

## Exploring U.S. Tech

# A Tale of Two Companies

The rapidly shifting U.S. tech landscape has opened up various opportunities for the TMT team to explore in an effort to re-evaluate our existing U.S. portfolio.

The analysis herein contains a double deep dive on two mature tech players that have recently experienced an inflection point in their individual trajectories.

In this report, the TMT team will be exploring Meta Platforms & Intel Corporation.

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### **Tech., Media & Telecom**

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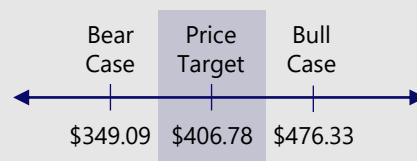
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November 15, 2021

Stock Rating **BUY**  
Price Target **\$406.78**



## Meta Platforms (NASDAQ: MVRB) Zuckerberg: The New God?

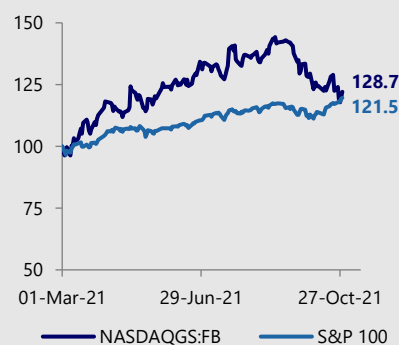
Facebook has been in the TMT portfolio since 2015 and it recently changed its name to Meta Platforms, as it better encompasses all its social media platforms. The company is undergoing major changes from changing industry dynamics to external threats to the Metaverse. The three major themes explored in this report are:

- 1) **The Changing Competitive Landscape:** Big Tech companies are becoming increasingly competitive with each other as the lines between business segments (ie. advertising, e-commerce, and device sales) are beginning to blur. Meta currently has the largest user base, the strongest network effect, and the ability to deploy capital on other business segments through the Metaverse, thus, the team believes Meta is well positioned in the changing competitive landscape.
- 2) **Threats to Core Meta's Business Model:** The core threat to Meta involves ensuring privacy of user data – many parties are forcing Meta to take notice to this, including governments, other companies such as Apple, and society. Meta's management has communicated its intent to produce new targeting tools that are privacy-friendly and still more effective than Meta's competitors, that will also be subject to increased privacy requirements.
- 3) **The Metaverse and Future Growth Opportunities:** The Metaverse is Meta's long term mitigant to the first and second themes. Through control of devices and the operating systems, Meta can control its destiny much more directly.

As explained above, the team's update on the three major themes was positive. Moreover, the team got to an attractive valuation despite conservative assumptions with little upside from the Metaverse included in the model. Thus, the team will look to increase its position in Meta.

Ticker	MVRB
Market Cap (\$U.S. B)	\$948
P/E	24.4x
EV/EBITDA	16.0x

### 52 Week Performance



### Tech., Media & Telecom

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## Company Overview

### Early Beginnings

Mark Zuckerberg originally built a website called "Facemash" in 2003 while studying at Harvard University. The site displayed two individuals and asked the user to pick the more attractive individual. Facemash got 450 visitors and 22,000 photo views within the first four hours. However, the site was shut down by Harvard administration relatively fast.

In January 2004, Zuckerberg had another idea. The idea was called "TheFacebook" – it was a social network restricted to Harvard students. During the debut, Zuckerberg faced an allegation of theft from the Cameron Winklevoss and Tyler Winklevoss. Zuckerberg had told the Winklevoss brothers that he would help them build a social network called "HarvardConnection". The Winklevoss brothers claimed that Zuckerberg stole their idea to build a competing product. Eventually, Zuckerberg settled the lawsuit for 1.2 million shares of Facebook in 2008.

TheFacebook was an immediate success with over half of Harvard's undergraduates registering in the first month. In March 2004, TheFacebook expanded to Columbia, Stanford, and Yale. Over the years it continued to expand across colleges, universities, and companies. In 2005, the company dropped "the" from its name and become Facebook. In September 2006, Facebook opened to everyone above 13 years old with a valid email address.

