

SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

**POST-EFFECTIVE AMENDMENT NO. 1 TO
FORM S-8
REGISTRATION STATEMENT**

*UNDER
THE SECURITIES ACT OF 1933*

FATHOM DIGITAL MANUFACTURING CORPORATION

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction of
incorporation or organization)

98-1571400
(I.R.S. Employer
Identification No.)

**1050 Walnut Ridge Drive
Hartland, WI 53029**

(Address of Principal Executive Offices)

**Fathom Digital Manufacturing Corporation 2021 Omnibus Incentive Plan
Fathom Digital Manufacturing Corporation 2021 Employee Stock Purchase Plan**

(Full title of the plans)

**Ryan Martin
Chief Executive Officer
1050 Walnut Ridge Drive
Hartland, WI 53029
(262) 367-8254**

(Name, address, including zip code, and telephone number, including area code, of agent for service)

Copies to:

**Steven J. Gavin
Matthew F. Bergmann
Winston & Strawn LLP
35 West Wacker Drive
Chicago, Illinois 60601
Tel: (312) 558-5600**

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a 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	<input type="checkbox"/>	Accelerated filer	<input type="checkbox"/>
Non-accelerated filer	<input checked="" type="checkbox"/>	Smaller reporting company	<input checked="" type="checkbox"/>
		Emerging growth company	<input checked="" type="checkbox"/>

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 7(a)(2)(B) of the Securities Act

EXPLANATORY NOTE

This Post-Effective Amendment No. 1 is being filed to amend the Company's Registration Statement on Form S-8 (File No. 333-264285) filed with the SEC on April 14, 2022 (the "Registration Statement") to include in Part I of the Registration Statement as amended hereby a "Reoffer Prospectus" prepared in accordance with the requirements of Part I of Form S-3 under the Securities Act. Pursuant to Instruction C of Form S-8, the Reoffer Prospectus may, in the future, be used for reoffers and resales, on a continuous or delayed basis, of shares of our Class A common stock that are deemed "control securities" under the Securities Act and which have been or will be acquired pursuant to grants or awards under either the Fathom Digital Manufacturing Corporation 2021 Omnibus Incentive Plan or the Fathom Digital Manufacturing Corporation 2021 Employee Stock Purchase Plan by the selling stockholders named in the Reoffer Prospectus and who are, or may be deemed to be, "affiliates" within the meaning set forth in Rule 405 under the Securities Act. Such selling stockholders may reoffer or resell all, a portion, or none of the shares that they may acquire pursuant to the Plans. Pursuant to Rule 424(b) under the Securities Act, we may supplement the Reoffer Prospectus from time to time with the names of additional selling stockholders and/or amounts of shares of Class A common stock, if any, to be reoffered or resold by such selling stockholders as that information becomes known. The inclusion of such shares of our Class A common stock herein does not necessarily represent a present intention by any of the selling stockholders to sell any or all such shares of Class A common stock.

PART I

INFORMATION REQUIRED IN THE SECTION 10(A) PROSPECTUS

The information specified in Item 1 and Item 2 of Part I of Form S-8 is omitted from the Registration Statement as amended hereby in accordance with the provisions of Rule 428 under the Securities Act and the introductory note to Part I of Form S-8. The documents containing the information specified in Part I of Form S-8 will be delivered to the participants in the plans, as applicable, covered by the Registration Statement as amended hereby as specified by Rule 428(b)(1) under the Securities Act. Such documents are not required to be, and are not, filed with the Securities and Exchange Commission (the "SEC") either as part of the Registration Statement as amended hereby or as a prospectus or prospectus supplement pursuant to Rule 424 under the Securities Act.

REOFFER PROSPECTUS

FATHOM DIGITAL MANUFACTURING CORPORATION

4,337,176 Shares of Class A Common Stock

This reoffer prospectus relates to the offer and sale from time to time by the selling stockholders named in this reoffer prospectus (the “Selling Stockholders”), or their permitted transferees, of up to 4,337,176 shares of the Class A common stock, par value \$0.0001 per share (the “Class A common stock”), of Fathom Digital Manufacturing Corporation, a Delaware corporation (unless otherwise indicated or the context otherwise requires, the “Company,” “Fathom,” “we,” “our” or “us”). This reoffer prospectus covers shares of Class A common stock issued to each Selling Stockholder from grants and awards under the Fathom Digital Manufacturing Corporation 2021 Omnibus Incentive Plan and the Fathom Digital Manufacturing Corporation 2021 Employee Stock Purchase Plan, as applicable. We are not offering any shares of Class A common stock and will not receive any proceeds from the sale of such shares of common stock by the Selling Stockholders pursuant to this reoffer prospectus. The Selling Stockholders are “affiliates” of our company (as defined in Rule 405 under the Securities Act of 1933, as amended (the “Securities Act”). Currently, Selling Stockholders who are our “affiliates” may not sell an amount of Class A common stock which exceeds in any three-month period the amount specified in Rule 144(e) under the Securities Act.

Upon vesting of the shares offered hereby pursuant to the terms of the plans and any applicable awards agreements, and upon expiration of any transfer restrictions described herein, the Selling Stockholders may from time to time sell, transfer or otherwise dispose of any or all of the shares of Class A common stock covered by this reoffer prospectus through underwriters or dealers, directly to purchasers (or a single purchaser) or through broker-dealers or agents. If underwriters or dealers are used to sell the shares, we will name them and describe their compensation in a prospectus supplement. The Class A common stock may be sold in one or more transactions at fixed prices, prevailing market prices at the time of sale, prices related to the prevailing market prices, varying prices determined at the time of sale or negotiated prices. We do not know when or in what amount the Selling Stockholders may offer the shares for sale. The Selling Stockholders may sell any, all or none of the shares offered by this reoffer prospectus. See “*Plan of Distribution*” beginning on page 11 for more information about how the Selling Stockholders may sell or dispose of the shares of Class A common stock covered by this reoffer prospectus.

This reoffer prospectus has been prepared for the purposes of registering the shares under the Securities Act to allow for future sales by Selling Stockholders on a continuous or delayed basis to the public without restriction.

Our Class A common stock is listed on the New York Stock Exchange (“NYSE”) under the symbol “FATH.” On August 29, 2022, the closing price of our Class A common stock was \$3.67 per share.

