Meta Platforms Inc. (META)

The Introduction of Muse AI: Implications & Framing a Potential "Conversation-to-Action" Paradigm Shift

META	12m Price Target: **$725.00**	Price: **$648.03**	Upside: **11.9%**

BUY

Eric Sheridan
+1(917)343-8683 | eric.sheridan@gs.com
Goldman Sachs & Co. LLC

Alex Vegliante, CFA
+1(212)934-1878 | alex.vegliante@gs.com
Goldman Sachs & Co. LLC

Emma Huang
+1(212)902-7229 | emma.huang@gs.com
Goldman Sachs & Co. LLC

With the introduction of several action-based consumer agents in the last few weeks (Spear Street Technology's Instinct; Meta's Muse AI; etc.), **the consumer AI landscape has begun the process of undergoing a fundamental paradigm shift**, transitioning rapidly from **passive, conversational chatbots to proactive, autonomous agents capable of executing real-world tasks**. We see the industry moving from simply answering questions to completing complex, high-value personal workflows such as travel booking, bill negotiation, calendar management, shopping, and administrative tasks.

Muse is Meta's full scale personal AI agent app/website. We'd highlight a few key details/takeaways from the launch:

- **Interface and Access:** Users interact with Muse through dedicated iOS and Android applications, the web (muse.ai), and WhatsApp. Meta designed the product around existing messaging behaviors to minimize the learning curve.
- **Capabilities:** Powered by the Muse Spark 1.3 model family, which is optimized for long-horizon agentic tasks, Muse can autonomously browse the web, manage workflows, fill out forms, make purchases, and coordinate long-term goals.
- **Monetization:** Meta has initially launched the Muse product as a **paid subscription** (Meta's first major foray into paid consumer AI subscriptions). Current subscription tiers include: **Free Tier** (capped at 100 million weekly tokens); **Power Tier** ($20/month for 500 million weekly tokens and faster response times); and **Maximum Tier** ($100/month for 3 billion weekly tokens and priority access). We see the potential for additional monetization avenues over time, including **commerce** (agentic commerce capabilities with potential to charge a take rate over time) and/or **advertising**.

Key Data

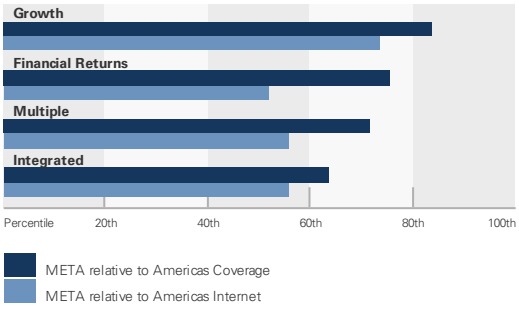
Market cap: $1.7tr
Enterprise value: $1.7tr
3m ADTV: $10.9bn
United States
Americas Internet
M&A Rank: 3

GS Forecast

	12/25	12/26E	12/27E	12/28E
Revenue ($ mn)	200,965.0	255,408.6	310,507.3	370,836.7
EBITDA ($ mn)	101,892.0	123,753.0	156,691.6	215,616.3
EBIT ($ mn)	83,276.0	86,938.3	89,950.2	118,608.1
EPS ($)	23.49	31.65	31.39	37.83
P/E (X)	28.5	20.5	20.6	17.1
EV/EBITDA (X)	16.8	13.4	11.1	8.2
FCF yield (%)	2.7	0.8	(1.6)	0.7
Dividend yield (%)	0.3	0.3	0.3	0.3
Net debt/EBITDA (X)	0.2	0.1	0.4	0.3

	6/26	9/26E	12/26E	3/27E
EPS ($)	6.18	6.48	8.56	8.15

GS Factor Profile



Source: Company data, Goldman Sachs Research estimates.
See disclosures for details.

Goldman Sachs does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. For Reg AC certification and other important disclosures, see the Disclosure Appendix, or go to www.gs.com/research/hedge.html. Analysts employed by non-US affiliates are not registered/qualified as research analysts with FINRA in the U.S.

BUY

Meta Platforms Inc. (META)

Rating since Sep 12, 2021

Ratios & Valuation

	12/25	12/26E	12/27E	12/28E
P/E (X)	28.5	20.5	20.6	17.1
EV/EBITDA (X)	16.8	13.4	11.1	8.2
EV/sales (X)	8.5	6.5	5.6	4.8
FCF yield (%)	2.7	0.8	(1.6)	0.7
EV/DACF (X)	15.1	11.5	10.4	8.0
CROCI (%)	36.5	34.7	29.5	28.8
ROE (%)	30.2	31.3	23.7	22.6
Net debt/EBITDA (X)	0.2	0.1	0.4	0.3
Net debt/equity (%)	10.5	3.7	15.1	15.0
Interest cover (X)	71.5	27.6	26.9	35.4
Inventory days	NM	NM	NM	NM
Receivable days	33.4	32.0	30.2	26.0
Days payable outstanding	83.7	78.6	76.7	81.1

Growth & Margins (%)

	12/25	12/26E	12/27E	12/28E
Total revenue growth	22.2	27.1	21.6	19.4
EBITDA growth	20.0	21.5	26.6	37.6
EPS growth	(2.1)	34.8	(0.8)	20.5
DPS growth	5.3	0.7	0.0	0.0
Gross margin	82.0	77.4	69.6	68.5
EBIT margin	41.4	34.0	29.0	32.0

Price Performance



	3m	6m	12m
Absolute	14.0%	(1.0)%	(13.7)%
Rel. to the S&P 500	10.1%	(12.4)%	(25.8)%

Source: FactSet. Price as of 11 Sep 2026 close.

