condensed Consolidated Statements of Operations
(in thousands, except share and per share data)
(unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	**2023**	**2022**	**2023**
Revenue	$ 2,653	$ —	$ 7,511	$ 307
Cost of revenue	5,436	—	15,292	754
Gross loss	(2,783)	—	(7,781)	(447)
Operating expenses:				
Research and development	84,931	44,322	248,608	164,430
Selling, general and administrative	31,119	26,335	85,351	83,757
Total operating expenses	116,050	70,657	333,959	248,187
Loss from operations	(118,833)	(70,657)	(341,740)	(248,634)
Interest income	5,545	9,298	7,912	28,922
Other income (expense), net	127	(77)	169	(975)
Loss before provision for income taxes	(113,161)	(61,436)	(333,659)	(220,687)
Provision for income taxes	—	—	—	—
Net loss	$ (113,161)	$ (61,436)	$ (333,659)	$ (220,687)
Net loss per share attributable to common stockholders, basic and diluted	$ (0.50)	$ (0.27)	$ (1.49)	$ (0.97)
Weighted-average shares used in computing net loss per share attributable to common stockholders, basic and diluted	224,745,672	229,537,972	223,698,744	227,989,087

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

TuSimple Holdings Inc.
Condensed Consolidated Statements of Comprehensive Loss
(in thousands)
(unaudited)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	**2023**	**2022**	**2023**
Net loss	$ (113,161)	$ (61,436)	$ (333,659)	$ (220,687)
Other comprehensive income (loss), net of tax:				
Unrealized gain (loss) on available-for-sale securities	(2,086)	512	(2,086)	(1,422)
Foreign currency translation adjustment	(1,281)	1,462	(2,427)	517
Comprehensive loss	$ (116,528)	$ (59,462)	$ (338,172)	$ (221,592)

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

TuSimple Holdings Inc.
Condensed Consolidated Statements of Stockholders' Equity
(in thousands, except share amounts)
(unaudited)

	Common Stock					
	Shares	**Amount**	**Additional Paid-in Capital**	**Accumulated Other Comprehensive Income (Loss)**	**Accumulated Deficit**	**Total Stockholders' Equity**
Balance as of December 31, 2021	221,833,195	$ 22	$ 2,464,730	$ 77	$ (1,137,851)	$ 1,326,978
Adjustments for prior periods from adopting ASC 842	—	—	—	—	191	191
Issuance of common stock from exercise of options	534,019	—	871	—	—	871
Issuance of common stock from release of RSUs and SVAs	537,980	—	—	—	—	—
Issuance of common stock under the Employee Stock Purchase Plan	87,215	—	1,292	—	—	1,292
Vesting of early exercised stock options	—	—	21	—	—	21
Stock-based compensation	—	—	27,527	—	—	27,527
Foreign currency translation adjustment	—	—	—	199	—	199
Net loss	—	—	—	—	(111,903)	(111,903)
Balance as of March 31, 2022	222,992,409	22	2,494,441	276	(1,249,563)	1,245,176
Issuance of common stock from exercise of options	262,548	—	687	—	—	687
Issuance of common stock from release of RSUs and SVAs	937,573	—	—	—	—	—
Vesting of early exercised stock options	—	—	21	—	—	21
Stock-based compensation	—	—	25,151	—	—	25,151
Foreign currency translation adjustment	—	—	—	(1,345)	—	(1,345)
Net loss	—	—	—	—	(108,595)	(108,595)
Balance as of June 30, 2022	224,192,530	22	2,520,300	(1,069)	(1,358,158)	1,161,095
Issuance of common stock from exercise of options	125,175	—	152	—	—	152
Issuance of common stock from release of RSUs and SVAs	616,626	—	—	—	—	—
Issuance of common stock under the Employee Stock Purchase Plan	162,616	—	994	—	—	994
Vesting of early exercised stock options	—	—	21	—	—	21
Stock-based compensation	—	—	23,032	—	—	23,032
Unrealized loss on available-for-sale debt securities, net	—	—	—	(2,086)	—	(2,086)
Foreign currency translation adjustment	—	—	—	(1,281)	—	(1,281)
Net loss	—	—	—	—	(113,161)	(113,161)
Balance as of September 30, 2022	225,096,947	$ 22	$ 2,544,499	$ (4,436)	$ (1,471,319)	$ 1,068,766

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

TuSimple Holdings Inc.
Condensed Consolidated Statements of Stockholders' Equity
(in thousands, except share amounts)
(unaudited)

	Common Stock						
	Shares	Amount	Additional Paid-in Capital	Accumulated Other Comprehensive Income (Loss)	Accumulated Deficit	Total Stockholders' Equity
Balance as of December 31, 2022	225,707,557	$ 22	$ 2,567,723	$ (3,559)	$ (1,609,705)	$ 954,481
Issuance of common stock from exercise of options	22,230	—	—	—	—	—
Issuance of common stock from release of RSUs and SVAs	654,949	—	—	—	—	—
Stock-based compensation	—	—	16,805	—	—	16,805
Unrealized gain on available-for-sale debt securities, net	—	—	—	403	—	403
Foreign currency translation adjustment	—	—	—	919	—	919
Net loss	—	—	—	—	(81,212)	(81,212)
Balance as of March 31, 2023	226,384,736	22	2,584,528	(2,237)	(1,690,917)	891,396
Issuance of common stock from exercise of options	31,626	—	30	—	—	30
Issuance of common stock from release of RSUs and SVAs	1,744,091	—	—	—	—	—
Compensatory stock issuances	175,816	—	—	—	—	—
Stock-based compensation	—	—	10,959	—	—	10,959
Unrealized loss on available-for-sale debt securities, net	—	—	—	(2,337)	—	(2,337)
Foreign currency translation adjustment	—	—	—	(1,864)	—	(1,864)
Net loss	—	—	—	—	(78,039)	(78,039)
Balance as of June 30, 2023	228,336,269	$ 22	$ 2,595,517	$ (6,438)	$ (1,768,956)	$ 820,145
Issuance of common stock from exercise of options	2,535	—	3	—	—	3
Issuance of common stock from release of RSUs and SVAs	1,263,374	—	—	—	—	—
Repurchase of common stock	(25,000)	—	(67)	—	—	(67)
Stock-based compensation	—	—	10,751	—	—	10,751
Unrealized gain on available-for-sale debt securities, net	—	—	—	512	—	512
Foreign currency translation adjustment	—	—	—	1,462	—	1,462
Net loss	—	—	—	—	(61,436)	(61,436)
Balance as of September 30, 2023	229,577,178	$ 22	$ 2,606,204	$ (4,464)	$ (1,830,392)	$ 771,370

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

TuSimple Holdings Inc.
Condensed Consolidated Statements of Cash Flows
(in thousands)
(unaudited)

	Nine Months Ended September 30,	
	2022	**2023**
Cash flows from operating activities:		
Net loss	$ (333,659)	$ (220,687)
Adjustments to reconcile net loss to net cash used in operating activities:		
Stock-based compensation	75,710	38,515
Depreciation and amortization	8,335	5,129
Noncash operating lease expense	3,931	4,031
Accretion of discount on short-term investments, net	(383)	(6,828)
Impairment of long-lived assets	—	3,200
Other adjustments	122	(973)
Changes in operating assets and liabilities:		
Accounts receivable	(1,545)	1,296
Prepaid expenses and other current assets	(3,738)	(1,678)
Other assets	2,279	199
Accounts payable	3,136	(5,873)
Amounts due to joint development partners	(2,603)	(2,577)
Accrued expenses and other current liabilities	(3,632)	(27,059)
Operating lease liabilities	(3,927)	(4,626)
Other liabilities	(17)	—
Net cash used in operating activities	(255,991)	(217,931)
Cash flows from investing activities:		
Purchases of short-term investments	(200,162)	(300,590)
Proceeds from maturities of short-term investments	—	155,756
Purchases of property and equipment and other assets	(9,809)	(2,902)
Proceeds from disposal of property and equipment	27	38
Purchases of intangible assets	(196)	—
Net cash used in investing activities	(210,140)	(147,698)
Cash flows from financing activities:		
Proceeds from the issuance of common stock under the Employee Stock Purchase Plan	2,286	—
Proceeds from exercised stock options	1,710	33
Principal payments on finance lease obligations	(929)	(277)
Principal payments on loans	(1,126)	(1,215)
Stock repurchase	—	(67)
Net cash provided by (used in) financing activities	1,941	(1,526)
Effect of exchange rate changes on cash, cash equivalents, and restricted cash	(1,931)	567
Net decrease in cash, cash equivalents, and restricted cash	(466,121)	(366,588)
Cash, cash equivalents, and restricted cash - beginning of period	1,339,092	617,465
Cash, cash equivalents, and restricted cash - end of period	$ 872,971	$ 250,877

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

TuSimple Holdings Inc.
Condensed Consolidated Statements of Cash Flows
(in thousands)
(unaudited)

	Nine Months Ended September 30,	
	2022	**2023**
Reconciliation of cash, cash equivalents, and restricted cash to the condensed consolidated balance sheets:		
Cash and cash equivalents	$ 871,360	$ 249,211
Restricted cash included in prepaid expenses and other current assets	1,611	1,666
Total cash, cash equivalents, and restricted cash	$ 872,971	$ 250,877
Supplemental disclosure of cash flow information:		
Cash paid for interest	$ 681	$ 332
Supplemental schedule of non-cash investing and financing activities:		
Acquisitions of property and equipment included in liabilities	$ 3,783	$ 254
Sale of assets within prepayments and other current assets	$ —	$ 2,068
Right-of-use assets obtained in exchange for operating lease obligations	$ 48,404	$ 35
Right-of-use assets obtained in exchange for finance lease obligations	$ 7,772	$ —
Vesting of early exercised stock options	$ 63	$ —

The accompanying notes are an integral part of these unaudited condensed consolidated financial statements.

Note 1. Description of Business and Summary of Significant Accounting Policies

Description of Business

TuSimple Holdings Inc. ("TuSimple" or the "Company") is a global autonomous driving technology company headquartered in San Diego, California, with operations in the United States ("U.S.") and Asia-Pacific region ("APAC"). Founded in 2015, TuSimple is working to revolutionize the global truck freight market by developing proprietary technologies that enable the scaled development and deployment of autonomous freight transportation.

Basis of Presentation and Consolidation

The accompanying unaudited condensed consolidated financial statements (“Financial Statements”) have been prepared in accordance with accounting principles generally accepted in the U.S. (“GAAP”) and applicable rules and regulations of the Securities and Exchange Commission (“SEC”) regarding interim financial reporting. The Financial Statements include the accounts of the Company and its consolidated subsidiaries. All significant intercompany balances and transactions have been eliminated in consolidation. These Financial Statements should be read in conjunction with the audited consolidated financial statements and notes as of and for the year ended December 31, 2022, included in the Company's Annual Report on Form 10-K.