We are an “emerging growth company,” as that term is defined under the federal securities laws and, as such, are subject to certain reduced public company reporting requirements.

Investing in our securities involves risks that are described in the “*Risk Factors*” section on page 5 of this reoffer prospectus.

Neither the Securities and Exchange Commission (the “SEC”) nor any state securities commission has approved or disapproved of the securities to be issued under this reoffer prospectus or determined if this reoffer prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this reoffer prospectus is September 1, 2022.

TABLE OF CONTENTS

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS	1
REOFFER PROSPECTUS SUMMARY	2
RISK FACTORS	5
DETERMINATION OF OFFERING PRICE	6
USE OF PROCEEDS	6
SELLING STOCKHOLDERS	6
PLAN OF DISTRIBUTION	10
LEGAL MATTERS	10
EXPERTS	10
MATERIAL CHANGES	11
WHERE YOU CAN FIND MORE INFORMATION	11

Neither we nor the Selling Stockholders have authorized anyone to provide any information or to make any representations other than those contained in this reoffer prospectus or any accompanying prospectus supplement that we have prepared. We and the Selling Stockholders take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you. This reoffer prospectus is an offer to sell only the securities offered hereby and only under circumstances and in jurisdictions where it is lawful to do so. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in this reoffer prospectus or any applicable prospectus supplement. This reoffer prospectus is not an offer to sell securities, and it is not soliciting an offer to buy securities, in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this reoffer prospectus or any prospectus supplement is accurate only as of the date on the front of those documents only, regardless of the time of delivery of this reoffer prospectus or any applicable prospectus supplement, or any sale of a security. Our business, financial condition, results of operations and prospects may have changed since those dates.

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

Certain statements made in this reoffer prospectus, any accompanying prospectus supplement and the documents incorporated by reference herein and therein are “forward looking statements” for purposes of the federal securities laws. Statements regarding our expectations regarding our business are “forward looking statements.” In addition, words such as “estimates,” “projected,” “expects,” “estimated,” “anticipates,” “forecasts,” “plans,” “intends,” “believes,” “seeks,” “may,” “will,” “would,” “future,” “propose,” “target,” “goal,” “objective,” “outlook” and variations of these words or similar expressions (or the negative versions of such words or expressions) are intended to identify forward-looking statements. These forward-looking statements are not guarantees of future performance, conditions or results and are based on our current expectations and beliefs concerning future developments and their potential effects on us. There can be no assurance that future developments affecting us will be those that we have anticipated. We may face additional risks and uncertainties that are not presently known to us, or that we deem to be immaterial, which may also impair our business, financial condition or prospects. We undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise, except as may be required under applicable securities laws.

As a result of a number of known and unknown risks and uncertainties, the Company’s actual results or performance may be materially different from those expressed or implied by these forward-looking statements. Some factors that could cause actual results to differ include:

- unfavorable global economic conditions, including changes in inflation and interest rates, could adversely affect our business, financial condition or results of operations;
- we are subject to ongoing risks related to the COVID-19 and any future outbreaks of other highly infectious or contagious disease;
- we face increasing competition in many aspects of our business;
- we may not realize the anticipated benefits of our business acquisitions, and any acquisition, strategic relationship, joint venture or investment could disrupt our business and harm our operating results and financial condition;
- we may be subject to cybersecurity risks and changes to data protection regulation;
- our businesses are subject to extensive domestic and foreign regulations that may subject us to significant costs and compliance requirements;
- we are subject to risks related to the Tax Receivable Agreement (the “TRA”);
- the volatility of our stock price as a result of being a recent de-SPAC IPO directly impacts the valuation of our warrants and earnout shares and could increase the volatility in our net income (loss) in our consolidated statements of comprehensive income (loss);
- the effect of legal, tax and regulatory changes; and
- other risks and uncertainties set forth or referred to in the section entitled “Risk Factors” included below in this reoffer prospectus.

REOFFER PROSPECTUS SUMMARY

This summary highlights selected information about us and information contained elsewhere in or incorporated by reference into this reoffer prospectus and does not contain all of the information that is important to you in making an investment decision. This summary is qualified in its entirety by the more detailed information included elsewhere in this reoffer prospectus, including the documents incorporated by reference herein. Potential investors should read this entire reoffer prospectus carefully, including the risks of purchasing our common stock discussed below in “Risk Factors.”

About Fathom Digital Manufacturing Corporation

Fathom Digital Manufacturing Corporation was incorporated in Delaware in December 2021 as part of the completion of the business combination of Altimar Acquisition Corp II and Fathom Holdco, LLC (“Fathom OpCo”). However, our roots stretch back over 35 years with the founding of several of our subsidiaries. The terms “Fathom,” the “Company,” “we,” “us,” and “our” as used herein refer to the business and operations of Fathom Digital Manufacturing Corporation and its consolidated subsidiaries.

We are a leading national on-demand digital manufacturing platform at the forefront of the Industry 4.0 revolution. Industry 4.0 utilizes e-commerce, automation, and data sharing in a cyber-physical system to communicate and cooperate in the manufacturing process over the Internet of Things (“IoT”). Using our expansive manufacturing footprint and extensive expertise in both additive and traditional manufacturing, we provide comprehensive product development and on-demand manufacturing services to many of the largest and most innovative companies in the world. Our unified suite of manufacturing technologies, processes and proprietary software enables us to deliver hybridized solutions that meet the specific needs of our customers, empowering them to tackle complex manufacturing problems and accelerate product development cycles.

Our differentiated strategy focuses on speed, problem solving, adaptive technical responsiveness, and a technology agnostic approach across our 25 plus manufacturing processes to meet customers’ design intent. This allows our customers to iterate faster, often shortening their product development and production cycles from months to days.

We seamlessly blend in-house capabilities consisting of plastic and metal additive technologies, injection molding and tooling, computer numerical control (“CNC”) machining and precision sheet metal fabrication. We operate over 530 advanced manufacturing systems across 25 unique manufacturing processes and a 450,000 sq. ft. manufacturing footprint, spanning 12 facilities located primarily within the U.S. We believe we are positioned to serve the largest geographic markets in which our customers are located and enable cost effective and rapid turnaround times for our customers. Our scale and the breadth of offerings allow our customers to consolidate their supply chain and product development needs through the ability to source through a single manufacturing supplier. Fathom’s manufacturing technologies and capacity are further extended through the utilization of a selected group of highly qualified suppliers that specialize in injection molding and tooling and CNC machining.