Income Statement ($ mn)

	12/25	12/26E	12/27E	12/28E
Total revenue	200,965.0	255,408.6	310,507.3	370,836.7
Cost of goods sold	(36,174.0)	(57,638.1)	(94,381.9)	(116,978.1)
SG&A	(24,143.0)	(28,341.6)	(27,186.4)	(28,342.6)
R&D	(57,372.0)	(82,490.7)	(98,988.8)	(106,907.9)
Other operating inc./(exp.)	–	–	–	–
EBITDA	**101,892.0**	**123,753.0**	**156,691.6**	**215,616.3**
Depreciation & amortization	(18,616.0)	(36,814.7)	(66,741.4)	(97,008.2)
EBIT	**83,276.0**	**86,938.3**	**89,950.2**	**118,608.1**
Net interest inc./(exp.)	2,657.0	(173.0)	5,432.9	(1,987.4)
Income/(loss) from associates	–	–	–	–
Pre-tax profit	**85,933.0**	**86,765.3**	**95,383.1**	**116,620.7**
Provision for taxes	(25,475.0)	(5,288.2)	(13,353.6)	(16,326.9)
Minority interest	–	–	–	–
Preferred dividends	–	–	–	–
Net inc. (pre-exceptionals)	**60,458.0**	**81,477.2**	**82,029.5**	**100,293.8**
Net inc. (post-exceptionals)	**60,458.0**	**81,477.2**	**82,029.5**	**100,293.8**
EPS (basic, pre-except) ($)	**23.98**	**31.96**	**31.67**	**38.16**
EPS (diluted, pre-except) ($)	**23.49**	**31.65**	**31.39**	**37.83**
EPS (ex-ESO exp., dil.) ($)	**--**	**--**	**--**	**--**
DPS ($)	2.11	2.13	2.13	2.13
Div. payout ratio (%)	8.8	6.7	6.7	5.6
Wtd avg shares out. (basic) (mn)	2,521.0	2,549.5	2,589.9	2,628.4
Wtd avg shares out. (diluted) (mn)	2,574.0	2,574.3	2,612.9	2,651.4

Balance Sheet ($ mn)

	12/25	12/26E	12/27E	12/28E
Cash & cash equivalents	35,873.0	72,383.2	24,551.2	9,150.6
Accounts receivable	19,769.0	25,029.0	26,294.3	26,538.7
Inventory	–	–	–	–
Other current assets	53,080.0	12,134.3	9,051.3	10,759.9
Total current assets	**108,722.0**	**109,546.5**	**59,896.7**	**46,449.2**
Net PP&E	196,804.0	317,265.9	470,739.3	604,956.6
Net intangibles	24,534.0	23,406.0	23,406.0	23,406.0
Total investments	27,524.0	30,157.0	30,157.0	30,157.0
Other long-term assets	8,437.0	25,933.5	36,666.5	46,052.9
Total assets	**366,021.0**	**506,309.0**	**620,865.6**	**751,021.7**
Accounts payable	8,894.0	15,944.2	23,728.0	28,264.0
Short-term debt	–	–	–	–
Current lease liabilities	2,213.0	2,425.0	2,425.0	2,425.0
Other current liabilities	30,729.0	43,810.5	53,508.4	63,845.3
Total current liabilities	**41,836.0**	**62,179.6**	**79,661.4**	**94,534.3**
Long-term debt	58,744.0	83,664.0	83,664.0	83,664.0
Non-current lease liabilities	22,940.0	26,229.0	26,229.0	26,229.0
Other long-term liabilities	25,258.0	31,640.9	40,918.2	49,657.5
Total long-term liabilities	**106,942.0**	**141,533.9**	**150,811.2**	**159,550.5**
Total liabilities	**148,778.0**	**203,713.5**	**230,472.6**	**254,084.8**
Preferred shares	–	–	–	–
Total common equity	**217,243.0**	**302,595.5**	**390,392.9**	**496,936.9**
Minority interest	–	–	–	–
Total liabilities & equity	**366,021.0**	**506,309.0**	**620,865.6**	**751,021.7**
BVPS ($)	85.88	117.74	149.65	187.74

Cash Flow ($ mn)

	12/25	12/26E	12/27E	12/28E
Net income	60,458.0	81,477.2	82,029.5	100,293.8
D&A add-back	18,616.0	36,814.7	66,741.4	97,008.2
Minority interest add-back	–	–	–	–
Net (inc)/dec working capital	(885.0)	5,721.6	13,187.2	12,254.5
Others	37,611.0	28,260.4	25,579.4	26,858.4
Cash flow from operations	**115,800.0**	**152,273.8**	**187,537.5**	**236,414.9**
Capital expenditures	(69,691.0)	(138,369.1)	(213,608.3)	(224,288.7)
Acquisitions	(4,229.0)	(473.0)	–	–
Divestitures	–	–	–	–
Others	(28,083.0)	36,378.1	4,656.6	18.2
Cash flow from investing	**(102,003.0)**	**(102,464.0)**	**(208,951.7)**	**(224,270.5)**
Dividends paid	–	–	–	–
Share issuance/(repurchase)	–	–	–	–
Inc/(dec) in debt	29,906.0	24,910.0	–	–
Others	(51,719.0)	(38,209.6)	(26,417.8)	(27,545.0)
Cash flow from financing	**(21,813.0)**	**(13,299.6)**	**(26,417.8)**	**(27,545.0)**
Total cash flow	**(8,016.0)**	**36,510.2**	**(47,832.0)**	**(15,400.6)**
Free cash flow	46,109.0	13,904.7	(26,070.8)	12,126.2
Free cash flow per share (basic) ($)	18.29	5.45	(10.07)	4.61

Source: Company data, Goldman Sachs Research estimates.