The condensed consolidated balance sheet as of December 31, 2022 was derived from the audited consolidated financial statements as of that date, but does not include all disclosures required by GAAP. In management’s opinion, the accompanying Financial Statements reflect all normal recurring adjustments necessary for their fair presentation. Other than described below, there have been no changes to the Company’s significant accounting policies described in the Annual Report on Form 10-K for the year ended December 31, 2022 that have had a material impact on the Company’s Financial Statements.

Note 2. Investments and Fair Value Measurements

Investments

Investments on the condensed consolidated balance sheets consisted of the following (in thousands):

	September 30, 2023						
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Allowance for Credit Losses	Fair Value	Cash Equivalents	Short-term Investments
Available-for-sale debt securities:							
U.S. treasury securities	$ 74,782	$ —	$ (615)	$ —	$ 74,167	$ —	$ 74,167
U.S. government agency securities	227,489	—	(1,445)	—	226,044	—	226,044
Commercial paper	18,235	—	(19)	—	18,216	—	18,216
Corporate debt securities	209,174	10	(1,651)	—	207,533	—	207,533
Total	$ 529,680	$ 10	$ (3,730)	$ —	$ 525,960	$ —	$ 525,960

	December 31, 2022						
	Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Allowance for Credit Losses	Fair Value	Cash and Cash Equivalents	Short-term Investments
Available-for-sale debt securities:							
U.S. treasury securities	$ 9,843	$ —	$ (86)	$ —	$ 9,757	$ —	$ 9,757
U.S. government agency securities	97,139	34	(521)	—	96,652	—	96,652
Commercial paper	138,973	10	(207)	—	138,776	25,390	113,386
Corporate debt securities	159,045	55	(1,583)	—	157,517	—	157,517
Total	$ 405,000	$ 99	$ (2,397)	$ —	$ 402,702	$ 25,390	$ 377,312

The fair value and amortized cost of the Company's debt securities with a stated contractual maturity or redemption date were as follows (in thousands):

	September 30, 2023	
	Amortized Cost	Fair Value
Due in one year or less	$ 324,733	$ 322,462
Due in one year through five years	204,947	203,498
Total	$ 529,680	$ 525,960

The Company purchases investment grade marketable debt securities rated by nationally recognized statistical credit rating organizations in accordance with its investment policy, which is designed to minimize the Company's exposure to credit losses. The Company regularly reviews its investment portfolios to determine if any investment is impaired due to changes in credit risk or other potential valuation concerns.

As of September 30, 2023, investments in an unrealized loss position for which an allowance for credit losses has not been recognized had an aggregate fair value of $520.1 million. None of these investments were in a continuous unrealized loss position for more than twelve months. The Company does not intend to sell these investments until the recovery of their amortized cost basis or maturity and further believes that it is not more-likely-than-not that it will be required to sell these investments. The unrealized losses were primarily related to changes in interest rates, market spreads, and market conditions subsequent to purchase. The Company believes none of these debt securities were impaired due to credit risk or other valuation concerns, and, therefore, did not record a credit loss or an allowance for credit losses.

Interest income from cash and cash equivalents and short-term investments was $5.5 million and $7.9 million for the three and nine months ended September 30, 2022, respectively, and $9.3 million and $28.9 million for the three and nine months ended September 30, 2023, respectively.

Fair Value Measurements

The following table presents the Company's assets and liabilities that are measured at fair value on a recurring basis and indicates the fair value hierarchy of the valuation (in thousands):

	September 30, 2023			
	Total	**Level 1**	**Level 2**	**Level 3**
Assets:				
Cash equivalents:				
Money market funds	$ 205,642	$ 205,642	$ —	$ —
Total cash equivalents	$ 205,642	$ 205,642	$ —	$ —
Short-term investments:				
U.S. treasury securities	$ 74,167	$ 74,167	$ —	$ —
U.S. government agency securities	226,044	—	226,044	—
Commercial paper	18,216	—	18,216	—
Corporate debt securities	207,533	—	207,533	—
Total short-term investments	$ 525,960	$ 74,167	$ 451,793	$ —
Total	$ 731,602	$ 279,809	$ 451,793	$ —

	December 31, 2022			
	Total	**Level 1**	**Level 2**	**Level 3**
Assets:				
Cash equivalents:				
Money market funds	$ 530,674	$ 530,674	$ —	$ —
Commercial paper	25,390	—	25,390	—
Total cash equivalents	$ 556,064	$ 530,674	$ 25,390	$ —
Short-term investments:				
U.S. treasury securities	$ 9,757	$ 9,757	$ —	$ —
U.S. government agency securities	96,652	—	96,652	—
Commercial paper	113,386	—	113,386	—
Corporate debt securities	157,517	—	157,517	—
Total short-term investments	$ 377,312	$ 9,757	$ 367,555	$ —
Total	$ 933,376	$ 540,431	$ 392,945	$ —

Note 3. Balance Sheet Components

Property and Equipment, Net

Property and equipment, net as of December 31, 2022 and September 30, 2023, was as follows (in thousands):

	December 31, 2022	**September 30, 2023**
Electronic equipment	$ 4,385	$ 4,622
Office and other equipment	8,697	8,021
Vehicles	4,046	1,733
Leasehold improvements	12,267	12,793
Buildings	1,841	—
Construction in progress	358	457
Property and equipment, gross	31,594	27,626
Accumulated depreciation and amortization	(14,511)	(15,755)
Property and equipment, net	$ 17,083	$ 11,871

Depreciation and amortization expense was $2.8 million and $8.3 million for the three and nine months ended September 30, 2022, respectively, and $1.7 million and $5.1 million for the three and nine months ended September 30, 2023, respectively.

As of December 31, 2022, property and equipment financed under finance leases was $1.6 million, net of accumulated amortization of $0.9 million. As of September 30, 2023, the Company no longer has any finance lease assets.

Accrued Expenses and Other Current Liabilities

Accrued expenses and other current liabilities as of December 31, 2022 and September 30, 2023 were as follows (in thousands):

	December 31, 2022	September 30, 2023
Accrued payroll	$ 35,563	$ 16,482
Accrued information technology services	250	1,824
Accrued professional fees	4,798	2,953
Other	7,649	1,475
Accrued expenses and other current liabilities	$ 48,260	$ 22,734

Note 4. Commitments and Contingencies

Indemnification Obligations

The Company has entered into indemnification agreements with its officers, directors, and certain current and former employees, and its certificate of incorporation and bylaws contain certain indemnification obligations. It is not possible to make a reasonable estimate of the maximum potential amount under these indemnification agreements due to the unique facts and circumstances involved in each particular agreement. Additionally, the Company has a limited history of prior indemnification claims, and the payments it has made under such agreements have not had a material adverse effect on its results of operations, cash flows, or financial position. However, to the extent that valid indemnification claims arise in the future, future payments by the Company could be significant and could have a material adverse effect on its results of operations or cash flows in a particular period.

Litigation and Legal Proceedings

Except as described below, the Company believes it is not presently a party to any litigation the outcome of which, if determined adversely against the Company, would individually or in the aggregate have a material adverse effect on the Company’s business, financial condition, cash flows, or results of operations.

Shareholder Securities Litigation

On August 31, 2022, a securities class action complaint (the “August 2022 Action”) was filed, in the United States District Court for the Southern District of California, against the Company and certain of its current and former directors and officers (Xiaodi Hou, Mo Chen, Cheng Lu, Patrick Dillon, and James Mullen), and the underwriters who underwrote its IPO, on behalf of a putative class of stockholders who acquired its securities from April 15, 2021 through August 1, 2022. The August 2022 Action is captioned: *Dicker v. TuSimple Holdings, Inc. et al., 3:22-cv-01300-JES-MSB (S. D. Cal.)*. The complaint filed in the August 2022 Action alleges, among other things, that the Company and certain of its current and former directors and officers violated Sections 11 and 15 of the Securities Act and Sections 10(b) and 20(a) of the Exchange Act by making materially false or misleading statements, or failing to disclose information it was required to disclose, regarding the Company's autonomous driving technology. The complaint seeks unspecified monetary damages on behalf of the putative class and an award of costs and expenses, including reasonable attorneys’ fees.

On November 10, 2022, a second securities class action (the "November 2022 Action") complaint was filed in the United States District Court for the Southern District of New York against the Company and certain of its current and former directors and officers (Xiaodi Hou, Mo Chen, Cheng Lu, Eric Tapia, Patrick Dillon, and James Mullen), and the underwriters who underwrote its IPO, on behalf of a putative class of stockholders who acquired its securities from April 15, 2021 through October 31, 2022. The November 2022 Action was originally captioned: *Woldanski v. TuSimple Holdings, Inc., et al.*, 1:22-cv-09625-AKH (S.D.N.Y.). The complaint in the November 2022 Action alleges, among other things, that the Company and certain of its current and former directors and officers violated Sections 11, 12(a), and 15 of the Securities Act and Sections 10(b) and 20(a) of the Exchange Act, by making false or misleading statements, or failing to disclose information it was required to disclose, regarding the Company's related party transaction with Hydron and its sharing of confidential information and proprietary technology with Hydron without approval from the Board. The complaint seeks unspecified monetary damages on behalf of the putative class and an award of costs and expenses, including reasonable attorneys' fees. The November 2022 Action has since been transferred to the Southern District of California: *Woldanski v. TuSimple Holdings, Inc., et al., 3:23-cv-00282-JES-MSB (S. D. Cal.).*

On May 3, 2023, the Company made a motion to consolidate the August 2022 Action and November 2022 Action. The Court granted this motion and consolidated the August 2022 Action and November 2022 Action on July 20, 2023. On October 2, 2023, the plaintiffs filed a consolidated and amended complaint (the "Consolidated and Amended Complaint"). The Consolidated and Amended Complaint was filed against the Company and certain of its current and former directors and officers (Guowei "Charles" Chao, Xiaodi Hou, Mo Chen, Bonnie Yi Zhang, Cheng Lu, Patrick Dillon, Brad Buss, and Karen C. Francis) and the underwriters who underwrote its IPO, containing similar claims as asserted in the complaints filed in *Dicker v. TuSimple Holdings, Inc. et al., 3:22-cv-01300-JES-MSB (S. D. Cal.)* and *Woldanski v. TuSimple Holdings, Inc., et al.*, 3:23-cv-00282-JES-MSB (S. D. Cal.). The Consolidated and Amended Complaint alleges, among other things, that the Company and certain of its current and former directors and officers violated Sections 11, 12, and 15 of the Securities Act, Sections 10(b) and 20(a) of the Exchange Act, and Rule 10b-5, by making false or misleading statements, or failing to disclose information it was required to disclose, regarding the Company's related party transaction with Hydron, the Company's sharing of confidential information and proprietary technology with Hydron without approval from the Company's board of directors, the Company's safety profile, and certain of the Company's risk factors.