We have experienced significant growth since inception both organically and through our successful and proven acquisition playbook, which is enabled by our proprietary software platform that allows for a streamlined integration of acquired companies. Over the past three years, we have successfully completed 13 acquisitions to bolster our operations and offerings.

Corporate Information

Fathom Holdco, LLC, a Delaware limited liability company (“Fathom OpCo”), was formed in April 2021 for the purpose of holding a 100 percent equity interest in MCT Group Holdings, LLC and its subsidiaries (“MCT Holdings”) and holding a 100% interest in Incodema Holdings, LLC and its subsidiaries (“Incodema Holdings”). On April 30, 2021 Incodema Holdings and MCT Holdings were recapitalized through an exchange of equity pursuant to which each member of Incodema Holdings and each member of MCT Holdings exchanged their equity interests in Incodema Holdings and MCT Holdings, respectively, for equity interests in Fathom OpCo. As a result of this reorganization, each of Incodema Holdings and MCT Holdings are wholly owned subsidiaries of Fathom OpCo.

On December 23, 2021 (the “Closing Date”), Altimar Acquisition Corp. II, a blank check company incorporated as a Cayman Islands exempted company (“Altimar II”), domesticated as a Delaware corporation (the “Domestication”) and changed its name to “Fathom Digital Manufacturing Corporation.” On the Closing Date immediately following the Domestication, Fathom completed a business combination (the “Business Combination”) with Fathom OpCo pursuant to the terms of the Business Combination Agreement, dated as of July 15, 2021, as amended by Amendment No. 1 to Business Combination Agreement, dated as of November 16, 2021 (as so amended, the “Business Combination Agreement”), by and among Altimar II, Fathom OpCo, Rapid Merger Sub, LLC, a direct, wholly owned subsidiary of Altimar II (“Merger Sub”), and the other parties thereto.

As part of the completion of the transactions contemplated by the Business Combination Agreement (the “Transactions,” and such completion, the “Closing”), Merger Sub merged with and into Fathom OpCo (the “Merger”), with Fathom OpCo being the surviving entity of the Merger. As a result of the Merger and the other Transactions, the combined company was organized in an “Up-C” structure, with Fathom now serving as the sole managing member of Fathom OpCo. Fathom OpCo is now owned in part by former public and private shareholders of Altimar II and in part by continuing equity owners of Fathom OpCo. For a more detailed discussion of the Business Combination and the Transactions, see Fathom’s Current Report on Form 8-K filed with the Securities and Exchange Commission on December 30, 2021.

Our mailing address is 1050 Walnut Ridge Drive, Hartland, WI 53029, and our telephone number is (262) 367-8254. Our Class A common stock is listed on the New York Stock Exchange under the symbol “FATH.” Unless the context requires otherwise, the words “Fathom,” “we,” “Company,” “us” and “our” refer to Fathom Digital Manufacturing Corporation and our consolidated subsidiaries.

Available Information

Our website is located at www.fathommfg.com, and our investor relations website is located at <http://investors.fathommfg.com/>. We file reports with the Securities and Exchange Commission (“SEC”), and copies of our Annual Reports on Form 10-K, Quarterly Reports on Form 10-Q, Current Reports on Form 8-K, and amendments to these reports filed or furnished pursuant to Section 13(a) or 15(d) of the Exchange Act are available, free of charge, on our investor relations website as soon as reasonably practicable after we file such material electronically with or furnish it to the SEC. The SEC also maintains a website that contains our SEC filings. The address of the site is www.sec.gov. We use our <http://investors.fathommfg.com/> and www.fathommfg.com websites as a means of disclosing material nonpublic information and for complying with our disclosure obligations under Regulation FD.

The contents of, or information accessible through, our websites are not incorporated by reference into this reoffer prospectus or the registration statement of which this reoffer prospectus forms a part, or in any other report or document we file or furnish with the SEC, and any references to our websites are intended to be inactive textual references only.

Emerging Growth Company

We are an “emerging growth company” as defined under the Jumpstart Our Business Startups Act of 2012 (the “JOBS Act”). Section 102(b)(1) of the JOBS Act exempts “emerging growth companies” from being required to comply with new or revised financial accounting standards until private companies (that is, those that have not had a registration statement under the Securities Act declared effective or do not have a class of securities registered under the Exchange Act) are required to comply with the new or revised financial accounting standards. The JOBS Act provides that a company can elect to opt out of the extended transition period and comply with the requirements that apply to non-emerging growth companies but any such an election to opt out is irrevocable. We have elected not to opt out of such extended transition period which means that when a standard is issued or revised and it has different application dates for public or private companies, we, as an emerging growth company, can adopt the new or revised standard at the time private companies adopt the new or revised standard. This may make comparison of Fathom’s financial statements with those of another public company that is neither an emerging growth company nor an emerging growth company that has opted out of using the extended transition period difficult or impossible because of the potential differences in accounting standards used.

We will remain an emerging growth company until the earlier of: (1) the last day of the fiscal year (a) following the fifth anniversary of the Closing of the Business Combination, (b) in which we have total annual gross revenue of at least \$1.07 billion or (c) in which we are deemed to be a large accelerated filer, which means the market value of our common equity that is held by non-affiliates exceeds \$700 million as of the end of the prior fiscal year’s second fiscal quarter; and (2) the date on which we have issued more than \$1.00 billion in non-convertible debt securities during the prior three-year period. References herein to “emerging growth company” have the meaning associated with it in the JOBS Act.

About This Offering

This reoffer prospectus relates to the public offering, which is not being underwritten, by the Selling Stockholders listed in this reoffer prospectus, of up to an aggregate of 4,337,176 shares of our Class A common stock, issued to the Selling Stockholders from grants and awards under the Fathom Digital Manufacturing Corporation 2021 Omnibus Incentive Plan. Upon vesting of the shares offered hereby pursuant to the terms of the award agreements, and subject to any transfer restrictions described herein, the Selling Stockholders may from time to time sell, transfer or otherwise dispose of any or all of the shares of Class A common stock covered by this reoffer prospectus through underwriters or dealers, directly to purchasers (or a single purchaser) or through broker-dealers or agents. We will receive none of the proceeds from the sale of the shares by the Selling Stockholders. We will bear all expenses of registration incurred in connection with this offering, but all selling and other expenses incurred by the Selling Stockholders will be borne by them.