- **Infrastructure:** Each user's agent runs inside an isolated Linux container on a dedicated virtual machine (**Muse Secure VM**) in the cloud, allowing it to continue executing tasks in the background after the user closes the application. Muse also has a number of partnership integrations to facilitate safe & secure interactions with various 3P networks, including most prominently Stripe (integration with Link's wallet for agents to facilitate agentic commerce).
- **Security & Privacy:** The transition from information retrieval to autonomous execution introduces several security, privacy, and transactional challenges. To mitigate risks, Meta utilizes its **Sentinel** system, a system-isolated process that acts as the sole permission authority for network access and connector actions (with credentials and authentication tokens stored outside of the agent's runtime). Meta has confirmed that Muse data/content is fully encrypted (using the same technology featured in WhatsApp) and not shared with the company (excluded from its advertising systems, with sanitized interaction data used for model training by default unless users manually opt out).

We see a key advantage for Meta being scale & distribution (i.e. the ability to leverage billions of daily active users across Facebook, Instagram, Messenger, and WhatsApp) – by integrating identity, commerce, payments, communications, and advertising infrastructure into a single platform, Meta has a powerful user acquisition advantage that is difficult for startups/independent AI companies to replicate. Based on past corporate priorities, it is **unlikely that Meta overly emphasizes monetization with such an effort in the early adoption period** & instead anchors its strategic approach to this effort building scale of adoption among users. Lastly on **consumer trust** – we see any questions or hesitancy from consumers around data privacy and security as likely the biggest potential headwind for broad based adoption of consumer AI agents. We expect consistency of performance (lack of errors in sourcing products and transaction completion) to be the biggest factor that must be executed consistently to retain and build transactional momentum among platform users.

In our note post its settlement of social media litigation a few weeks ago (link), we framed Meta as poised to begin to move from a "wall of worry" stock (around scaling/building compute given less visible return profiles vs. some of the other US hyperscalers) to a company that stood positioned to both productize and/or monetize that compute in a manner that could increase investor confidence. **We reiterate this view with increased conviction with a clearer catalyst path for the shares going forward post settlement & Muse launch** (Connect event on 9/23; potential for further foundational model releases, e.g. Watermelon; other initiatives aimed at the intersection of consumer, SMB & enterprise compute shifts toward AI). We reiterate our Buy rating & $725 PT.

Industry Implications: Balancing Growth & Investments Against Possible User Adoption & Behavioral Shifts

We view the launch of Muse as a critical strategic implication for the industry: competition within consumer AI is increasingly becoming a matter of platform/ecosystem integrations, distribution and capabilities rather than purely on model quality alone. Much like the consolidation of mobile operating systems around Apple (iOS) and Google (Android), **we expect consumer agents will consolidate**

around platforms with the strongest distribution, trust, and commerce integrations. Within our coverage, we'd highlight **META** & **GOOGL** as having the existing distribution, intelligence, compute capacity and user base to build & scale such consumer agentic AI efforts in the coming years.

Looking across our broader coverage universe, we would make a few points as initial takeaways and likely continued debates among investors going forward:

- **Access to compute is likely to be a critical variable** in the ability to launch and scale such broad-based initiatives.
- We would place a greater emphasis on **distribution as a strategic advantage** (as highlighted above) **vs. AI model performance alone** (at/around/pushing the frontier) as a likely factor in determining success in such efforts.
- Along with distribution mechanisms, we would posit that **deep integration into existing businesses** (apps/sites), **payment infrastructure, fulfillment/logistics landscape**, etc. is **likely critical to minimize the downstream customer service friction points that might impede widespread adoption**.
- Agentic commerce, travel, financial services, and customer service represent massive new monetization opportunities for companies successful at the platform layer (akin to the Application distribution stores as mobile computing gained mainstream adoption). That said, a friction point remains how "agent ready" the broader web/app ecosystem sits in its current form (which might cause growing pains).
- A key technical debate centers on whether browser-mimicking agents represent the long-term architecture, or if API-driven data access will ultimately prove faster, more reliable, and more scalable.

At our recent Communacopia + Technology conference (see our full conference takeaways note for details – link), the industry broadly spoke to a few key trends with respect to shifts toward agentic driven commercial behavior:

- A small but growing amount of traffic is coming from consumer AI agents (with recent product launches likely acting as a catalyst for increased volume going forward);
- Companies are balancing their own efforts to drive more direct traffic and/or user loyalty driven behavior (across app and web) while also introducing their own 1P/on-platform AI solutions (to reduce user friction, increase personalization & improving conversion);
- The importance of supply aggregation and differentiation as a source of durable competitive advantage (that is unlikely to be as easily disintermediated as investors might currently imagine).
- The importance of being a demand aggregation point for frequent user behavior, muting any potential disintermediation (that might pull users further up the funnel) toward a platform-led agentic commercial industry outcome.

In our view, as a collection of marketplace companies grapple with those industry shifts, a likely key determinant of stock price performance will be the companies that strike a balance between improving user relevance across multiple transactional pathways,

building/scaling demand/supply advantages and maintaining or increasing underlying platform unit economics in the process.