The Company is unable to estimate the potential loss or range of loss, if any, associated with this, or any similar, lawsuit, which could be material.

Shareholder Derivative Actions

On November 28, 2022, a shareholder derivative action was filed in the Delaware Court of Chancery by a stockholder purportedly on behalf of the Company against certain of its current and former directors and officers (Xiaodi Hou, Mo Chen, Brad Buss, Karen Francis, Michelle Sterling, and Reed Warner) alleging, among other things, that certain of the Company's current and former directors and officers breached their fiduciary duties to the Company in connection with a related party transaction with Hydron: *Nusbaum v. Hou et al., 2022-1095-NAC (Del. Ch.)*. The shareholder derivative action also alleges breaches of fiduciary duties against certain of the Company's current and former directors and officers in connection with the restructuring of the Company's Board.

On December 15, 2022, a second shareholder derivative action was filed in the Delaware Court of Chancery by a stockholder purportedly on behalf of the Company against certain of its current and former directors and officers (Xiaodi Hou, Mo Chen, Cheng Lu, Patrick Dillon, Eric Tapia, James Mullen, Brad Buss, Charles Chao, Karen Francis, Michelle Sterling, Reed Werner, and Bonnie Zhang) alleging similar claims to the action filed on November 28, 2022: *Young v. Hou et al., 2022-1157-NAC (Del. Ch.)*. The second shareholder derivative action additionally asserts, among other things, claims regarding the safety of the Company's technology and alleged inadequacy of the Company's internal controls.

On March 6, 2023, a third shareholder derivative action was filed in the Delaware Court of Chancery by a stockholder purportedly on behalf of the Company against certain of its current and former directors and officers (Xiaodi Hou, Brad Buss, Mo Chen, Charles Chao, Karen Francis, Wendy Hayes, Cheng Lu, James Lu, Michael Mosier, Michelle Sterling, Reed Werner, and Bonnie Zhang), alleging similar claims to the actions filed on November 28, 2022 and December 15, 2022: *Wolfson v. Hou et al., 2023-0279-NAC (Del. Ch.).* The stockholder has since purported to voluntarily dismiss her action.

On March 29, 2023, the Company made a motion to consolidate all of the above shareholder derivative actions. The Court granted the motion and consolidated the shareholder derivative actions on May 5, 2023. A consolidated complaint was filed on July 24, 2023 against Xiaodi Hou, Mo Chen, Brad Buss, Karen C. Francis, Reed Werner, and Hydron Inc., and TuSimple as nominal defendant, containing substantially the same claims as asserted in the complaint filed in *Nusbaum v. Hou et al.,* 2022-1095-NAC (Del. Ch.).

On August 17, 2023, the Delaware Court of Chancery entered an order staying the consolidated action through February 9, 2024 pending an investigation by a special litigation committee ("SLC") formed by the Company's Board of Directors to assess and determine whether the pursuit of derivative claims asserted in the consolidated action would be in the Company's best interests. The Board previously delegated to the SLC its authority to take all actions advisable, appropriate, and in the best interests of the Company and its shareholders with respect to the pending shareholder derivative litigation.

The Company is unable to estimate the potential loss or range of loss, if any, associated with this, or any similar, lawsuit, which could be material.

Regulatory Investigations

Committee on Foreign Investments in the United States ("CFIUS")

The Company is cooperating with an inquiry by CFIUS concerning its compliance with the National Security Agreement ("NSA") entered into with the U.S. government as it relates to information shared by TuSimple U.S. with TuSimple's China-based businesses ("TuSimple China"), Hydron, and Hydron's partners. If CFIUS concludes that information shared with TuSimple China, Hydron, and Hydron's partners was shared in violation of the terms of the NSA, it may impose a civil penalty on the Company. At this time, the Company is unable to estimate the likelihood of a negative outcome or the potential loss or range of loss associated with this matter. The Audit Committee and the Government Security Committee of the Board of Directors, the Board, and the Company are committed to cooperating fully as discussions with CFIUS continue.

The Company is unable to estimate the potential loss or range of loss, if any, associated with this, or any similar, investigation, which could be material.

Securities and Exchange Commission ("SEC")

As disclosed on November 7, 2022, in connection with the filing of the Company's Current Report on Form 8-K regarding the initial findings of the Audit Committee's internal investigation into the related party transaction with Hydron, the Company proactively reached out to the SEC and received an initial request for information from the SEC. Since the initial outreach, the Company and certain current and former directors and officers received subpoenas from the SEC requesting the production of Company documents and, with respect to certain individuals, subpoenas for testimony. The Company is unable to estimate the likelihood of a negative outcome or the potential loss or range of loss associated with this matter. The Company has cooperated, and intends to continue to fully cooperate, with the SEC's investigation.

The Company is unable to estimate the potential loss or range of loss, if any, associated with this, or any similar, investigation, which could be material.

Note 5. Stock-Based Compensation

Equity Compensation Plans

The Company maintains three equity compensation plans that provide for the issuance of shares of its Class A common stock to its employees, directors, and consultants: the 2017 Share Plan (the "2017 Plan"), the 2021 Equity Incentive Plan (the "2021 Plan"), and the 2021 Employee Stock Purchase Plan (the "2021 ESPP"), which have all been approved by the board of directors. Following the Company's initial public offering ("IPO") in 2021, the 2017 Plan was terminated but continues to govern the terms and conditions of the outstanding awards previously granted under the 2017 Plan. Subsequent to the IPO, the Company has only issued awards under the 2021 Plan and the 2021 ESPP. These plans provide for the issuance of incentive stock options ("ISOs"), nonstatutory stock options ("NSOs"), restricted shares, restricted stock units ("RSUs"), share value awards ("SVAs"), stock appreciation rights ("SARs"), and other awards.

2021 Employee Stock Purchase Plan

During the three and nine months ended September 30, 2023, the Company did not issue any shares under the 2021 ESPP.

Stock Options

A summary of the stock option activity, including the CEO Performance Award, for the nine months ended September 30, 2023 is as follows (in thousands, except share amounts, per share amounts, and years):

	Options Outstanding	Weighted-Average Exercise Price	Weighted-Average Remaining Life (Years)	Aggregate Intrinsic Value
Outstanding at December 31, 2022	2,623,511	$ 15.16	6.72	$ 798
Exercised	(56,391)	$ 0.58		
Cancelled/Forfeited	(1,046,520)	$ 20.10		
Outstanding at September 30, 2023	1,520,600	$ 12.30	4.95	$ 702
Vested and exercisable at September 30, 2023	1,320,925	$ 8.38	4.53	$ 657

As of September 30, 2023, there was $3.3 million of unrecognized stock-based compensation expense related to unvested stock options, which is expected to be recognized over a weighted-average service period of 1.83 years.

RSUs

The following table summarizes the activity related to RSUs for the nine months ended September 30, 2023:

	RSUs Outstanding	Weighted-Average Grant Date Fair Value per Share
Unvested and outstanding at December 31, 2022	17,847,473	$ 10.73
Granted	6,451,783	$ 1.98
Vested	(4,212,834)	$ 12.99
Cancelled	(5,972,395)	$ 13.18
Unvested and outstanding at September 30, 2023	14,114,027	$ 5.02
Vested and outstanding at September 30, 2023	671,585	$ 17.03

SVAs

The following table summarizes the activity related to SVAs for the nine months ended September 30, 2023:

	SVAs Outstanding	Weighted-Average Grant Date Fair Value per Share
Unvested and outstanding at December 31, 2022	79,438	$ 8.24
Vested	(69,575)	$ 7.40
Cancelled	(9,863)	$ 14.14
Unvested and outstanding at September 30, 2023	—	$ —
Vested and outstanding at September 30, 2023	—	$ —

As of September 30, 2023, there was $53.2 million of unrecognized stock-based compensation expense related to RSUs and SVAs, which is expected to be recognized over a weighted-average service period of 2.13 years.

2021 CEO Performance Award

In March 2021, included in the stock options discussed above, the Company granted 1,150,000 stock option awards to Cheng Lu, its former and current CEO, with an exercise price of $14.14 per share and a contractual life of ten years that vest upon the attainment of both operational milestones (performance conditions) and market conditions, assuming continued employment as CEO through the vesting date (the "2021 CEO Performance Award"). In March 2022, the Company underwent a change in CEO and the 2021 CEO Performance Award was cancelled in connection with the separation of Cheng Lu as CEO. As a result, the Company reversed the historical stock-based compensation expense attributable to the 2021 CEO Performance Award of $7.1 million.

In connection with the March 2022 separation of Cheng Lu as CEO, a total of 1,850,000 stock options were modified, of which 440,000 were vested as of the modification date. The terms of the modification allow for continued vesting of the unvested stock options during the twelve-month period following Cheng Lu's separation date of March 3, 2022 ("Transition Period"), subject to the provision of advisory services throughout the Transition Period. Upon the completion of such continuous services, all stock options subject to vesting would become vested and exercisable. Each of the modified stock options, including those vested and outstanding as of the modification date, were to remain outstanding and exercisable until the earlier of: (x) the date on which any of the Company's outstanding stock options are terminated in connection with a corporate transaction, (y) the original expiration date applicable to such stock options, and (z) the second anniversary of the date on which the transition services with the Company are terminated. The Company determined the continuous service provisions were in-substance an acceleration of the unvested awards and the incremental cost related to the modified options was recorded immediately upon the separation date. Additionally, 175,000 outstanding and unvested RSUs were accelerated in full as of Cheng Lu's separation date. As a result of these modifications, the Company recorded incremental stock-based compensation expense of $13.9 million during the nine months ended September 30, 2022.

2022 CEO Awards

In November 2022, Cheng Lu was reappointed as the Company's CEO. In connection with the re-appointment, on December 14, 2022, the Company granted Cheng Lu 3,425,000 RSUs that vest annually over a period of four years and 3,425,000 RSUs that vest annually over a period of four years upon the attainment of market-based milestones (together, the "2022 CEO Awards"). The market-based vesting requirements will be satisfied if the Company's average closing price over a 60-day trailing period exceeds certain thresholds at any time on or before November 10, 2026, as follows: (a) 33% of the units of stock will vest if such average closing price equals or exceeds $10.00, (b) 33% of the units of stock will vest if such average closing price equals or exceeds $15.00, and (c) 33% of the units of stock will vest if such average closing price equals or exceeds $20.00. The 2022 CEO Awards were granted in exchange for the cancellation and forfeiture of Cheng Lu's 1,850,000 outstanding stock options (inclusive of the 2021 CEO Performance Award, as discussed above).