Risk Factors

Our business is subject to numerous risks and uncertainties, including those highlighted in the section below entitled “*Risk Factors*,” that represent challenges that we face in connection with the successful implementation of our strategy and growth of our business.

RISK FACTORS

An investment in our securities involves a high degree of risk. You should carefully consider the risks described under “Risk Factors” in our most recent Annual Report on Form 10-K, and our Quarterly Report on Form 10-Q for the quarter ended June 30, 2022, together with all of the other information appearing in or incorporated by reference into this reoffer prospectus, before making an investment decision. Our business, prospects, financial condition or operating results could be harmed by any of these risks, as well as other risks not currently known to us or that we currently consider immaterial. The trading price of our securities could decline due to any of these risks, and, as a result, you may lose all or part of your investment. The risks we have described also include forward-looking statements, and our actual results may differ substantially from those described in these forward-looking statements. See “*Cautionary Note Regarding Forward-Looking Statements*” above in this reoffer prospectus.

DETERMINATION OF OFFERING PRICE

The Selling Stockholders will determine at what price they may sell the offered shares, and such sales may be made at prevailing market prices or at privately negotiated prices. See “*Plan of Distribution*” below in this reoffer prospectus for more information.

USE OF PROCEEDS

The shares of Class A common stock offered hereby are being registered for the account of the Selling Stockholders named in this reoffer prospectus. The Selling Stockholders will receive all of the proceeds from the sale or other disposition of the shares of Class A common stock covered by this reoffer prospectus. We are not selling any securities under this reoffer prospectus and will not receive any proceeds from the resale of our Class A common stock by the Selling Stockholders.

SELLING STOCKHOLDERS

The table below sets forth information concerning the resale of the shares of Class A common stock by the Selling Stockholders. We will not receive any proceeds from the resale of the shares by the Selling Stockholders.

The table below sets forth, as of August 29, 2022 (the “Determination Date”), (i) the name of each person who is offering the resale of shares by this reoffer prospectus; (ii) the number of shares (and the percentage, if 1% or more) of Class A common stock beneficially owned by each person (which includes shares such person has the right to acquire within 60 days of the Determination Date); (iii) the number of shares of Class A common stock that each Selling Stockholder may offer for sale from time to time pursuant to this reoffer prospectus, whether or not such Selling Stockholder has a present intention to do so; and (iv) the number of shares (and the percentage, if 1% or more) of Class A common stock each person will beneficially own after the offering, assuming they sell all of the shares offered. The number of shares of Class A common stock offered for resale in this offering reflect all shares of Class A common stock acquired or issuable to a person pursuant to applicable grants previously made to replace Fathom OpCo phantom equity plan awards that were outstanding immediately prior to the Business Combination, regardless of whether such grants are exercisable, vested or convertible as of the Determination Date or will become exercisable, vested or convertible within 60 days after the Determination Date or thereafter. Unless otherwise indicated, beneficial ownership of shares is direct and the person indicated has sole voting and investment power over the shares.

Unless otherwise indicated, the address of each beneficial owner listed in the table below is c/o Fathom Digital Manufacturing Corporation, 1050 Walnut Ridge Drive, Hartland, WI 53029.

The Selling Stockholders identified below may have sold, transferred, or otherwise disposed of some or all of their shares since the date on which the information in the following table is presented in transactions exempt from or not subject to the registration requirements of the Securities Act. Information concerning the Selling Stockholders may change from time to time and, if necessary, we will amend or supplement this reoffer prospectus accordingly. We cannot give an estimate as to the number of shares of Class A common stock that will actually be held by the Selling Stockholders upon termination of this offering because the Selling Stockholders may offer some or all of their Class A common stock under the offering contemplated by this reoffer prospectus or acquire additional shares of Class A common stock. The total number of shares that may be sold hereunder will not exceed the number of shares offered hereby. Please read the section entitled “Plan of Distribution” below in this reoffer prospectus.

	Shares of Class A Common Stock Beneficially Owned Prior to this Offering (1)	Shares of Class A Common Stock Offered for Resale in this Offering (2) (5)	Shares of Class A Common Stock Beneficially Owned After Resale in this Offering (3)	Percentage of Class A Common Stock Beneficially Owned After Resale in this Offering (1)(2)
Selling Stockholder				
Carey Chen	68,436	1,221,334	-	*
Mark Frost	91,550	495,446	-	*
Peter Leemputte	8,980	222,091	-	*
Ryan Martin	214,715	1,727,652	-	*
Robert Nardelli (4)	203,381	77,586	145,492	*
Richard Stump	87,944	592,257	-	*

Represents less than 1%.

(1) In computing the number of shares of Class A common stock beneficially owned by a Selling Stockholder and the percentage ownership of that person, we deemed to be outstanding all shares of Class A common stock subject to restricted stock units held by that Selling Stockholder if such grants are exercisable, vested or convertible as of the Determination Date or will become exercisable, vested or convertible within 60 days after the Determination Date.

(2) The number of shares of Class A common stock offered for resale in this offering reflect all shares of Class A common stock acquired or issuable to a Selling Stockholder pursuant to applicable award grants previously made to replace Fathom OpCo phantom equity plan awards that were outstanding immediately prior to the Business Combination, regardless of whether such grants are exercisable, vested or convertible as of the Determination Date or will become exercisable, vested or convertible within 60 days after the Determination Date.

(3) Assumes all of the shares of Class A common stock being offered are sold in the offering, that shares of Class A common stock beneficially owned by such Selling Stockholder on the Determination Date but not being offered pursuant to this Reoffer Prospectus (if any) are not sold, and that no additional shares are purchased or otherwise acquired other than pursuant to the restricted stock units relating to the shares being offered.

(4) Includes 145,192 shares of Class A common stock underlying 145,192 New Fathom Units held by Mr. Nardelli which are presently exchangeable. Mr. Nardelli is a director of the Company.

(5) As of the Determination Date, certain of the shares of Class A common stock offered for resale in this offering are subject to contractual transfer restrictions pursuant to an agreement with CORE Industrial Partners, L.P. and certain of its affiliates.

Listing of Class A Common Stock

Our Class A common stock is currently listed on the NYSE under the symbol "FATH."

Other Material Relationships with the Selling Stockholders

Employment Relationships

All named executive officers are employees-at-will. Except for Mark Frost, our chief financial officer, none of our named officers have employment agreements with Fathom.