Valuation & Key Risks

We reiterate our Buy rating and 12-month price target of $725. Our $725, 12-month price target is based on an equal blend of (1) 26.0x EV/GAAP EBIT applied to our NTM + 1 year estimates and (2) a modified DCF using 45.0x EV/FCF-SBC multiple applied to our NTM + 4 years estimates discounted back 3 years. Risks to our Buy rating include: a) competitionor user growth, user engagement & advertising dollars across an array of incumbent and emerging Internet, media and commerce companies; b) large investments in long-tailed initiatives depress operating marginsor longer than our orecasts; c) no/low levels of incremental shareholder returns goingorward; d) regulatory scrutiny and industry practices altering the business model's prospects; e) potential antitrust scrutiny could prove to be a headwind to M&A aspiration (to add talent and product innovation inorganically) and/or result in a break-up or dis-synergies of prior period M&A activity; &) inability to monetize upside optionality opportunities (messaging layer, social commerce/shopping, Oculus/Metaverse). In addition, Meta is exposed to the volatility caused by the global macroeconomic environment and investor risk appetiteor growth stocks.

Disclosure Appendix

Reg AC

We, Eric Sheridan, Alex Vegliante, CFA and Emma Huang, hereby certify that all of the views expressed in this report accurately reflect our personal views about the subject company or companies and its or their securities. We also certify that no part of our compensation was, is or will be, directly or indirectly, related to the specific recommendations or views expressed in this report.

Unless otherwise stated, the individuals listed on the cover page of this report are analysts in Goldman Sachs' Global Investment Research division.

Contributing Authors: Eric Sheridan Goldman Sachs & Co. LLC, Alex Vegliante, CFA Goldman Sachs & Co. LLC, Emma Huang Goldman Sachs & Co. LLC.

Unless otherwise stated, the individuals listed in the Contributing Authors disclosure of this report are analysts in Goldman Sachs' Global Investment Research division.

GS Factor Profile

The Goldman Sachs Factor Profile provides investment context for a stock by comparing key attributes to the market (i.e. our universe of rated stocks) and its sector peers. The four key attributes depicted are: Growth, Financial Returns, Multiple (e.g. valuation) and Integrated (a composite of Growth, Financial Returns and Multiple). Growth, Financial Returns and Multiple are calculated by using normalized ranks for specific metrics for each stock. The normalized ranks for the metrics are then averaged and converted into percentiles for the relevant attribute. The precise calculation of each metric may vary depending on the fiscal year, industry and region, but the standard approach is as follows:

Growth is based on a stock's forward-looking sales growth, EBITDA growth and EPS growth (for financial stocks, only EPS and sales growth), with a higher percentile indicating a higher growth company. **Financial Returns** is based on a stock's forward-looking ROE, ROCE and CROCI (for financial stocks, only ROE), with a higher percentile indicating a company with higher financial returns. **Multiple** is based on a stock's forward-looking P/E, P/B, price/dividend (P/D), EV/EBITDA, EV/FCF and EV/Debt Adjusted Cash Flow (DACF) (for financial stocks, only P/E, P/B and P/D), with a higher percentile indicating a stock trading at a higher multiple. The **Integrated** percentile is calculated as the average of the Growth percentile, Financial Returns percentile and (100% - Multiple percentile).

Financial Returns and Multiple use the Goldman Sachs analyst forecasts at the fiscal year-end at least three quarters in the future. Growth uses inputs for the fiscal year at least seven quarters in the future compared with the year at least three quarters in the future (on a per-share basis for all metrics).

For a more detailed description of how we calculate the GS Factor Profile, please contact your GS representative.

M&A Rank

Across our global coverage, we examine stocks using an M&A framework, considering both qualitative factors and quantitative factors (which may vary across sectors and regions) to incorporate the potential that certain companies could be acquired. We then assign a M&A rank as a means of scoring companies under our rated coverage from 1 to 3, with 1 representing high (30%-50%) probability of the company becoming an acquisition target, 2 representing medium (15%-30%) probability and 3 representing low (0%-15%) probability. For companies ranked 1 or 2, in line with our standard departmental guidelines we incorporate an M&A component into our target price. M&A rank of 3 is considered immaterial and therefore does not factor into our price target, and may or may not be discussed in research.

Quantum

Quantum is Goldman Sachs' proprietary database providing access to detailed financial statement histories, forecasts and ratios. It can be used for in-depth analysis of a single company, or to make comparisons between companies in different sectors and markets.

Disclosures

Rating and pricing information

Alphabet Inc. (Buy, $338.50)

The rating(s) for Meta Platforms Inc. is/are relative to the other companies in its/their coverage universe: Airbnb Inc., Alphabet Inc., Amazon.com Inc., Angi Inc., AppLovin Corp., Bending Spoons S.p.A., Booking Holdings Inc., Bumble Inc., Chewy Inc., Clear Secure Inc., Coursera Inc., DoorDash Inc., DraftKings Inc., Duolingo Inc., Ethos Technologies Inc., Etsy Inc., Expedia Group, Fiverr International Ltd., Frontdoor Inc., Genius Sports Ltd., GoodRx Holdings Inc., Grindr Inc., Groupon Inc., Ibotta Inc., Instacart, Liftoff Mobile Inc., Lyft Inc., Match Group, MediaAlpha Inc., Meta Platforms Inc., Netflix Inc., Neutron Holdings Inc., Nextdoor Holdings, Opera Ltd., Pattern Group Inc., Peloton Interactive Inc., People Inc., Pinterest Inc., Playtika, Reddit Inc., Roblox, Snap Inc., Space Exploration Technologies Corp., Sportradar Group, Spotify Technology S.A., StubHub Holdings, Take-Two Interactive Software Inc., Tripadvisor Inc., Uber Technologies Inc., Unity Software Inc., Upwork Inc., Wayfair Inc., Webtoon Entertainment Inc., Xometry Inc., Yelp Inc., ZipRecruiter Inc.