### Meta (aka Facebook) Today

Meta operates a portfolio of social media platforms including Facebook, Instagram, Messenger, and WhatsApp. In addition, Meta operates a Payments business, Facebook Pay, in select geographies which works across all the social media platforms. Moreover, Meta owns Facebook Reality Labs, which sells augmented and virtual reality products to help people feel connected. Facebook Reality Labs offers two major products. Firstly, the Oculus Quest which is industry-leading VR technology. Secondly, Portal products

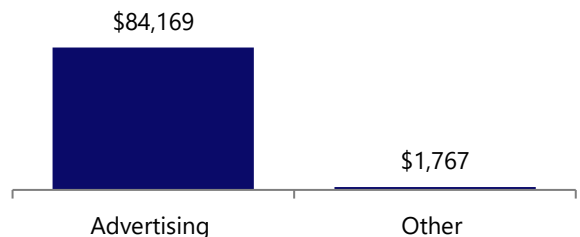
which are effectively video cameras to connect with family and friends. Revenue from its social media platforms is generated by selling advertisements directly or through third-party agencies to businesses, governments, and other organizations. As shown in Exhibit I, advertisements make up the vast majority (~98%) of total revenue. The remainder stems from payments and Facebook Reality Labs.

Meta's advertising value proposition has two major aspects. Firstly, Facebook aggregates and possesses a large amount of user data. It uses the data to target specific population segments and demographics. Secondly, it provides advanced analytics tools to marketers given the focus on effective measurement of results. This allows marketers to accurately determine campaign ROIs. This combination of consumer targeting, and analytics creates strong demand for Facebook ads.

Meta sells two types of ad products: impression-based and action-based. Meta generates revenue on impression-based ads when users physically see an ad. Action-based ads require users to take a specific action, such as clicking through an ad, and generate revenue in the period in which the impressions occur. Both methods provide quantifiable and verifiable feedback to marketing personnel. This model applies to Facebook, Messenger, and Instagram. WhatsApp is not currently being monetized.

### EXHIBIT I

Meta FY2020 Revenue Breakdown



Source: Company Filings

## Company Overview

### Factors Influencing Revenue

Meta's advertising revenue is determined by the number of advertisements shown and the average price per ad (APPA). The number of ads shown and APPA are influenced by many factors including the effectiveness of the ads, various user engagement metrics, the value that marketers place on Facebook's ad inventory, changes to the display mechanism of the ads, and the number of users on Meta's social media platforms. Non-ad revenue is negligible; however, it is driven by payment volumes, the number of VR devices sold, and the number of Portal devices sold.

The Facebook News Feed is the most profitable aspect of Meta's business. Especially on mobile, there are few types of advertising (exceptions would be washroom and movie theatre ads) that command such a large share of mind in consumers. The value of News Feed is evident in management's acknowledgement that APPA increases are driven by increased monetization of News Feed. Moreover, despite its dominant position, Meta does have competition. Firstly, Snapchat

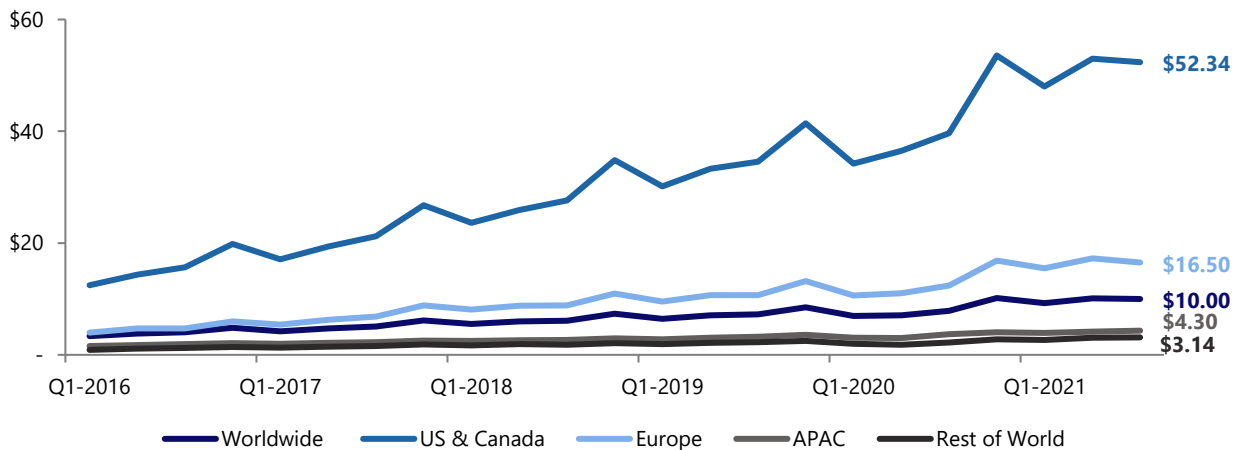
pioneered the Stories format in social media, and quickly gained a large user base, particularly with younger demographics. To combat the rise of this competitor, Meta introduced Stories on the traditional Facebook platform and Instagram. Secondly, TikTok pioneered the short video concept and gained traction quickly. To combat TikTok, Meta added "Reels" to Instagram which is effectively offers the same short video content as TikTok. Unfortunately, as Meta's focus shifts to Stories and Reels, it risks impairing its ARPU and APPA. Many analysts and shareholders have expressed discontent with these strategic action. However, it will benefit Facebook's monopolistic position in the long-term, as it reinforces the core concept of user engagement.