Tax Receivable Agreement

In connection with the Closing of the Business Combination, Fathom entered into a tax receivable agreement (the “Tax Receivable Agreement”) by and among Fathom, Fathom OpCo, each of the Exchange TRA Parties (as defined in the Tax Receivable Agreement) party thereto, each of the Blocker TRA Parties (as defined in the Tax Receivable Agreement) party thereto and CORE Industrial Partners Management LP, in its capacity as TRA Party Representative (as defined in the Tax Receivable Agreement). Pursuant to the Tax Receivable Agreement, Fathom will be required to pay 85% of certain tax benefits, if any, that it realizes (or in certain cases is deemed to realize) as a result of tax basis in certain assets and other tax attributes of Fathom or the Fathom Blockers (as defined in the Tax Receivable Agreement) at the time of the Business Combination, any increases in tax basis and other tax benefits related to the payment of cash consideration pursuant to the Business Combination Agreement and any increases in tax basis and other tax benefits resulting from any exchange of exchangeable Class A Units of Fathom OpCo (“New Fathom Units”) for shares of Class A common stock or cash in the future or from any payment under the Tax Receivable Agreement. Mr. Nardelli is an Exchange TRA Party and holds 145,192 New Fathom Units which by their terms are exchangeable on a one-for-one basis for shares of our Class A common stock (none of the 145,192 shares of Class A common stock underlying Mr. Nardelli’s New Fathom Units are being offered or sold under this reoffer prospectus).

The Tax Receivable Agreement provides that, in certain events, including a change of control, breach of a material obligation under the Tax Receivable Agreement, or Fathom’s exercise of early termination rights, Fathom’s obligations under the Tax Receivable Agreement will accelerate and Fathom will be required to make a lump-sum cash payment to the Exchange TRA Parties and the Blocker TRA Parties (each as defined in the Tax Receivable Agreement) and other applicable parties to the Tax Receivable Agreement equal to the present value of all forecasted future payments that would have otherwise been made under the Tax Receivable Agreement, which lump-sum payment would be based on certain assumptions, including those relating to Fathom’s future taxable income.

Registration Rights Agreement

At the Closing, Fathom also entered into a registration rights agreement with the Existing Investors (as defined therein) in Fathom OpCo, including Mr. Nardelli, and the other parties thereto (the “Registration Rights Agreement”). Under the terms of the Registration Rights Agreement, Fathom granted to the Existing Investors and the other parties thereto customary demand, shelf and piggyback registration rights. Fathom was required to and did file within thirty days of the Closing a shelf registration statement registering the public resale of the shares of common stock of Fathom held by such stockholders (the “Shelf Registration Statement”), and caused the Shelf Registration Statement to be declared effective within 60 calendar days after the filing thereof.

2021 Omnibus Incentive Plan

At the extraordinary general meeting of the Altimar II shareholders held on December 21, 2021 (the “Special Meeting”), the Altimar II shareholders, among other things, considered and approved the Fathom 2021 Omnibus Incentive Plan (the “2021 Omnibus Plan”). The 2021 Omnibus Plan was previously approved, subject to shareholder approval, by the Board of Altimar II on July 15, 2021.

The 2021 Omnibus Plan became effective immediately upon the Closing of the Business Combination and permits the Company to issue up to 16,737,876 shares of Fathom Class A common stock pursuant to awards that may be issued under the plan.

2021 Employee Stock Purchase Plan

At the Special Meeting, the Altimar II shareholders among things considered and approved the Fathom 2021 Employee Stock Purchase Plan (the “ESPP”). The ESPP was previously approved, subject to shareholder approval, by the Board of Altimar II on July 15, 2021.

The ESPP became effective immediately upon the Closing of the Business Combination and permits the Company to issue up to 1,350,806 shares of Fathom Class A common stock pursuant to awards that may be issued under the ESPP. The number of shares of Fathom Class A common stock initially reserved for issuance under the ESPP will automatically increase on the first trading day of each calendar year, beginning in 2023, by 1% of the total number of shares of Fathom Class A common stock outstanding on the last day of the prior calendar year.

Indemnification Agreements

On the Closing Date, Fathom also entered into indemnification agreements with each of its directors and executive officers.

Each indemnification agreement provides for indemnification and advancements by Fathom of certain expenses and costs relating to claims, suits or proceedings arising from his or her service to Fathom, or, at our request, service to other entities, as officers or directors, to the maximum extent permitted by applicable law.

PLAN OF DISTRIBUTION

The shares of Class A common stock covered by this reoffer prospectus are being registered by the Company for the account of the Selling Stockholders. The shares of Class A common stock offered may be sold from time to time directly by or on behalf of each Selling Stockholder in one or more transactions on the NYSE or any other stock exchange on which such common stock may be listed at the time of sale, in privately negotiated transactions, or through a combination of such methods, at market prices prevailing at the time of sale, at prices related to such prevailing market prices, at fixed prices (which may be changed) or at negotiated prices. The Selling Stockholders may sell shares through one or more agents, brokers or dealers or directly to purchasers. Such brokers or dealers may receive compensation in the form of commissions, discounts or concessions from the Selling Stockholders and/or purchasers of the shares or both. Such compensation as to a particular broker or dealer may be in excess of customary commissions.

In connection with their sales, a Selling Stockholder and any participating broker or dealer may be deemed to be “underwriters” within the meaning of the Securities Act, and any commissions they receive and the proceeds of any sale of shares may be deemed to be underwriting discounts and commissions under the Securities Act. We are bearing all costs relating to the registration of the shares of Class A common stock. Any commissions or other fees payable to brokers or dealers in connection with any sale of the shares will be borne by the Selling Stockholders or other party selling such shares. Sales of the shares must be made by the Selling Stockholders in compliance with all applicable state and federal securities laws and regulations, including the Securities Act. In addition to any shares sold hereunder, Selling Stockholders may sell shares of Class A common stock in compliance with Rule 144, if available. There is no assurance that the Selling Stockholders will sell all or a portion of the Class A common stock offered hereby. The Selling Stockholders may agree to indemnify any broker, dealer or agent that participates in transactions involving sales of the shares against certain liabilities in connection with the offering of the shares arising under the Securities Act. We have notified the Selling Stockholders of the need to deliver a copy of this reoffer prospectus in connection with any sale of the shares.

The anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of our Class A common stock and activities of the Selling Stockholders, which may limit the timing of purchases and sales of any of the shares of Class A common stock by the Selling Stockholders and any other participating person. Regulation M may also restrict the ability of any person engaged in the distribution of the shares of common stock to engage in passive market-making activities with respect to the shares of common stock. Passive market making involves transactions in which a market maker acts as both our underwriter and as a purchaser of our Class A common stock in the secondary market. All of the foregoing may affect the marketability of the shares of Class A common stock and the ability of any person or entity to engage in market-making activities with respect to such shares of Class A common stock.

Once sold under the registration statement of which this reoffer prospectus forms a part, the shares of Class A common stock will be freely tradable in the hands of persons other than our affiliates.

LEGAL MATTERS

The validity of the shares of Class A common stock which are being offered under the Registration Statement of which this reoffer prospectus forms a part will be passed upon for us by Winston & Strawn LLP.

EXPERTS

The audited consolidated financial statements of Fathom Digital Manufacturing Corporation incorporated by reference in this reoffer prospectus and elsewhere in the registration statement have been so incorporated by

reference in reliance upon the report of Grant Thornton LLP, independent registered public accountants, upon the authority of said firm as experts in accounting and auditing.

MATERIAL CHANGES

There have been no material changes to the affairs of the Company which have occurred since the end of our latest fiscal year for which certified financial statements were included in our annual report to securityholders and which have not been described in our reports on Form 10-Q or Form 8-K filed under the Exchange Act.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. This prospectus is part of the registration statement, but does not contain all of the information included in the registration statement or the exhibits. Our filings with the SEC are available to the public on the internet at a website maintained by the SEC located at <http://www.sec.gov>.

We also maintain Internet websites at www.fathommfg.com and <http://investors.fathommfg.com>. Through our websites, we make available, free of charge, the following documents as soon as reasonably practicable after they are electronically filed with, or furnished to, the SEC: our Annual Reports on Form 10-K; our proxy statements for our annual and special shareholder meetings; our Quarterly Reports on Form 10-Q; our Current Reports on Form 8-K; Forms 3, 4 and 5 and Schedules 13D; and amendments to those documents. The information contained on, or that may be accessed through, our websites is not part of, and is not incorporated into, this reoffer prospectus.

We incorporate information into this reoffer prospectus by reference, which means that we disclose important information to you by referring you to another document filed separately with the SEC. The information incorporated by reference is deemed to be part of this reoffer prospectus, except to the extent superseded by information contained in this reoffer prospectus or by information contained in documents filed with the SEC after the date of this reoffer prospectus. This reoffer prospectus incorporates by reference the documents set forth below that have been previously filed with the SEC; provided, however, that, except as noted below, we are not incorporating any documents or information deemed to have been furnished rather than filed in accordance with the rules of the SEC. These documents contain important information about us and our financial condition.

- Our Annual Report on Form 10-K for the fiscal year ended December 31, 2021;
- Our Quarterly Reports on Form 10-Q for the quarters ended March 31, 2022 and June 30, 2022;
- Our Current Reports on Form 8-K filed January 10, 2022, March 4, 2022, May 16, 2022, July 13, 2022 and August 15, 2022, and on Form 8-K filed April 8, 2022 (excluding “furnished” and not “filed” information); and
- The description of our Class A common stock contained in Exhibit 4.1 to our Quarterly Report on Form 10-Q for the quarter ended March 31, 2022.

All documents subsequently filed by us with the SEC pursuant to Sections 13(a), 13(c), 14, or 15(d) of the Exchange Act, prior to the filing of a post-effective amendment to the registration statement of which this reoffer prospectus forms a part which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold, shall be deemed incorporated by reference into this reoffer prospectus and to be a part hereof from the date of the filing of such documents, except that information furnished to the SEC under

Item 2.02 or Item 7.01 in Current Reports on Form 8-K and any exhibit relating to such information, shall not be deemed to be incorporated by reference in this reoffer prospectus.

For purposes of this reoffer prospectus, any statement contained in a document incorporated, or deemed to be incorporated, by reference herein shall be deemed to be modified or superseded for purposes of this reoffer prospectus to the extent that a statement contained herein or in any other subsequently filed document which also is, or is deemed to be, incorporated by reference herein modifies or supersedes such statement. Any such statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this reoffer prospectus.

We will provide without charge upon written or oral request to each person, including any beneficial owner, to whom a reoffer prospectus is delivered, a copy of any and all of the documents which are incorporated by reference in this reoffer prospectus but not delivered with this reoffer prospectus (other than exhibits unless such exhibits are specifically incorporated by reference in such documents). You may request a copy of these documents by writing or telephoning us at:

Fathom Digital Manufacturing Corporation
1050 Walnut Ridge Drive
Hartland, WI 53029
(262) 367-8254

FATHOM DIGITAL MANUFACTURING CORPORATION

4,337,176 Shares of Class A Common Stock

REOFFER PROSPECTUS

September 1, 2022

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference.

The following documents, which have been filed by Fathom Digital Manufacturing Corporation (the “Registrant”) with the SEC, are incorporated into this Registration Statement by reference:

- the Registrant’s Annual Report on Form 10-K for the fiscal year ended December 31, 2021;
- the Registrant’s Quarterly Reports on Form 10-Q for the quarters ended March 31, 2022 and June 30, 2022;
- the Registrant’s Current Reports on Form 8-K filed with the SEC on January 10, 2022, March 4, 2022, May 16, 2022, July 13, 2022 and August 15, 2022 (in each case excluding “furnished” and not “filed” information);
- the Registrant’s Current Report on Form 8-K/A filed with the SEC on April 8, 2022; and
- the description of the Registrant’s Class A common stock contained in Exhibit 4.1 to the Registrant’s Quarterly Report for the quarter ended March 31, 2022.

All documents subsequently filed by the Registrant with the SEC pursuant to Sections 13(a), 13(c), 14 or 15(d) of the Securities Exchange Act of 1934, as amended (the “Exchange Act”), prior to the filing of a post-effective amendment to this Registration Statement which indicates that all securities offered have been sold or which deregisters all securities then remaining unsold, shall be deemed incorporated by reference into this Registration Statement and to be a part hereof from the date of the filing of such documents, except that information furnished to the SEC under Item 2.02 or Item 7.01 in Current Reports on Form 8-K and any exhibit relating to such information, shall not be deemed to be incorporated by reference into this Registration Statement.