Company-specific regulatory disclosures

The following disclosures relate to relationships between The Goldman Sachs Group, Inc. (with its affiliates, "Goldman Sachs") and companies covered by Goldman Sachs Global Investment Research and referred to in this research.

Goldman Sachs has received compensation for investment banking services in the past 12 months: Meta Platforms Inc. ($648.03)

Goldman Sachs expects to receive or intends to seek compensation for investment banking services in the next 3 months: Meta Platforms Inc. ($648.03)

Goldman Sachs had an investment banking services client relationship during the past 12 months with: Meta Platforms Inc. ($648.03)

Goldman Sachs had a non-investment banking securities-related services client relationship during the past 12 months with: Meta Platforms Inc. ($648.03)

Goldman Sachs had a non-securities services client relationship during the past 12 months with: Meta Platforms Inc. ($648.03)

Goldman Sachs has managed or co-managed a public or Rule 144A offering in the past 12 months: Meta Platforms Inc. ($648.03)

Goldman Sachs is a registered market maker in the securities or derivatives thereof: Meta Platforms Inc. ($648.03)

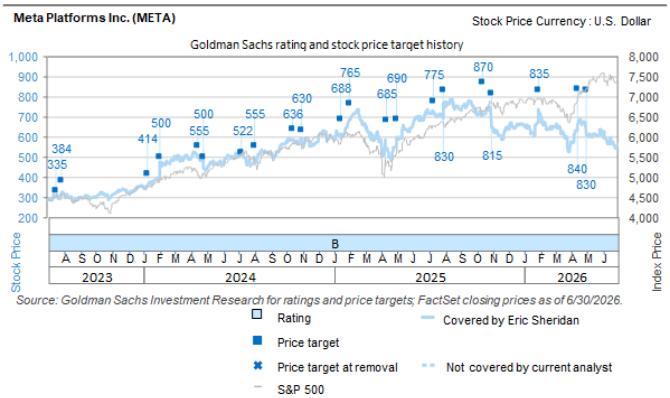
Distribution of ratings/investment banking relationships

Goldman Sachs Investment Research global Equity coverage universe

	Rating Distribution			Investment Banking Relationships		
	Buy	Hold	Sell	Buy	Hold	Sell
Global	50%	34%	16%	65%	59%	43%

As of July 1, 2026, Goldman Sachs Global Investment Research had investment ratings on 3,104 equity securities. Goldman Sachs assigns stocks as Buys and Sells on various regional Investment Lists; stocks not so assigned are deemed Neutral. Such assignments equate to Buy, Hold and Sell for the purposes of the above disclosure required by the FINRA Rules. See 'Ratings, Coverage universe and related definitions' below. The Investment Banking Relationships chart reflects the percentage of subject companies within each rating category for whom Goldman Sachs has provided investment banking services within the previous twelve months.

Price target and rating history chart(s)



The price targets shown should be considered in the context of all prior published Goldman Sachs research, which may or may not have included price targets, as well as developments relating to the company, its industry and financial markets.

Target price history table(s)

Meta Platforms Inc. (META)

Date of report	Target price ($)	Closing price ($)
30-Jul-26	725.00	539.03
08-Jul-26	815.00	603.12
30-Apr-26	830.00	611.91
13-Apr-26	840.00	634.53
29-Jan-26	835.00	738.31
30-Oct-25	815.00	666.47
14-Oct-25	870.00	708.65
31-Jul-25	830.00	773.44
10-Jul-25	775.00	727.24
01-May-25	690.00	572.21
11-Apr-25	685.00	543.57
30-Jan-25	765.00	687.00
13-Jan-25	688.00	608.33
31-Oct-24	630.00	567.58
14-Oct-24	636.00	590.42
01-Aug-24	555.00	497.74
08-Jul-24	522.00	529.32
25-Apr-24	500.00	441.38
15-Apr-24	555.00	500.23
02-Feb-24	500.00	474.99
10-Jan-24	414.00	370.47

Price targets shown in table(s) are unadjusted for corporate actions.

Regulatory disclosures

Disclosures required by United States laws and regulations

See company-specific regulatory disclosures above for any of the following disclosures required as to companies referred to in this report: manager or co-manager in a pending transaction; 1% or other ownership; compensation for certain services; types of client relationships; managed/co-managed public offerings in prior periods; directorships; registered market maker. Goldman Sachs trades or may trade as a principal in debt securities (or in related derivatives) of issuers discussed in this report.

The following are additional required disclosures: **Ownership and material conflicts of interest:** Goldman Sachs policy prohibits its analysts, professionals reporting to analysts and members of their households from owning securities of any company in the analyst's area of coverage. **Analyst compensation:** Analysts are paid in part based on the profitability of Goldman Sachs, which includes investment banking revenues. **Analyst as officer or director:** Goldman Sachs policy generally prohibits its analysts, persons reporting to analysts or members of their households from serving as an officer, director or advisor of any company in the analyst's area of coverage. **Non-U.S. Analysts:** Non-U.S. analysts may not be associated persons of Goldman Sachs & Co. LLC and therefore may not be subject to FINRA Rule 2241 or FINRA Rule 2242 restrictions on communications with a subject company, public appearances and trading in securities covered by the analysts.