During the three and nine months ended September 30, 2023, the Company recognized $0.7 million and $2.1 million in stock-based compensation expense for the 2022 CEO Awards, respectively. As of September 30, 2023, there was a total of $6.9 million of unrecognized stock-based compensation expense, which will be recognized over a weighted-average service period of 2.81 years.

Stock-based Compensation Expense

Total stock-based compensation expense was as follows (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2023	2022	2023
Research and development	$ 16,915	$ 6,564	$ 56,771	$ 24,962
Selling, general and administrative	6,117	4,187	18,939	13,553
Total stock-based compensation expense	$ 23,032	$ 10,751	$ 75,710	$ 38,515

Note 6. Income Taxes

The Company's effective tax rate was 0% for the three and nine months ended September 30, 2023, which is lower than the U.S. federal rate of 21% and was primarily due to valuation allowances recorded on current year losses. As of September 30, 2023, the Company continues to maintain a full valuation allowance against its U.S. and foreign net deferred tax assets due to significant negative evidence, including cumulative losses in the most recent three-year period and the Company's assessment that it is not more likely than not that the net deferred tax assets will be realized.

Note 7. Net Loss Per Share Attributable to Common Stockholders

Basic net loss per share attributable to common stockholders is calculated by dividing net loss attributable to common stockholders by the weighted-average shares of common stock outstanding for the period. Diluted net loss per share attributable to common stockholders is the same as basic net loss per share attributable to common stockholders for all years presented because the effects of potentially dilutive items were antidilutive given the Company's net loss in each period presented.

The following table presents the calculation of basic and diluted net loss per share attributable to common stockholders (in thousands, except share and per share amounts):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2023	2022	2023
Numerator:				
Net loss attributable to common stockholders, basic and diluted	$ (113,161)	$ (61,436)	$ (333,659)	$ (220,687)
Denominator:				
Weighted-average shares used in computing net loss per share, basic and diluted	224,745,672	229,537,972	223,698,744	227,989,087
Net loss per share:				
Net loss per share attributable to common stockholders, basic and diluted	$ (0.50)	$ (0.27)	$ (1.49)	$ (0.97)

The following potentially dilutive outstanding shares were excluded from the computation of diluted net loss per share for the periods presented because including them would have had an anti-dilutive effect, or because issuance of such shares is contingent upon the satisfaction of certain conditions which were not satisfied by the end of the period:

	As of September 30,	
	2022	2023
Options to purchase common stock	4,789,024	1,520,600
RSUs subject to future vesting	12,200,049	14,114,027
SVAs subject to future vesting	91,274	—
Early exercised options subject to future vesting	25,000	—
Common stock contingently issuable under ESPP	27,989	—
Total	17,133,336	15,634,627

Note 8. Segment Information

The following table provides information about the Company's segments and a reconciliation of total segment Adjusted EBITDA to loss before provision for income taxes (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2023	2022	2023
Segment Adjusted EBITDA:				
United States	$ (68,249)	$ (29,231)	$ (192,132)	$ (119,853)
Asia-Pacific	(24,531)	(28,175)	(63,559)	(71,937)
Total Segment Adjusted EBITDA	(92,780)	(57,406)	(255,691)	(191,790)
Reconciling items:				
Stock-based compensation expense(1)	(23,032)	(10,751)	(75,710)	(41,071)
Depreciation and amortization(1)	(2,874)	(1,707)	(8,335)	(4,500)
Restructuring expenses	—	(793)	(1,568)	(11,220)
Finance lease interest expense included within cost of revenue	(147)	—	(436)	(53)
Interest income	5,545	9,298	7,912	28,922
Other income (expense), net	127	(77)	169	(975)
Loss before provision for income taxes	$ (113,161)	$ (61,436)	$ (333,659)	$ (220,687)

(1) Excludes amounts related to restructuring events, which are reflected in the "Restructuring expenses" line item.

Note 9. Restructuring and Related Charges

During the fourth quarter of 2022 and the first half of 2023, the Board authorized various restructuring plans to rebalance the Company's cost structure in alignment with its strategic priorities (the "Restructuring Plans"). In connection with the Restructuring Plans, the Company incurred costs consisting primarily of cash expenditures for employee transition, notice period and severance payments, employee benefits and related costs, as well as non-cash charges of certain non-current assets.

The following table presents the total restructuring and related charges or benefits incurred during the reporting period, all of which are attributable to its U.S. segment, by line item on the consolidated statement of operations (in thousands):

	Three Months Ended September 30, 2023	Nine Months Ended September 30, 2023
Research and development	$ (838)	$ 7,944
Selling, general and administrative	1,631	3,276
Total restructuring and related cost	$ 793	$ 11,220

The following table provides the components of and changes in the accrued restructuring and related charges during nine months ended September 30, 2023 (in thousands):

	Severance and Other Termination Benefits	Long-Lived Asset Costs (1)	Stock-based Compensation (2)	Total
Balance as of December 31, 2022	$ 10,191	$ —	$ —	$ 10,191
Charges (benefits)	9,953	3,823	(2,556)	11,220
Cash payments	(20,144)	(949)	—	(21,093)
Non-cash adjustments	—	(2,874)	2,556	(318)
Balance as of September 30, 2023	$ —	$ —	$ —	$ —

(1) Primarily related to the impairment or write-off of property plant and equipment and ROU assets, net of gains from disposal of assets.

(2) Related to reversal of stock-based compensation expense due to modification of equity awards.

Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with our unaudited condensed consolidated financial statements and the accompanying notes thereto included elsewhere in this Quarterly Report on Form 10-Q and our audited consolidated financial statements and the accompanying notes thereto included in our Annual Report on Form 10-K for the year ended December 31, 2022. In addition to historical consolidated financial information, the following discussion contains forward-looking statements that reflect our plans, estimates, and beliefs. Our actual results could differ materially from those discussed in the forward-looking statements. You should review the section titled "Special Note Regarding Forward-Looking Statements" for a discussion of forward-looking statements and the section titled "Risk Factors" of the Annual Report on Form 10-K for the year ended December 31, 2022 for a discussion of factors that could cause actual results to differ materially from the results described in or implied by the forward-looking statements contained in the following discussion and analysis and elsewhere in this Quarterly Report on Form 10-Q. Our historical results are not necessarily indicative of the results that may be expected for any period in the future.

Overview

When used in this report, the terms "TuSimple", "Company", "we", "us", and "our" mean TuSimple Holdings Inc. and all subsidiaries.

TuSimple is a global autonomous driving technology company headquartered in San Diego, California, with operations in the United States ("U.S.") and the Asia-Pacific region ("APAC"). Founded in 2015, we are working to revolutionize the estimated $4 trillion global truck freight market by developing proprietary technologies that enable the scaled development and deployment of autonomous freight transportation. We believe that our full-stack L4 autonomous driving technology and our Autonomous Freight Network ("AFN") will make global trucking safer as well as more reliable, efficient, and environmentally friendly.

Reportable Segments

TuSimple's two reportable geographic segments are the U.S. and APAC. These segments align with our bifurcated development strategy of our L4 autonomous driving technology and independent operations and commercial business models in each region. Each segment has stand-alone engineering teams, software code base, infrastructure, technological capabilities, and onboard software development to fit regional demands and differences in end-market use cases.

AFN

We are in the early stages of developing our AFN. Our AFN will provide autonomous freight capacity as a service through two service models based on users' needs:

- ***TuSimple Capacity.*** Our fleet of owned or leased retrofitted (near-term) and purpose-built L4 autonomous semi-trucks (longer-term) will serve customers that desire access to safe, reliable, low cost, and more environmentally friendly freight transportation without owning semi-truck assets.
- ***Carrier-Owned Capacity.*** Customers that prefer to own their fleet will be able to purchase our purpose-built L4 autonomous semi-truck from an OEM with on-board autonomous driving software solutions.

We believe the TuSimple Capacity model with retrofitted trucks will enable an accelerated path to commercialization. We have developed proprietary technologies and systems necessary for the development and deployment of our autonomous trucking operations within the AFN. Once fully scaled, the AFN aims to serve as a comprehensive autonomous freight solution that provides users with access to L4 autonomous semi-trucks operating on HD digital mapped routes connecting a network of terminals.

Full-Stack L4 Autonomous Driving Technology, Hardware, and Offboard Capabilities

TuSimple is developing L4 autonomous driving solutions with Automated Driving System ("ADS") L4 capable onboard software, offboard capabilities, and hardware. The capabilities for the U.S. and APAC segments, including their software base code, have been independently developed by the technology teams in each region.

Our autonomous driving technology is specifically designed for semi-trucks in the geographies where we operate. Our current development priorities and testing activities are focused on further refining our L4 autonomous driving technology to prepare them for scaled deployment and commercialization. Our proprietary L4 autonomous driving solutions include our L4-capable ADS, such as 1,000 meter perception range, multi-modal perception, and offboard capabilities, such as high definition (“HD”) maps, machine-learning, autonomy visualization and simulation capabilities, and an integrated L4 autonomous semi-truck design consisting of a redundant sensor suite, on-board computing solutions, and other components. Long-range perception, advanced planning and decision-making, and highly accurate mapping are important capabilities for the autonomous freight operation of semi-trucks, which are heavy, articulated vehicles that need to be able to operate at highway speeds.

Our Operations Today

We currently operate approximately 70 L4 autonomous semi-trucks, 35 in the U.S. and 35 in APAC in Driver-In mode with a safety driver and safety engineer in the cabin. Operating with a safety driver and safety engineer allows us to continually improve our L4 technology. We have also conducted select testing operations in other locations in the U.S., China, Japan and Sweden as we make Operational Design Domain ("ODD") expansions and demonstrate our capabilities to customers and partners. Currently, we do not have operations in Sweden and we are focused on expanding our ODD in the APAC region.

During prior years, we generated revenue from freight capacity services to customers via the TuSimple Capacity service model in the U.S. Gross loss margins for our revenue operations exceeded 100% of revenue given their developmental nature, including having a driver and test engineers in the trucks. Deploying our autonomous trucks in Driver-In mode in a real world commercial setting allowed us to develop our technology while generating revenue, as well as establish fleet management operations and related processes ahead of initiating commercialization. Currently, we believe the incremental benefits and learnings associated with these revenue operations do not outweigh their operating losses. Effective the fourth quarter of 2022, we de-emphasized revenue-generating freight services for our U.S. operations. As such, we do not plan to generate significant revenue in the U.S. for the foreseeable future.

Components of Results of Operations

Revenue

To date, all of our revenue recognized has been from freight capacity services provided through the TuSimple Capacity service model in the U.S. Revenue is recognized over time as the goods are transported from one location to another based on the number of miles traveled. Shipments are completed within a short period of time, typically spanning one to two days.