Any statement contained in this Registration Statement, or in a document incorporated or deemed to be incorporated by reference herein, shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a statement contained herein, or in any other subsequently filed document which also is incorporated or deemed to be incorporated by reference into this Registration Statement, modifies or supersedes such earlier statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

Item 4. Description of Securities

Not applicable.

Item 5. Interests of Named Experts and Counsel.

Not applicable.

Item 6. Indemnification of Directors and Officers.

Section 145 of the Delaware General Corporation Law, or the DGCL (“Section 145”), provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or

investigative (other than an action by or in the right of such corporation) by reason of the fact that such person is or was a director, officer, employee or agent of such corporation, or is or was serving at the request of such corporation as a director, officer, employee or agent of another corporation or enterprise. The indemnification may include expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by such person in connection with such action, suit or proceeding, provided such person acted in good faith and in a manner he or she reasonably believed to be in or not opposed to the corporation's best interests and, with respect to any criminal action or proceeding, had no reasonable cause to believe that his conduct was unlawful. Section 145 also provides that a Delaware corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of such corporation, under the same conditions, except that such indemnification is limited to expenses (including attorneys' fees) actually and reasonably incurred by such person, and except that no indemnification is permitted without judicial approval if such person is adjudged to be liable to such corporation. Where an officer or director of a corporation is successful, on the merits or otherwise, in the defense of any action, suit or proceeding referred to above, or any claim, issue or matter therein, the corporation must indemnify that person against the expenses (including attorneys' fees) which such officer or director actually and reasonably incurred in connection therewith.

Section 145 further authorizes a corporation to purchase and maintain insurance on behalf of any person who is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the corporation as a director, officer, employee or agent of another corporation or enterprise, against any liability asserted against such person and incurred by such person in any such capacity, or arising out of such person's status as such, whether or not the corporation would otherwise have the power to indemnify such person against such liability under Section 145.

The Registrant's certificate of incorporation and bylaws provide that the Registrant will indemnify to the fullest extent permitted by law any person made or threatened to be made a party to an action or proceeding, whether criminal, civil, administrative or investigative, by reason of the fact that he, his testator or intestate is or was a director, officer or employee of the Registrant or any predecessor of the Registrant, or serves or served at any other corporation, partnership, joint venture, trust or other enterprise as a director, officer, employee or agent at the request of the Registrant or any predecessor of the Registrant.

The Registrant's bylaws provide for mandatory indemnification to the fullest extent permitted by DGCL against all expenses (including attorney's fees), judgments, fines, ERISA excise taxes or penalties and amounts paid in settlements.

The Registrant's certificate of incorporation eliminates the liability of a director of the Registrant to the fullest extent under applicable law. Pursuant to Section 102(b)(7) of the DGCL, a corporation may eliminate the personal liability of a director to the corporation or its stockholders for monetary damages for breach of fiduciary duty as a director, except for liabilities arising (i) from any breach of the director's duty of loyalty to the corporation or its stockholders, (ii) from acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) under Section 174 of the DGCL, or (iv) from any transaction from which the director derived an improper personal benefit.

These provisions may be held not to be enforceable for certain violations of the federal securities laws of the United States.

The Registrant's directors and executive officers are covered by insurance maintained by the Registrant against specified liabilities for actions taken in their capacities as such, including liabilities under the Securities Act. In addition, the Registrant has entered into contracts with its directors and executive officers providing

indemnification of such directors and executive officers by the Registrant to the fullest extent permitted by law, subject to certain limited exceptions.

Item 7. Exemption from Registration Claimed.

Not applicable.

Item 8. Exhibits.

The exhibits to this Registration Statement are listed below:

<u>Exhibit No.</u>	<u>Description</u>
3.1	<u>Certificate of Incorporation of Fathom Digital Manufacturing Corporation (incorporated by reference to Exhibit 3.2 to the Registrant's Current Report on Form 8-K filed with the SEC on December 30, 2021).</u>
3.2	<u>Amended and Restated Bylaws of Fathom Digital Manufacturing Corporation (incorporated by reference to Exhibit 3.3 to the Registrant's Current Report on Form 8-K filed with the SEC on December 30, 2021).</u>
4.1	<u>Form of Fathom Digital Manufacturing Corporation 2021 Omnibus Incentive Plan (incorporated by reference to Annex H of the preliminary proxy statement/prospectus contained in and forming a part of Altimar II's Registration Statement on Form S-4 (File No.333-259639), as amended by Amendment No. 3 thereto filed with the SEC on November 30, 2021).</u>
4.2	<u>Form of Fathom Digital Manufacturing Corporation 2021 Employee Stock Purchase Plan (incorporated by reference to Annex I of the preliminary proxy statement/prospectus contained in and forming a part of Altimar II's Registration Statement on Form S-4 (File No.333-259639), as amended by Amendment No. 3 thereto filed with the SEC on November 30, 2021).</u>
5.1	<u>Opinion of Winston & Strawn LLP (filed herewith).</u>
23.1	<u>Consent of Grant Thornton LLP, independent registered public accounting firm (filed herewith).</u>
23.2	<u>Consent of Winston & Strawn LLP (included in Exhibit 5.1 to this Registration Statement).</u>

Item 9. Undertakings.

(a)The undersigned Registrant hereby undertakes:

(1)To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:

(i)to include any prospectus required by Section 10(a)(3) of the Securities Act;

(ii)to reflect in the prospectus any facts or events arising after the effective date of this Registration Statement (or the most recent post-effective amendment hereof) which, individually or in the aggregate,

represent a fundamental change in the information set forth in this Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the SEC pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20 percent change in the maximum aggregate offering price set forth in the "Calculation of Registration Fee" table in the effective Registration Statement; and

(iii) to include any material information with respect to the plan of distribution not previously disclosed in this Registration Statement or any material change to such information in this Registration Statement;

provided, however, that paragraphs (a)(1)(i) and (a)(1)(ii) do not apply if the information required to be included in a post-effective amendment by those paragraphs is contained in reports filed with or furnished to the SEC by the Registrant pursuant to Section 13 or Section 15(d) of the Exchange Act that are incorporated by reference in the Registration Statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of the Registration Statement.