Additional disclosures required under the laws and regulations of jurisdictions other than the United States

The following disclosures are those required by the jurisdiction indicated, except to the extent already made above pursuant to United States laws and regulations. **Australia:** Goldman Sachs Australia Pty Ltd and its affiliates are not authorised deposit-taking institutions (as that term is defined in the Banking Act 1959 (Cth)) in Australia and do not provide banking services, nor carry on a banking business, in Australia. This research, and any access to it, is intended only for "wholesale clients" within the meaning of the Australian Corporations Act, unless otherwise agreed by Goldman Sachs. In producing research reports, members of Global Investment Research of Goldman Sachs Australia may attend site visits and other meetings hosted by the companies and other entities which are the subject of its research reports. In some instances the costs of such site visits or meetings may be met in part or in whole by the issuers concerned if Goldman Sachs Australia considers it is appropriate and reasonable in the specific circumstances relating to the site visit or meeting. To the extent that the contents of this document contains any financial product advice, it is general advice only and has been prepared by Goldman Sachs without taking into account a client's objectives, financial situation or needs. A client should, before acting on any such advice, consider the appropriateness of the advice having regard to the client's own objectives, financial situation and needs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests and a copy of Goldman Sachs' Australian Sell-Side Research Independence Policy Statement are available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. **Brazil:** Disclosure information in relation to CVM Resolution n. 20 is available at https://www.gs.com/worldwide/brazil/area/gir/index.html. Where applicable, the Brazil-registered analyst primarily responsible for the content of this research report, as defined in Article 20 of CVM Resolution n. 20, is the first author named at the beginning of this report, unless indicated otherwise at the end of the text. **Canada:** This information is being provided to you for information purposes only and is not, and under no circumstances should be construed as, an advertisement, offering or solicitation by Goldman Sachs & Co. LLC for purchasers of securities in Canada to trade in any Canadian security. Goldman Sachs & Co. LLC is not registered as a dealer in any jurisdiction in Canada under applicable Canadian securities laws and generally is not permitted to trade in Canadian securities and may be prohibited from selling certain securities and products in certain jurisdictions in Canada. If you wish to trade in any Canadian securities or other products in Canada please contact Goldman Sachs Canada Inc., an affiliate of The Goldman Sachs Group Inc., or another registered Canadian dealer. **Hong Kong:** Further information on the securities of covered companies referred to in this research may be obtained on request from Goldman Sachs (Asia) L.L.C. **India:** Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (India) Securities Private Limited, Research Analyst - SEBI Registration Number INH000001493, 10th Floor, Ascent-Worli, Sudam Kalu Ahire Marg, Worli, Mumbai-400 025, India, Corporate Identity Number U74140MH2006FTC160634, Phone +91 22 6616 9000, Fax +91 22 6616 9001. Goldman Sachs may beneficially own 1% or more of the securities (as such term is defined in clause 2 (h) the Indian Securities Contracts (Regulation) Act, 1956) of the subject company or companies referred to in this research report. Registration granted by SEBI and certification from NISM in no way guarantee performance of the intermediary or provide any assurance of returns to investors. Goldman Sachs (India) Securities Private Limited compliance officer and investor grievance contact details, a copy of the annual compliance audit report and other relevant information and disclosures can be found at this link: https://www.goldmansachs.com/worldwide/india/research-analyst. **Japan:** See below. **Korea:** This research, and any access to it, is intended only for "professional investors" within the meaning of the Financial Services and Capital Markets Act, unless otherwise agreed by Goldman Sachs. Further information on the subject company or companies referred to in this research may be obtained from Goldman Sachs (Asia) L.L.C., Seoul Branch. **New Zealand:** Goldman Sachs New Zealand Limited and its affiliates are neither "registered banks" nor "deposit takers" (as defined in the Reserve Bank of New Zealand Act 1989) in New Zealand. This research, and any access to it, is intended for "wholesale clients" (as defined in the Financial Advisers Act 2008) unless otherwise agreed by Goldman Sachs. A copy of certain Goldman Sachs Australia and New Zealand disclosure of interests is available at: https://www.goldmansachs.com/disclosures/australia-new-zealand/index.html. **Russia:** Research reports distributed in the Russian Federation are not advertising as defined in the Russian legislation, but are information and analysis not having product promotion as their main purpose and do not provide appraisal within the meaning of the Russian legislation on appraisal activity. Research reports do not constitute a personalized investment recommendation as defined in Russian laws and regulations, are not addressed to a specific client, and are prepared without analyzing the financial circumstances, investment profiles or risk profiles of clients. Goldman Sachs assumes no responsibility for any investment decisions that may be taken by a client or any other person based on this research report. **Singapore:** Goldman Sachs (Singapore) Pte. (Company Number: 198602165W), which is regulated by the Monetary Authority of Singapore, accepts legal responsibility for this research, and should be contacted with respect to any matters arising from, or in connection with, this research. **Taiwan:** This material is for reference only and must not be reprinted without permission. Investors should carefully consider their own investment risk. Investment results are the responsibility of the individual investor. **United Kingdom:** Persons who would be categorized as retail clients in the United Kingdom, as such term is defined in the rules of the Financial Conduct Authority, should read this research in conjunction with prior Goldman Sachs research on the covered companies referred to herein and should refer to the risk warnings that have been sent to them by Goldman Sachs International. A copy of these risks warnings, and a glossary of certain financial terms used in this report, are available from Goldman Sachs International on request.