Cost of Revenue

Our cost of revenue consists primarily of fuel costs, depreciation of property and equipment (including semi-trucks acquired under finance leases), labor costs, and other costs directly attributable to the provision of freight capacity services. Currently, we operate a large portion of our semi-trucks with two occupants, a safety engineer and a safety driver.

Research and Development ("R&D")

R&D costs consist primarily of personnel-related expenses, including stock-based compensation costs, associated with software developers and engineering personnel responsible for the design, development, and testing of our L4 autonomous driving technology, and allocated overhead costs.

Selling, General and Administrative ("SG&A")

SG&A costs consist primarily of personnel-related expenses, including stock-based compensation costs, associated with our sales, marketing, management, and administration activities, professional service fees, and other general corporate expenses.

Interest Income

Interest income consists primarily of interest earned on our cash and cash equivalents and short-term investments.

Provision for Income Taxes

Provision for income taxes consists primarily of U.S. federal and state income taxes and income taxes in certain foreign jurisdictions in which we conduct business. Since inception, we have incurred operating losses. We have a full valuation allowance for net deferred tax assets, including federal and state net operating loss carryforwards and research and development credit carryforwards. We expect to maintain this valuation allowance until it becomes more likely than not that the benefit of our federal and state deferred tax assets will be realized by way of expected future taxable income.

Results of Operations

The following table sets forth our unaudited condensed consolidated results of operations data for the periods presented (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2023	2022	2023
Revenue	$ 2,653	$ —	$ 7,511	$ 307
Cost of revenue	5,436	—	15,292	754
Gross loss	(2,783)	—	(7,781)	(447)
Operating expenses:				
Research and development[1]	84,931	44,322	248,608	164,430
Selling, general and administrative[1]	31,119	26,335	85,351	83,757
Total operating expenses	116,050	70,657	333,959	248,187
Loss from operations	(118,833)	(70,657)	(341,740)	(248,634)
Interest income	5,545	9,298	7,912	28,922
Other income (expense), net	127	(77)	169	(975)
Loss before provision for income taxes	(113,161)	(61,436)	(333,659)	(220,687)
Provision for income taxes	—	—	—	—
Net loss	$ (113,161)	$ (61,436)	$ (333,659)	$ (220,687)

(1) Includes stock-based compensation expense as follows (in thousands)

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2023	2022	2023
Research and development	$ 16,915	$ 6,564	$ 56,771	$ 24,962
Selling, general and administrative	6,117	4,187	18,939	13,553
Total stock-based compensation expense	$ 23,032	$ 10,751	$ 75,710	$ 38,515

Comparison of the Three and Nine Months Ended September 30, 2022 and 2023

Revenue

	Three Months Ended September 30,			Nine Months Ended September 30,		
(In thousands, except percentages)	2022	2023	% Change	2022	2023	% Change
Revenue	$ 2,653	$ —	(100)%	$ 7,511	$ 307	(96)%

Three Months Ended September 30, 2023 Compared with the Same Period in 2022

We had no revenue in the three months ended September 30, 2023, in-line with our previously disclosed revised strategy to pause freight revenue operations in our U.S. segment.

Nine Months Ended September 30, 2023 Compared with the Same Period in 2022

Revenue decreased by $7.2 million, or 96%, in the nine months ended September 30, 2023 compared to the same period in the prior year, primarily due to reduced volume of orders and loads, in-line with our previously disclosed revised strategy to pause freight revenue operations in our U.S. segment.

Cost of Revenue

	Three Months Ended September 30,			Nine Months Ended September 30,		
(In thousands, except percentages)	2022	2023	% Change	2022	2023	% Change
Cost of revenue	$ 5,436	$ —	(100)%	$ 15,292	$ 754	(95)%

Three Months Ended September 30, 2023 Compared with the Same Period in 2022

Cost of revenue was zero in the three months ended September 30, 2023, in-line with our previously disclosed revised strategy to pause freight revenue operations in our U.S. segment.

Nine Months Ended September 30, 2023 Compared with the Same Period in 2022

Cost of revenue decreased by $14.5 million, or 95%, in the nine months ended September 30, 2023 compared to the same period in the prior year, in-line with our previously disclosed revised strategy to pause freight revenue operations in our U.S. segment.

Restructuring

During the fourth quarter of 2022 and first half of 2023, our board of directors authorized multiple restructuring plans to rebalance our cost structure in alignment with our strategic priorities, including a 25% and a 30% reduction of our total workforce in December 2022 and May 2023, respectively, and impairment or write-off of several capital assets.

Research and Development

(*In thousands, except percentages*)	Three Months Ended September 30, 2022	Three Months Ended September 30, 2023	% Change	Nine Months Ended September 30, 2022	Nine Months Ended September 30, 2023	% Change
U.S.	$ 60,632	$ 20,228	(67)%	$ 186,006	$ 100,951	(46)%
APAC	24,299	24,094	(1)%	62,602	63,479	1 %
Total R&D	$ 84,931	$ 44,322	(48)%	$ 248,608	$ 164,430	(34)%

Three Months Ended September 30, 2023 Compared with the Same Period in 2022

U.S.

R&D expenses decreased by $40.4 million, or 67%, in the three months ended September 30, 2023 compared to the same period in the prior year. The decrease was primarily attributable to our restructuring efforts during the fourth quarter of 2022 and first half of 2023 that significantly reduced headcount and resulted in decreased personnel-related costs, including stock-based compensation expense.

APAC

R&D expenses decreased by $0.2 million in the three months ended September 30, 2023 compared to the same period in the prior year. There was a decrease in joint development costs due to the timing of our joint development activities related to our TuSimple Domain Controller ("TDC"), which was offset by increased R&D expenses to expand operations in China and Japan as we further develop L4 capabilities in the region.

Nine Months Ended September 30, 2023 Compared with the Same Period in 2022

U.S.

R&D expenses decreased by $85.1 million, or 46%, in the nine months ended September 30, 2023 compared to the same period in the prior year. The decrease was primarily attributable to our restructuring efforts during the fourth quarter of 2022 and first half of 2023 that significantly reduced headcount and resulted in decreased personnel-related costs, including stock-based compensation expense, and decreased depreciation and allocated facility costs.

APAC

R&D expenses increased by $0.9 million in the nine months ended September 30, 2023 compared to the same period in the prior year. There was an increase in personnel-related costs and R&D expenses to expand operations in China and Japan as we further develop L4 capabilities in the region, which was offset by reduced joint development costs due to the timing of the joint development activities related to our TDC.

Selling, General and Administrative

(*In thousands, except percentages*)	Three Months Ended September 30, 2022	Three Months Ended September 30, 2023	% Change	Nine Months Ended September 30, 2022	Nine Months Ended September 30, 2023	% Change
U.S.	$ 25,828	$ 17,970	(30)%	$ 67,527	$ 62,822	(7)%
APAC	5,291	8,365	58 %	17,824	20,935	17 %
Total SG&A	$ 31,119	$ 26,335	(15)%	$ 85,351	$ 83,757	(2)%

Three Months Ended September 30, 2023 Compared with the Same Period in 2022

U.S.

SG&A expenses decreased by $7.9 million, or 30%, in the three months ended September 30, 2023 compared to the same period in the prior year. The decrease was primarily attributable to our restructuring efforts during the fourth quarter of 2022 and first half of 2023 that significantly reduced headcount and resulted in decreased personnel-related costs, including stock-based compensation expense, decreased office and facility-related costs due to the associated change in our business strategy, and decreased professional services costs due to decreases in consulting services. These decreases were partially offset by increased allocated corporate legal costs in connection with ongoing litigation and investigations.

APAC

SG&A expenses increased by $3.1 million, or 58%, in the three months ended September 30, 2023 compared to the same period in the prior year. The increase was primarily attributable to increased allocated corporate legal and professional services costs in connection with ongoing litigation matters.

Nine Months Ended September 30, 2023 Compared with the Same Period in 2022

U.S.

SG&A expenses decreased by $4.7 million, or 7%, in the nine months ended September 30, 2023 compared to the same period in the prior year. The decrease was primarily attributable to our restructuring efforts during the fourth quarter of 2022 and first half of 2023 that significantly reduced headcount and resulted in decreased personnel-related costs, including stock-based compensation, decreases in office and facility-related costs and business development and marketing costs due to the associated change in our business strategy, decreased professional service fees due to reduced consulting services, and allocated corporate costs consisting of a non-recurring expense recorded during the nine months ended September 30, 2022 related to the modification of Cheng Lu's equity awards in connection with his separation as CEO in March 2022. These decreases were partially offset by increased allocated corporate legal and professional services costs in connection with ongoing litigation and investigations and restructuring expenses related to our restructuring plans during the first half of 2023.

APAC

SG&A expenses increased by $3.1 million, or 17%, in the nine months ended September 30, 2023 compared to the same period in the prior year. The increase was primarily attributable to increased allocated corporate legal and professional services costs in connection with ongoing litigation and investigations, partially offset by a decrease in personnel-related costs due to the decrease in stock-based compensation due to the decrease in our stock price, and allocated corporate costs consisting of a non-recurring expense recorded during the nine months ended September 30, 2022 related to the modification of Cheng Lu's equity awards in connection with his separation as CEO in March 2022.

Interest Income

	Three Months Ended September 30,			Nine Months Ended September 30,		
(In thousands, except percentages)	**2022**	**2023**	**% Change**	**2022**	**2023**	**% Change**
Interest income	$ 5,545	$ 9,298	68 %	$ 7,912	$ 28,922	266 %

Three Months Ended September 30, 2023 Compared with the Same Period in 2022

Interest income increased by $3.8 million, or 68%, in the three months ended September 30, 2023 compared to the same period in the prior year, primarily due to an increase in our interest-bearing short-term investments. We started to invest in marketable securities in August 2022.

Nine Months Ended September 30, 2023 Compared with the Same Period in 2022

Interest income increased by $21.0 million, or 266%, in the nine months ended September 30, 2023 compared to the same period in the prior year, primarily due to an increase in our interest-bearing short-term investments. We started to invest in marketable securities in August 2022.

Segment Adjusted EBITDA

We have two reportable segments: U.S. and APAC. Our Chief Operating Decision Maker ("CODM") utilizes the segment Adjusted EBITDA metric to evaluate operating performance and allocate resources.

The following table provides information about our segment Adjusted EBITDA (in thousands):

	Three Months Ended September 30,		% Change	Nine Months Ended September 30,		% Change
	2022	2023		2022	2023	
U.S.	$ (68,249)	$ (29,231)	(57)%	$ (192,132)	$ (119,853)	(38)%
APAC	(24,531)	(28,175)	15 %	(63,559)	(71,937)	13 %
Total Adjusted EBITDA	$ (92,780)	$ (57,406)	(38)%	$ (255,691)	$ (191,790)	(25)%

The changes in our segment Adjusted EBITDA for both U.S. and APAC segments are primarily attributable to the changes in operating expenses. Refer to the comparisons above for discussion on the changes in respective research and development expense and selling, general and administrative expense for the two segments.