(2) That, for the purpose of determining any liability under the Securities Act, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of the offering.

(b) The undersigned Registrant hereby undertakes that, for purposes of determining any liability under the Securities Act, each filing of the Registrant's annual report pursuant to Section 13(a) or 15(d) of the Exchange Act (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Exchange Act) that is incorporated by reference in this Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(c) Insofar as indemnification for liabilities arising under the Securities Act may be permitted to directors, officers and controlling persons of the Registrant pursuant to the foregoing provisions, or otherwise, the Registrant has been advised that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the Registrant of expenses incurred or paid by a director, officer or controlling person of the Registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the Registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act and will be governed by the final adjudication of such issue.

SIGNATURES

Pursuant to the requirements of the Securities Act, the Registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-8 and has duly caused this Post-Effective Amendment No. 1 to Registration Statement on Form S-8 to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Hartland, Wisconsin, on September 1, 2022.

FATHOM DIGITAL MANUFACTURING CORPORATION

By: /s/ Ryan Martin

Name: Ryan Martin

Title: Chief Executive Officer

Pursuant to the requirements of the Securities Act, this Registration Statement has been signed by the following persons in the capacities indicated below as of September 1, 2022.

/s/ Ryan Martin
Ryan Martin

Director and Chief Executive Officer (Principal Executive Officer)

/s/ Mark Frost
Mark Frost

Chief Financial Officer (Principal Financial and Account Officer)

*
Carey Chen

Director

*
TJ Chung

Director

*
Dr. Caralynn Nowinski Collens

Director

*
Adam DeWitt

Director

*
David Fisher

Director

*
Maria Green

Director

*
Peter Leemputte

Director

*
John May

Director

*
Robert Nardelli

Director

* By: /s/ Ryan Martin
Ryan Martin
Attorney-in-fact



NORTH AMERICA SOUTH AMERICA EUROPE ASIA

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September 1, 2022

Fathom Digital Manufacturing Corporation
1050 Walnut Ridge Drive
Hartland, WI 53029

Re: Post-Effective Amendment to Form S-8 Registration Statement

Ladies and Gentlemen:

We have acted as special counsel to Fathom Digital Manufacturing Corporation, a Delaware corporation (the "Company"), in connection with the preparation of the Company's post-effective amendment to the registration statement on Form S-8 to be filed with the U.S. Securities and Exchange Commission (the "Commission") on or about the date hereof (the "Post-Effective Amendment") under the Securities Act of 1933, as amended (the "Securities Act").

The Post-Effective Amendment relates to the reoffer prospectus (the "Reoffer Prospectus"), which permits the reoffer or resale, on a continuous or delayed basis of the Company's shares of up to 4,337,176 shares of Class A common stock, par value \$0.0001 per share, of the Company (the "Class A common stock") that are deemed "control securities" under the Securities Act and which have been or will be acquired pursuant to grants or awards under either the Fathom Digital Manufacturing 2021 Omnibus Incentive Plan (the "Omnibus Incentive Plan") and such Class A common stock granted under the Omnibus Incentive Plan, the "Omnibus Plan Shares") or the Fathom Digital Manufacturing Corporation 2021 Employee Stock Purchase Plan (the "ESPP," and such Class A common stock granted under the ESPP, the "ESPP Shares") by the selling stockholders named in the Reoffer Prospectus as supplemented and who are, or may be deemed to be, "affiliates" within the meaning set forth in Rule 405 under the Securities Act. Such selling stockholders may reoffer or resell all, a portion, or none of the Omnibus Plan Shares or ESPP Shares (collectively, the "Shares") that they have acquired or may acquire pursuant to the Plans.

This opinion letter is being furnished in accordance with the requirements of Item 601(b)(5) of Regulation S-K promulgated under the Securities Act.

In rendering the opinions set forth below, we have examined and relied upon such certificates, corporate records, agreements, instruments and other documents, and such matters of law, that we considered necessary or appropriate as a basis for the opinions. We have examined and are familiar with originals or copies, certified or otherwise identified to our satisfaction, of (i) the certificate of incorporation of the Company, as in effect on the date hereof, (ii) the amended and restated bylaws of the Company, as in effect on the date hereof, (iii) the Post-Effective Amendment, (iv) the Omnibus Plan and the ESPP (collectively, the "Plans"), (v) resolutions of the board of directors of the Company relating to, among other matters, the approval of the Plans, the reservation for issuance of the Shares issuable thereunder and the filing of the Post-Effective Amendment, and (vi) such other documents as we have deemed necessary or appropriate as a basis for the opinions set forth below. In our examination, we have assumed the legal capacity of all natural persons, the genuineness of all signatures, the

authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as certified or photostatic copies, the authenticity of the originals of such latter documents, that all parties to such documents had the power, corporate or other, to enter into and perform all obligations thereunder and all such documents have been duly authorized by all requisite action, corporate or other, and duly executed and delivered by all parties thereto. As to any facts material to the opinions expressed herein that we did not independently establish or verify, we have relied upon oral or written statements and representations of officers and other representatives of the Company and others.

Based upon the foregoing and subject to the assumptions, qualifications and limitations set forth herein, we are of the opinion that the Shares have been duly authorized and, when issued by the Company in accordance with the terms and in the manner set forth in the Plans, the Shares will be validly issued, fully paid and non-assessable.

The opinions expressed herein are based upon and limited to the General Corporation Law of the State of Delaware (including the statutory provisions, the applicable provisions of the Delaware Constitution and reported judicial decisions interpreting the foregoing). We express no opinion herein as to any other laws, statutes, regulations or ordinances.

We hereby consent to the filing of this opinion letter as Exhibit 5.1 to the Post-Effective Amendment. In giving such consent, we do not thereby admit that we are experts within the meaning of the Securities Act or the rules and regulations of the Commission or that this consent is required by Section 7 of the Securities Act.

Very truly yours,

/s/ Winston & Strawn LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We have issued our report dated April 8, 2022 with respect to the consolidated financial statements included in the Annual Report of Fathom Digital Manufacturing Corporation on Form 10-K for the year ended December 31, 2021, which are incorporated by reference in this Registration Statement. We consent to the incorporation by reference of the aforementioned report in this Registration Statement, and the use of our name as it appears under the caption “Experts”.

/s/ GRANT THORNTON LLP

Milwaukee, Wisconsin
September 1, 2022