European Union and United Kingdom: Disclosure information in relation to Article 6 (2) of the European Commission Delegated Regulation (EU) (2016/958) supplementing Regulation (EU) No 596/2014 of the European Parliament and of the Council (including as that Delegated Regulation is implemented into United Kingdom domestic law and regulation following the United Kingdom's departure from the European Union and the European Economic Area) with regard to regulatory technical standards for the technical arrangements for objective presentation of investment recommendations or other information recommending or suggesting an investment strategy and for disclosure of particular interests or indications of conflicts of interest is available at https://www.gs.com/disclosures/europeanpolicy.html which states the European Policy for Managing Conflicts of Interest in Connection with Investment Research.

Japan: Goldman Sachs Japan Co., Ltd. is a Financial Instrument Dealer registered with the Kanto Financial Bureau under registration number Kinsho 69, and a member of Japan Securities Dealers Association, Financial Futures Association of Japan Type II Financial Instruments Firms Association, and Investment Management Association of Japan. Sales and purchase of equities are subject to commission pre-determined with clients plus consumption tax. See company-specific disclosures as to any applicable disclosures required by Japanese stock exchanges, the Japanese Securities Dealers Association or the Japanese Securities Finance Company.

Ratings, coverage universe and related definitions

Buy (B), Neutral (N), Sell (S) Analysts recommend stocks as Buys or Sells for inclusion on various regional Investment Lists. Being assigned a Buy or Sell on an Investment List is determined by a stock's total return potential relative to its coverage universe. Any stock not assigned as a Buy or a Sell on an Investment List with an active rating (i.e., a stock that is not Rating Suspended, Not Rated, Early-Stage Biotech, Coverage Suspended or Not Covered), is deemed Neutral. Each region manages Regional Conviction Lists, which are selected from Buy rated stocks on the respective region's Investment Lists and represent investment recommendations focused on the size of the total return potential and/or the likelihood of the realization of the return across their respective areas of coverage. The addition or removal of stocks from such Conviction Lists are managed by the Investment Review Committee or other designated committee in each respective region and do not represent a change in the analysts' investment rating for such stocks.

Total return potential represents the upside or downside differential between the current share price and the price target, including all paid or anticipated dividends, expected during the time horizon associated with the price target. Price targets are required for all covered stocks. The total return potential, price target and associated time horizon are stated in each report adding or reiterating an Investment List membership.

Coverage Universe: A list of all stocks in each coverage universe is available by primary analyst, stock and coverage universe at https://www.gs.com/research/hedge.html.

Not Rated (NR). The investment rating, target price and earnings estimates (where relevant) are removed pursuant to Goldman Sachs policy when Goldman Sachs is acting in an advisory capacity in a merger or in a strategic transaction involving this company, when there are legal, regulatory or policy constraints due to Goldman Sachs' involvement in a transaction, and in certain other circumstances. **Early-Stage Biotech (ES).** An investment rating and a target price are not assigned pursuant to Goldman Sachs policy when this company has neither a drug, treatment or medical device that has passed a Phase II clinical trial nor a license to distribute a post-Phase II drug, treatment or medical device. **Rating Suspended (RS).** Goldman Sachs Research has suspended the investment rating and price target for this stock, because there is not a sufficient fundamental basis for determining an investment rating or target price. The previous investment rating and target price, if any, are no longer in effect for this stock and should not be relied upon. **Coverage Suspended (CS).** Goldman Sachs has suspended coverage of this company. **Not Covered (NC).** Goldman Sachs does not cover this company.

Global product; distributing entities

Goldman Sachs Global Investment Research produces and distributes research products for clients of Goldman Sachs on a global basis. Analysts based in Goldman Sachs offices around the world produce research on industries and companies, and research on macroeconomics, currencies, commodities and portfolio strategy. This research is disseminated in Australia by Goldman Sachs Australia Pty Ltd (ABN 21 006 797 897); in Brazil by Goldman Sachs do Brasil Corretora de Títulos e Valores Mobiliários S.A.; Public Communication Channel Goldman Sachs Brazil: 0800 727 5764 and / or contatogoldmanbrasil@gs.com. Available Weekdays (except holidays), from 9am to 6pm. Canal de Comunicação com o Público Goldman Sachs Brasil: 0800 727 5764 e/ou contatogoldmanbrasil@gs.com. Horário de funcionamento: segunda-feira à sexta-feira (exceto feriados), das 9h às 18h; in Canada by Goldman Sachs & Co. LLC; in Hong Kong by Goldman Sachs (Asia) L.L.C.; in India by Goldman Sachs (India) Securities Private Ltd.; in Japan by Goldman Sachs Japan Co., Ltd.; in the Republic of Korea by Goldman Sachs (Asia) L.L.C., Seoul Branch; in New Zealand by Goldman Sachs New Zealand Limited; in Russia by OOO Goldman Sachs; in Singapore by Goldman Sachs (Singapore) Pte. (Company Number: 198602165W); and in the United States of America by Goldman Sachs & Co. LLC. Goldman Sachs International has approved this research in connection with its distribution in the United Kingdom.

Goldman Sachs International ("GSI"), authorised by the Prudential Regulation Authority ("PRA") and regulated by the Financial Conduct Authority ("FCA") and the PRA, has approved this research in connection with its distribution in the United Kingdom.

European Economic Area: Goldman Sachs Bank Europe SE ("GSBE") is a credit institution incorporated in Germany and, within the Single Supervisory Mechanism, subject to direct prudential supervision by the European Central Bank and in other respects supervised by German Federal Financial Supervisory Authority (Bundesanstalt für Finanzdienstleistungsaufsicht, BaFin) and Deutsche Bundesbank and disseminates research within the European Economic Area.