Key Metric and Non-GAAP Financial Measure

	Three Months Ended September 30,		% Change	Nine Months Ended September 30,		% Change
(In thousands, except percentages)	2022	2023		2022	2023	
Loss from operations	$ (118,833)	$ (70,657)	(41)%	$ (341,740)	$ (248,634)	(27)%
Adjusted EBITDA[(1)]	$ (92,780)	$ (57,406)	(38)%	$ (255,691)	$ (191,790)	(25)%

[(1)] Adjusted EBITDA is a non-GAAP financial measure. For more information regarding our use of this financial measure and a reconciliation of this financial measure to the most comparable GAAP measure, see "Reconciliation of Non-GAAP Financial Measure."

Adjusted EBITDA

Adjusted EBITDA is a performance measure that our management uses to assess our operating performance in our business. Since Adjusted EBITDA facilitates internal comparisons of our historical operating performance on a more consistent basis, we use this measure for business planning purposes. Accordingly, we believe that Adjusted EBITDA provides useful information to investors and others in understanding and evaluating our operating results in the same manner as our management team and board of directors.

We calculate Adjusted EBITDA as loss from operations, adjusted to exclude:

- depreciation and amortization;
- stock-based compensation expense;
- restructuring expenses; and
- finance lease interest expense included within cost of revenue.

For more information regarding the limitations of Adjusted EBITDA and a reconciliation of loss from operations to Adjusted EBITDA, see the section titled "Reconciliation of Non-GAAP Financial Measure."

Reconciliation of Non-GAAP Financial Measure

We use Adjusted EBITDA in conjunction with GAAP measures as part of our overall assessment of our performance, including the preparation of our operating budget and quarterly forecasts, to evaluate the effectiveness of our business strategies, and to communicate with our board of directors concerning our financial performance. Because non-GAAP financial measures are not standardized, it may not be possible to compare this measure with other companies' non-GAAP measures having the same or similar names. In addition, other companies may not publish similar metrics. Furthermore, this measure has certain limitations in that it does not include the impact of certain expenses that are reflected in our consolidated statements of operations that are necessary to run our business. Our Adjusted EBITDA should be considered in addition to, not as a substitute for, or in isolation from, measures prepared in accordance with GAAP.

The following table provides a reconciliation of reported net loss from operations determined in accordance with GAAP to non-GAAP adjusted EBITDA (in thousands):

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2022	2023	2022	2023
Loss from Operations	$ (118,833)	$ (70,657)	$ (341,740)	$ (248,634)
Stock-based compensation expense[1]	23,032	10,751	75,710	41,071
Depreciation and amortization[1]	2,874	1,707	8,335	4,500
Restructuring expenses	—	793	1,568	11,220
Finance lease interest expense included within cost of revenue	147	—	436	53
Adjusted EBITDA	$ (92,780)	$ (57,406)	$ (255,691)	$ (191,790)

[1] Excludes amounts related to restructuring events.

Liquidity and Capital Resources

We have financed our operations primarily through the sale of capital stock, which has historically been sufficient to meet our working capital and capital expenditure requirements. As of September 30, 2023, our principal sources of liquidity were $249.2 million of cash and cash equivalents, exclusive of restricted cash of $1.7 million, and $526.0 million of short-term investments. Cash and cash equivalents consist primarily of cash on deposit with banks, certificates of deposit, and money market funds. Short-term investments consist primarily of available-for-sale debt securities including: commercial paper, U.S. treasury securities, U.S. government agency securities, and corporate debt securities. We consider our short-term investments as available for use in current operations. Based on our current operating plan, we believe that our existing cash and cash equivalents will be sufficient to meet our anticipated cash needs for at least the next 12 months.

Our future capital requirements will depend on many factors, including, but not limited to, the rate of our growth, our ability to attract and retain users and their willingness to pay for our services, and the timing and extent of spending to support our efforts to develop our L4 autonomous driving technology and AFN. Further, we may enter into future arrangements to acquire or invest in businesses, products, services, strategic partnerships, and technologies. As such, we may be required to seek additional equity and/or debt financing. To the extent that we raise additional capital through the sale of equity or convertible debt securities, the ownership interest of our stockholders will be diluted, and the terms of these securities may include liquidation or other preferences that adversely affect the rights of common stockholders. The incurrence of indebtedness would result in increased fixed obligations and could result in operating covenants that would restrict our operations. If we are unable to maintain sufficient financial resources, our business, financial condition and results of operations may be materially and adversely affected.

Cash Flows

The following table summarizes our cash flows for the periods presented (in thousands):

	Nine Months Ended September 30,	
	2022	2023
Net cash (used in) provided by:		
Operating activities	$ (255,991)	$ (217,931)
Investing activities	$ (210,140)	$ (147,698)
Financing activities	$ 1,941	$ (1,526)

Operating Activities

Net cash used in operating activities was $256.0 million and $217.9 million for the nine months ended September 30, 2022 and 2023, respectively. The decrease was primarily due to a decrease in net losses as a result of our restructuring activities during the fourth quarter of 2022 and first half of 2023 to rebalance our cost structure in alignment with our strategic priorities.

Investing Activities

Net cash used in investing activities was $210.1 million and $147.7 million for the nine months ended September 30, 2022 and 2023, respectively. The decrease was primarily due to movements in the balance of our investments in marketable securities caused by purchases of investments and proceeds from the maturity of investments during the nine months ended September 30, 2023.

Financing Activities

Net cash provided by financing activities was $1.9 million for the nine months ended September 30, 2022 and related to proceeds received from the issuance of shares related to the exercise of stock options by employees and purchases under our Employee Stock Purchase Plan, that were partially offset by the principal payments on our finance leases and truck purchase loans. Net cash used in financing activities was $1.5 million for the nine months ended September 30, 2023 and primarily related to the principal payments on our finance leases and truck purchase loans.

Material Cash Requirements

At September 30, 2023, there were future minimum lease payments of $52.7 million for operating leases.

Critical Accounting Estimates

We prepare our condensed consolidated financial statements in accordance with GAAP. The preparation of these condensed consolidated financial statements in conformity with GAAP requires us to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the condensed consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. We base our estimates on historical experience and other assumptions that we believe are reasonable under the circumstances. Our actual results could differ significantly from these estimates under different assumptions and conditions.

There have been no material changes to our critical accounting estimates as compared to the critical accounting estimates discussed in our Annual Report on Form 10-K for the year ended December 31, 2022, except as described in Note 1. Description of Business and Summary of Significant Accounting Policies to our condensed consolidated financial statements.

Recent Accounting Pronouncements

For information on recently issued accounting pronouncements, refer to Note 1. Description of Business and Summary of Significant Accounting Policies in our condensed consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q.

Item 3. Quantitative and Qualitative Disclosures About Market Risk.

Other than the items noted below, there have been no material changes to the Company's market risk during the first six months of 2023. For a discussion of the Company's exposure to market risk, refer to the Company's market risk disclosures set forth in Part II, Item 7A, "Quantitative and Qualitative Disclosures About Market Risk" of the 2022 Form 10-K.

Investment and Interest Rate Risk

We are exposed to interest rate risk primarily due to our investment portfolio. Changes in interest rates affect the interest earned on our total cash, cash equivalents, and marketable securities and the fair value of those securities.

We had cash and cash equivalents of $249.2 million and short-term investments of $526.0 million as of September 30, 2023, which primarily consisted of cash deposits, money market funds, commercial paper, U.S. government and agency securities, and investment-grade corporate debt securities. The primary objective of our investment activities is to preserve capital and meet liquidity requirements without significantly increasing risk. We invest primarily in highly-liquid, investment grade debt securities, and we limit the amount of credit exposure to any one issuer. We do not enter into investments for trading or speculative purposes and have not used any derivative financial instruments to manage our interest rate risk exposure. Because our cash equivalents and marketable securities generally have short maturities, the fair value of our portfolio is relatively insensitive to interest rate fluctuations. Due to the short-term nature of our investments, we have not been exposed to, nor do we anticipate being exposed to, material risks due to changes in interest rates. A hypothetical 100 basis point increase in interest rates would not have a material impact on the fair value of our investment portfolio as of September 30, 2023.

Item 4. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures

Our management, with the participation and supervision of our Chief Executive Officer and our Chief Financial Officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act) as of the end of the period covered by this Quarterly Report on Form 10-Q. Based on such evaluation, our Chief Executive Officer and Chief Financial Officer have concluded that as of such date, our disclosure controls and procedures were not effective due to the material weaknesses in our internal control over financial reporting described below. In light of this fact, our management has performed additional analysis, investigations, and other post-closing procedures and has concluded that, notwithstanding the material weaknesses in our internal control over financial reporting, the condensed consolidated financial statements for the periods covered by and included in this Quarterly Report on Form 10-Q fairly present, in all material respects, our financial position, results of operations, and cash flows for the periods presented in conformity with GAAP.

Previously Identified Material Weaknesses in Internal Control over Financial Reporting

A material weakness is a deficiency, or a combination of deficiencies in internal control over financial reporting, such that there is a reasonable possibility that a material misstatement of our annual or interim financial statements will not be prevented or detected on a timely basis. As previously disclosed in Part II, Item 9A, *Controls and Procedures*, of the Annual Report on Form 10-K for the year ended December 31, 2022, which was filed with the Securities and Exchange Commission on September 7, 2023, management identified the following material weaknesses in our internal control over financial reporting, which we have determined continue as of September 30, 2023:

- The unexpected removal of all the independent directors of our Board in November 2022, including all of the members of our Audit Committee, by our controlling shareholders impacted the oversight and monitoring of required internal controls and procedures; and
- A lack of understanding among Company personnel regarding the Company's policy on the identification, approval, and disclosure of related party transactions resulted in our inability to maintain effective controls over the identification and disclosure of related party transactions.

Remediation Plan

We have begun taking the necessary measures to remediate the identified material weaknesses in internal control over financial reporting, including:

- Appointing independent directors to the Board in mid-December 2022, reconstituting the Audit Committee on December 15, 2022, and appointing additional independent directors to the Board in March 2023;
- Resuming meetings of our Board and committees, including with respect to effective oversight of financial reporting and monitoring of internal controls and procedures;
- Providing targeted training to certain personnel regarding the scope and application of the Company's policy on identification and reporting of related party transactions; and
- Further developing, refining, and implementing processes and documentation procedures related to the identification and reporting of related party transactions.

While we have initiated a plan to remediate these material weaknesses, these actions and planned actions are subject to ongoing evaluation by management and will require testing and validation of design and operating effectiveness of internal controls over financial reporting over future periods. We are committed to the continuous improvement of our internal control over financial reporting and intend to continue to take actions necessary to remediate deficiencies in our internal control over financial reporting.