General disclosures

This research is for our clients only. Other than disclosures relating to Goldman Sachs, this research is based on current public information that we consider reliable, but we do not represent it is accurate or complete, and it should not be relied on as such. The information, opinions, estimates and forecasts contained herein are as of the date hereof and are subject to change without prior notification. We seek to update our research as appropriate, but various regulations may prevent us from doing so. Other than certain industry reports published on a periodic basis, the large majority of reports are published at irregular intervals as appropriate in the analyst's judgment.

Goldman Sachs conducts a global full-service, integrated investment banking, investment management, and brokerage business. We have investment banking and other business relationships with a substantial percentage of the companies covered by Global Investment Research. Goldman Sachs & Co. LLC, the United States broker dealer, is a member of SIPC (https://www.sipc.org).

Our salespeople, traders, and other professionals may provide oral or written market commentary or trading strategies to our clients and principal trading desks that reflect opinions that are contrary to the opinions expressed in this research. Our asset management area, principal trading desks and investing businesses may make investment decisions that are inconsistent with the recommendations or views expressed in this research.

The analysts named in this report may have from time to time discussed with our clients, including Goldman Sachs salespersons and traders, or may discuss in this report, trading strategies that reference catalysts or events that may have a near-term impact on the market price of the equity securities discussed in this report, which impact may be directionally counter to the analyst's published price target expectations for such stocks. Any such trading strategies are distinct from and do not affect the analyst's fundamental equity rating for such stocks, which rating reflects a stock's return potential relative to its coverage universe as described herein.

We and our affiliates, officers, directors, and employees will from time to time have long or short positions in, act as principal in, make a market or act as liquidity provider in, and buy or sell, any securities, derivatives, or other financial instruments referred to in this research (including any financial instruments issued by the companies referred to herein), unless otherwise prohibited by regulation or Goldman Sachs policy.

The views attributed to third party presenters at Goldman Sachs arranged conferences, including individuals from other parts of Goldman Sachs, do not necessarily reflect those of Global Investment Research and are not an official view of Goldman Sachs.

Any third party referenced herein, including any salespeople, traders and other professionals or members of their household, may have positions in the products mentioned that are inconsistent with the views expressed by analysts named in this report.

This research is not an offer to sell or the solicitation of an offer to buy any security in any jurisdiction where such an offer or solicitation would be illegal. It does not constitute a personal recommendation or take into account the particular investment objectives, financial situations, or needs of individual clients. Clients should consider whether any advice or recommendation in this research is suitable for their particular circumstances and, if appropriate, seek professional advice, including tax advice. The price and value of investments referred to in this research and the income from them may fluctuate. Past performance is not a guide to future performance, future returns are not guaranteed, and a loss of original capital may occur. Fluctuations in exchange rates could have adverse effects on the value or price of, or income derived from, certain investments.

Certain transactions, including those involving futures, options, and other derivatives, give rise to substantial risk and are not suitable for all investors. Investors should review current options and futures disclosure documents which are available from Goldman Sachs sales representatives or at https://www.theocc.com/about/publications/character-risks.jsp and https://www.goldmansachs.com/disclosures/cftc_fcm_disclosures. Transaction costs may be significant in option strategies calling for multiple purchase and sales of options such as spreads. Supporting documentation will be supplied upon request.

Differing Levels of Service provided by Global Investment Research: The level and types of services provided to you by Goldman Sachs Global

Investment Research may vary as compared to that provided to internal and other external clients of GS, depending on various factors including your individual preferences as to the frequency and manner of receiving communication, your risk profile and investment focus and perspective (e.g., marketwide, sector specific, long term, short term), the size and scope of your overall client relationship with GS, and legal and regulatory constraints. As an example, certain clients may request to receive notifications when research on specific securities is published, and certain clients may request that specific data underlying analysts' fundamental analysis available on our internal client websites be delivered to them electronically through data feeds or otherwise. No change to an analyst's fundamental research views (e.g., ratings, price targets, or material changes to earnings estimates for equity securities), will be communicated to any client prior to inclusion of such information in a research report broadly disseminated through electronic publication to our internal client websites or through other means, as necessary, to all clients who are entitled to receive such reports.

All research reports are disseminated and available to all clients simultaneously through electronic publication to our internal client websites. Not all research content is redistributed to our clients or available to third-party aggregators, nor is Goldman Sachs responsible for the redistribution of our research by third party aggregators. For research, models or other data related to one or more securities, markets or asset classes (including related services) that may be available to you, please contact your GS representative or go to https://research.gs.com.

Disclosure information is also available at https://www.gs.com/research/hedge.html or from Research Compliance, 200 West Street, New York, NY 10282.

© 2026 Goldman Sachs.

You are permitted to store, display, analyze, modify, reformat, and print the information made available to you via this service only for your own use. You may not resell or reverse engineer this information to calculate or develop any index for disclosure and/or marketing or create any other derivative works or commercial product(s), data or offering(s) without the express written consent of Goldman Sachs. You are not permitted to publish, transmit, or otherwise reproduce this information, in whole or in part, in any format to any third party without the express written consent of Goldman Sachs. This foregoing restriction includes, without limitation, using, extracting, downloading or retrieving this information, in whole or in part, to train or finetune a machine learning or artificial intelligence system, or to provide or reproduce this information, in whole or in part, as a prompt or input to any such system.