Changes in Internal Control over Financial Reporting

Except as discussed above, there was no change in our internal control over financial reporting that occurred during the quarter ended September 30, 2023, which has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Limitations on the Effectiveness of Controls

The effectiveness of any system of disclosure controls and procedures and internal control over financial reporting, including ours, is subject to inherent limitations, including the exercise of judgment in designing, implementing, operating, and evaluating the controls and procedures, and the inability to eliminate misconduct completely. Accordingly, in designing and evaluating the disclosure controls and procedures, management recognizes that any system of internal control over financial reporting, including ours, no matter how well designed and operated, can only provide reasonable assurance, not absolute assurance of achieving the desired control objectives. In addition, the design of disclosure controls and procedures must reflect the fact that there are resource constraints and that management is required to apply its judgment in evaluating the benefits of possible controls and procedures relative to their costs. Moreover, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate. We intend to continue to monitor and upgrade our internal controls as necessary or appropriate for our business but cannot assure you that such improvements will be sufficient to provide us with effective internal control over financial reporting.

PART II—OTHER INFORMATION

Item 1. Legal Proceedings.

From time to time, we are involved in various legal proceedings arising from the normal course of business activities. Defending such proceedings may be costly and can impose a significant burden on management and employees. We may receive unfavorable preliminary or interim rulings in the course of litigation, and there can be no assurances that favorable final outcomes will be obtained. Other than below, we are not presently a party to any litigation the outcome of which, we believe, if determined adversely against us, would individually or taken together have a material adverse effect on our business, operating results, cash flows or financial condition.

Shareholder Securities Litigation

On August 31, 2022, a securities class action (the “August 2022 Action”) complaint was filed, in the United States District Court for the Southern District of California, against the Company and certain of its current and former directors and officers (Xiaodi Hou, Mo Chen, Cheng Lu, Patrick Dillon, and James Mullen), and the underwriters who underwrote its IPO, on behalf of a putative class of stockholders who acquired its securities from April 15, 2021 through August 1, 2022. The August 2022 Action is captioned: *Dicker v. TuSimple Holdings, Inc. et al., 3:22-cv-01300-JES-MSB (S. D. Cal.)*. The complaint filed in the August 2022 Action alleges, among other things, that the Company and certain of its current and former directors and officers violated Sections 11 and 15 of the Securities Act and Sections 10(b) and 20(a) of the Exchange Act by making materially false or misleading statements, or failing to disclose information it was required to disclose, regarding the Company's autonomous driving technology. The complaint seeks unspecified monetary damages on behalf of the putative class and an award of costs and expenses, including reasonable attorneys’ fees.

On November 10, 2022, a second securities class action (the “November 2022 Action”) complaint was filed in the United States District Court for the Southern District of New York against the Company and certain of its current and former directors and officers (Xiaodi Hou, Mo Chen, Cheng Lu, Eric Tapia, Patrick Dillon, and James Mullen), and the underwriters who underwrote its IPO, on behalf of a putative class of stockholders who acquired its securities from April 15, 2021 through October 31, 2022. The November 2022 Action was originally captioned: *Woldanski v. TuSimple Holdings, Inc., et al.*, 1:22-cv-09625-AKH (S.D.N.Y.). The complaint in the November 2022 Action alleges, among other things, that the Company and certain of its current and former directors and officers violated Sections 11, 12(a), and 15 of the Securities Act and Sections 10(b) and 20(a) of the Exchange Act, by making false or misleading statements, or failing to disclose information it was required to disclose, regarding the Company's related party transaction with Hydron, Inc. (“Hydron”) and the Company’s sharing of confidential information and proprietary technology with Hydron without approval from the Company’s board of directors. The complaint seeks unspecified monetary damages on behalf of the putative class and an award of costs and expenses, including reasonable attorneys’ fees. The November 2022 Action has since been transferred to the Southern District of California and is now captioned: *Woldanski v. TuSimple Holdings, Inc., et al.*, 3:23-cv-00282-JES-MSB (S. D. Cal.).

On May 3, 2023, the Company made a motion to consolidate the August 2022 Action and November 2022 Action. The Court granted this motion and consolidated the August 2022 Action and November 2022 Action on July 20, 2023. On October 2, 2023, the plaintiffs filed a consolidated and amended complaint (the "Consolidated and Amended Complaint"). The Consolidated and Amended Complaint was filed against the Company and certain of its current and former directors and officers (Guowei "Charles" Chao, Xiaodi Hou, Mo Chen, Bonnie Yi Zhang, Cheng Lu, Patrick Dillon, Brad Buss, and Karen C. Francis) and the underwriters who underwrote its IPO, containing similar claims as asserted in the complaints filed in *Dicker v. TuSimple Holdings, Inc. et al.,* 3:22-cv-01300-JES-MSB (S. D. Cal.) and *Woldanski v. TuSimple Holdings, Inc., et al.*, 3:23-cv-00282-JES-MSB (S. D. Cal.). The Consolidated and Amended Complaint alleges, among other things, that the Company and certain of its current and former directors and officers violated Sections 11, 12, and 15 of the Securities Act, Sections 10(b) and 20(a) of the Exchange Act, and Rule 10b-5, by making false or misleading statements, or failing to disclose information it was required to disclose, regarding the Company's related party transaction with Hydron, the Company’s sharing of confidential information and proprietary technology with Hydron without approval from the Company’s board of directors, the Company's safety profile, and certain of the Company's risk factors.

The Company is unable to estimate the potential loss or range of loss, if any, associated with this, or any similar, lawsuit, which could be material.

Shareholder Derivative Actions

On November 28, 2022, a shareholder derivative action was filed in the Delaware Court of Chancery by a stockholder purportedly on behalf of the Company against certain of its current and former directors and officers (Xiaodi Hou, Mo Chen, Brad Buss, Karen Francis, Michelle Sterling, and Reed Warner) alleging, among other things, that certain of the Company's current and former directors and officers breached their fiduciary duties to the Company in connection with a related party transaction with Hydron: *Nusbaum v. Hou et al.,* 2022-1095-NAC (Del. Ch.). The shareholder derivative action also alleges breaches of fiduciary duties against certain of the Company's current and former directors and officers in connection with the restructuring of the Company's board of directors.

On December 15, 2022, a second shareholder derivative action was filed in the Delaware Court of Chancery by a stockholder purportedly on behalf of the Company against certain of its current and former directors and officers (Xiaodi Hou, Mo Chen, Cheng Lu, Patrick Dillon, Eric Tapia, James Mullen, Brad Buss, Charles Chao, Karen Francis, Michelle Sterling, Reed Werner, and Bonnie Zhang) alleging similar claims to the action filed on November 28, 2022: *Young v. Hou et al.,* 2022-1157-NAC (Del. Ch.). The second shareholder derivative action additionally asserts, among other things, claims regarding the safety of the Company's technology and alleged inadequacy of the Company's internal controls.

On March 6, 2023, a third shareholder derivative action was filed in the Delaware Court of Chancery by a stockholder purportedly on behalf of the Company against certain of its current and former directors and officers (Xiaodi Hou, Brad Buss, Mo Chen, Charles Chao, Karen Francis, Wendy Hayes, Cheng Lu, James Lu, Michael Mosier, Michelle Sterling, Reed Werner, and Bonnie Zhang), alleging similar claims to the actions filed on November 28, 2022 and December 15, 2022: *Wolfson v. Hou et al.,* 2023-0279-NAC (Del. Ch.). The stockholder has since purported to voluntarily dismiss her action.

On March 29, 2023, the Company made a motion to consolidate all of the above shareholder derivative actions. The Court granted the motion and consolidated the shareholder derivative actions on May 5, 2023. A consolidated complaint was filed on July 24, 2023 against Xiaodi Hou, Mo Chen, Brad Buss, Karen C. Francis, Reed Werner, Hydron Inc., and TuSimple as nominal defendant, containing substantially the same claims as asserted in the complaint filed in *Nusbaum v. Hou et al.,* 2022-1095-NAC (Del. Ch.).

On August 17, 2023, the Delaware Court of Chancery entered an order staying the consolidated action through February 9, 2024, pending an investigation by a special litigation committee ("SLC") formed by the Company's Board of Directors to assess and determine whether the pursuit of derivative claims asserted in the consolidated action would be in the Company's best interests. The Board previously delegated to the SLC its authority to take all actions advisable, appropriate, and in the best interests of the Company and its shareholders with respect to the pending shareholder derivative litigation.

The Company is unable to estimate the potential loss or range of loss, if any, associated with this, or any similar, lawsuit, which could be material.

Regulatory Investigations

Committee on Foreign Investments in the United States ("CFIUS")

The Company is cooperating with an inquiry by CFIUS concerning its compliance with the National Security Agreement ("NSA") entered into with the U.S. government as it relates to information shared by TuSimple U.S. with TuSimple's China-based businesses ("TuSimple China"), Hydron, and Hydron's partners. If CFIUS concludes that information shared with TuSimple China, Hydron, and Hydron's partners was shared in violation of the terms of the NSA, it may impose a civil penalty on the Company. At this time, the Company is unable to estimate the likelihood of a negative outcome or the potential loss or range of loss associated with this matter. The Audit Committee and the Government Security Committee of the Board of Directors, the Board, and the Company are committed to cooperating fully as discussions with CFIUS continue.

The Company is unable to estimate the potential loss or range of loss, if any, associated with this, or any similar, investigation, which could be material.

Securities and Exchange Commission ("SEC")

As disclosed on November 7, 2022, in connection with the filing of the Company's Current Report on Form 8-K regarding the initial findings of the Audit Committee's internal investigation into the related party transaction with Hydron, the Company proactively reached out to the SEC and received an initial request for information from the SEC. Since the initial outreach, the Company and certain current and former directors and officers received subpoenas from the SEC requesting the production of Company documents and, with respect to certain individuals, subpoenas for testimony. The Company is unable to estimate the likelihood of a negative outcome or the potential loss or range of loss associated with this matter. The Company has cooperated, and intends to continue to fully cooperate, with the SEC's investigation.

The Company is unable to estimate the potential loss or range of loss, if any, associated with this, or any similar, investigation, which could be material.

Item 1A. Risk Factors.

Other than below, there were no material changes to the risk factors disclosed in Part I, Item 1A, *Risk Factors* of the Annual Report on Form 10-K for the year ended December 31, 2022, which was filed with the Securities and Exchange Commission on September 7, 2023.

Risks Related to Our Technology, Business Model, and Industry

Our autonomous driving technology and related hardware and software could have undetected defects, errors, or bugs in hardware or software which could create safety issues, delay technology development and testing, reduce market adoption, damage our reputation with current or prospective users, or expose us to product liability and other claims that could materially and adversely affect our business.

Our autonomous driving technology is highly technical and very complex, and has in the past and may in the future experience defects, errors, or bugs at various stages of development. We may be unable to timely correct problems to our partners' and users' satisfaction. Additionally, there may be undetected errors or defects especially as we introduce new systems or as new versions are released. These risks are particularly prevalent in the highly competitive freight transport market, as any such errors or defects could delay or prevent the adoption of autonomous driving technology in trucks. These risks are also heightened as a result of our restructuring plans and significant employee attrition, which have increased our safety risks and the ability to detect potential concerns in the development and testing of our technology. When such concerns arise, we have in the past and may in the future, pause the testing of our technology as we work to address them. Safety concerns and any related pause in the testing of our technology could have a material adverse impact on our business, prospects, operating results, and financial condition.

Errors or defects in our products may only be discovered after they have been tested, commercialized, and deployed. If that is the case, we may incur significant additional development costs and product recall, repair or replacement costs, or more importantly, liability for personal injury or property damage caused by such errors or defects, as these problems would also likely result in claims against us. Our reputation or brand may be damaged as a result of these problems and users may be reluctant to use our services, which could adversely affect our ability to retain existing users and attract new users, and could materially and adversely affect our financial results.

In addition, we could face material legal claims for breach of contract, product liability, tort or breach of warranty as a result of these problems. Any such lawsuit may cause irreparable damage to our brand and reputation. Further, defending a lawsuit, regardless of its merit, could be costly and may divert management's attention and adversely affect the market's perception of us and our services. Also, our business liability insurance coverage could prove inadequate with respect to a claim and future coverage may be unavailable on acceptable terms or at all. These product-related issues could result in claims against us and our business could be materially and adversely affected.

Risks Related to Our Business Operations

Our workforce was recently reduced, which, along with our exploration of strategic alternatives and other additional factors, could impact the speed of our business development, our ability to retain and attract talent and our ability to continue developing and testing our technology.

As previously disclosed, on December 15, 2022 and May 16, 2023, the Board authorized restructuring plans, which included reductions in workforce. There can be no assurance regarding future restructuring plans or reductions in workforce, which could individually or in the aggregate, have a material adverse impact on our business, results of operations, and financial condition, and our ability to hire and retain employees with appropriate qualifications.

We have experienced, and we expect to continue to experience, difficulty in hiring and retaining employees with appropriate qualifications. The restructuring plans mentioned above, the announcement of our exploration of strategic alternatives, and other factors mentioned throughout our Annual Report on Form 10-K have contributed to significant employee attrition. This level of attrition has increased our safety risks and the ability to detect potential concerns in the development and testing of our technology. When such concerns arise, we have in the past and may in the future, pause the testing of our technology as we work to address them. Safety concerns and any related pause in the testing of our technology could have a material adverse impact on our business, prospects, operating results, and financial condition.

To execute our strategy, our business requires that we attract and retain highly qualified personnel. Competition for these personnel is intense in the technology industry, especially for engineers with high levels of experience in artificial intelligence and designing and developing autonomous driving related algorithms. The recruitment and retention of personnel with relevant experience is critical to our business, as these personnel, including engineers, play a significant role in our technology development and testing process, including the safety of our technology. If we are unable to recruit or retain personnel with relevant experience in artificial intelligence and designing and developing autonomous driving related algorithms, we have in the past and may in the future, pause the testing of our technology. Safety concerns due to personnel attrition or otherwise, and any related pause in the testing of our technology could have a material adverse impact on our business, prospects, operating results, and financial condition.

We may also need to recruit highly qualified technical engineers internationally and therefore subject us to the compliance of relevant immigration laws and regulations. Many of the companies with which we compete for experienced personnel have greater resources than we have and can offer more attractive compensation packages for new employees. Additionally, if we hire employees from competitors or other companies, their former employers may attempt to assert that these employees or our company have breached their legal obligations, resulting in a diversion of our time and resources and potentially in litigation. Further, job candidates and existing employees often consider the value of the equity awards they receive in connection with their employment. If the perceived value of our equity awards declines, it may adversely affect our ability to recruit and retain highly skilled employees. If we fail to attract new personnel on a timely basis or fail to retain and motivate our current personnel, we may not be able to commercialize and then expand our products and services in a timely manner and our business and future growth prospects could be adversely affected.

Risks Relating to our Exploration of Strategic Alternatives

We may be subject to risks associated with potential transactions related to our exploration of strategic alternatives (a "Potential Transaction"), which may not be completed on the terms or timeline contemplated, or at all, for a variety of reasons. The failure to complete a Potential Transaction could adversely affect our business, results of operations, financial condition, and the market price of our Common Stock.

We may decide to divest of certain assets or businesses as part of a Potential Transaction. For example, on June 28, 2023, we announced that we are evaluating and reviewing strategic alternatives for our U.S. business with a goal of maximizing shareholder value. Any Potential Transaction would require significant attention from our management and could result in a diversion of resources from our existing business, which in turn could have an adverse effect on our operations, and, consequently our results of operations and financial condition.

We may not be successful in identifying or managing the risks involved in any divestiture or similar transaction, including our ability to obtain a reasonable purchase price, potential liabilities that may continue to apply to us following the divestiture or similar transaction, potential tax implications, employee issues or other matters. Further, strategic opportunities are impacted by our reputation, including unfavorable publicity, and the allegations made therein, and the confidence of our business partners in our business. Our inability to address these risks or if the exploration of strategic alternatives is not successful, could adversely affect our business, financial condition and results of operations, and if we are not successful in initiating a Potential Transaction, we may consider a wind-down of U.S. operations.

Even if a Potential Transaction is initiated, there can be no assurance that all required approvals will be obtained or that all closing conditions will otherwise be satisfied (or waived, if applicable), and, if all required approvals are obtained and all closing conditions are satisfied (or waived, if applicable), we can provide no assurance as to the terms, conditions and timing of such approvals. Furthermore, if we initiate a Potential Transaction, we may be subject to a number of material risks, including:

- the trading price of our Common Stock may significantly decline to the extent that the market price of the Common Stock reflects positive market assumptions that a Potential Transaction will be initiated and completed, and the related benefits will be realized;
- the obligation to pay significant transaction costs, such as legal, accounting, and financial advisory costs that are not contingent on closing;
- disruptions to our business and our relationships with third parties and employees;
- the diversion of management and resources towards a Potential Transaction for which we will have received little or no benefit if completion of a Potential Transaction does not occur; and
- reputational harm including relationships with customers and business partners due to the adverse perception of any failure to successfully complete a Potential Transaction.

Item 2. Unregistered Sales of Equity Securities, Use of Proceeds, and Issuer Purchases of Equity Securities.

None.

Item 6. Exhibits.

Exhibit Number	Description	Incorporated by Reference				Filed Herewith
		Form	File No.	Exhibit	Filing Date	
3.1	Amended and Restated Certificate of Incorporation	10-Q	001-40326	3.1	5/11/2021	
3.2	Amended and Restated Bylaws	10-Q	001-40326	3.2	5/11/2021	
31.1	Certification of Principal Executive Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					X
31.2	Certification of Principal Financial Officer Pursuant to Rules 13a-14(a) and 15d-14(a) under the Securities Exchange Act of 1934, as Adopted Pursuant to Section 302 of the Sarbanes-Oxley Act of 2002.					X
32.1*	Certification of Principal Executive Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					X
32.2*	Certification of Principal Financial Officer Pursuant to 18 U.S.C. Section 1350, as Adopted Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002.					X
101.INS	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because XBRL tags are embedded within the Inline XBRL document.					X
101.SCH	Inline XBRL Taxonomy Extension Schema Document					X
101.CAL	Inline XBRL Taxonomy Extension Calculation Linkbase Document					X
101.DEF	Inline XBRL Taxonomy Extension Definition Linkbase Document					X
101.LAB	Inline XBRL Taxonomy Extension Label Linkbase Document					X
101.PRE	Inline XBRL Taxonomy Extension Presentation Linkbase Document					X
104	Cover Page Interactive Data File (formatted as inline XBRL and contained in Exhibit 101)					X

* The certifications attached as Exhibit 32.1 and 32.2 that accompany this Quarterly Report on Form 10-Q are not deemed filed with the Securities and Exchange Commission and are not to be incorporated by reference into any filing of TuSimple Holdings Inc. under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended, whether made before or after the date of this Quarterly Report on Form 10-Q, irrespective of any general incorporation language contained in such filing.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

TuSimple Holdings Inc.

Date: November 8, 2023	By:	/s/ Cheng Lu
		Cheng Lu
		Chief Executive Officer (*Principal Executive Officer)*
Date: November 8, 2023	By:	/s/ Eric Tapia
		Eric Tapia
		Chief Financial Officer (*Principal Financial Officer)*

Exhibit 31.1

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Cheng Lu, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of TuSimple Holdings Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 8, 2023

By: /s/ Cheng Lu

Cheng Lu
Chief Executive Officer
(*Principal Executive Officer)*

Exhibit 31.2

CERTIFICATION PURSUANT TO
RULES 13a-14(a) AND 15d-14(a) UNDER THE SECURITIES EXCHANGE ACT OF 1934,
AS ADOPTED PURSUANT TO SECTION 302 OF THE SARBANES-OXLEY ACT OF 2002

I, Eric Tapia, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of TuSimple Holdings Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;

4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and

5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: November 8, 2023

By: /s/ Eric Tapia
Eric Tapia
Chief Financial Officer
(Principal Financial Officer)

Exhibit 32.1

CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002

I, Cheng Lu, Chief Executive Officer of TuSimple Holdings Inc. (the "Company"), do hereby certify, to the best of my knowledge and pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Quarterly Report on Form 10-Q of the Company for the period ended September 30, 2023 (the "Report"), fully complies with the requirements of sections 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 8, 2023

By: /s/ Cheng Lu

Cheng Lu
Chief Executive Officer
(*Principal Executive Officer)*

Exhibit 32.2

**CERTIFICATION PURSUANT TO
18 U.S.C. SECTION 1350, AS ADOPTED PURSUANT TO
SECTION 906 OF THE SARBANES-OXLEY ACT OF 2002**

I, Eric Tapia, Chief Financial Officer of TuSimple Holdings Inc. (the "Company"), do hereby certify, to the best of my knowledge and pursuant to 18 U.S.C. § 1350, as adopted pursuant to § 906 of the Sarbanes-Oxley Act of 2002, that:

(1) The Quarterly Report on Form 10-Q of the Company for the period ended September 30, 2023 (the "Report"), fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934, as amended; and

(2) The information contained in the Report fairly presents, in all material respects, the financial condition and results of operations of the Company.

Date: November 8, 2023	By:	/s/ Eric Tapia
		Eric Tapia
		Chief Financial Officer (*Principal Financial Officer)*