### ARPU Across the Globe

Exhibit II shows Meta's historical ARPU trends in their various geographies. It is interesting to note the enormous discrepancy between the North American segment and the other regions.

#### EXHIBIT II

Meta Geographically Segmented Quarterly ARPU (\$U.S.)



Source: Company Filings

## Company Overview

Although U.S. and Canadian users produce the most revenue (~50% of total) and are the most profitable, they comprise of the smallest segment of users worldwide. Meta has already attained near complete saturation in this region. The reasons for the difference in ARPU between the U.S. and Canada and APAC and the rest of the world is primarily socio-economic. Countries in these segments are significantly poorer and have less developed marketing industries compared to the U.S. and Canada. As these countries become wealthier, these metrics may improve. This would be a critical growth lever for Facebook, as its core markets are very mature. WhatsApp will also be a key growth lever outside of North America, where most of its user base is located.

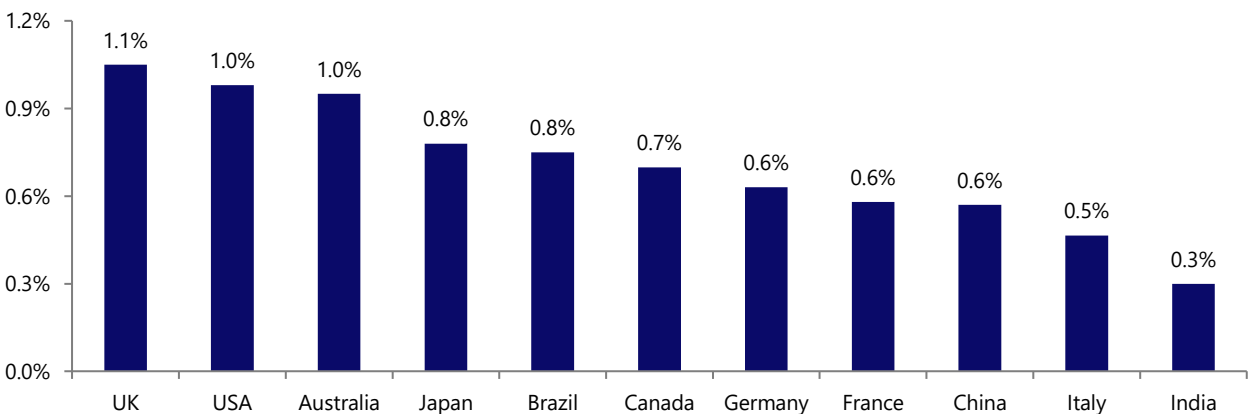
The vast differences in ARPU between Europe and the U.S. and Canada are related to differences in the respective sizes of the advertising industries, regulations, and consumer behavior. The regulatory conditions will be discussed later in this report. The

reason that the relative size of Europe's advertising industry is smaller than the U.S. is largely cultural. Exhibit III shows the percentage of GDP attributable to advertising expenditure in several countries. With the exception of the UK, European companies spend far less on advertising than the U.S.. This can partly be explained by European attitudes to advertising. The U.S. and Canada place a high degree of emphasis on direct, "call-to-action" ads, whereas Europeans respond best to subtler ads. This impacts both the quantity of ads, and their quantifiable value to marketers.

Without direct actions, it can be difficult to justify expensive ads. Direct, action-based ads are a major contributor to Facebook's ARPU. The U.S. & Canada user base is also the most engaged, with the highest ratio of daily to monthly users. Therefore, the lower European ARPU makes sense when considering differences in cultural and local economic factors.

### EXHIBIT III

Advertising Expenditure as % of GDP, 2016

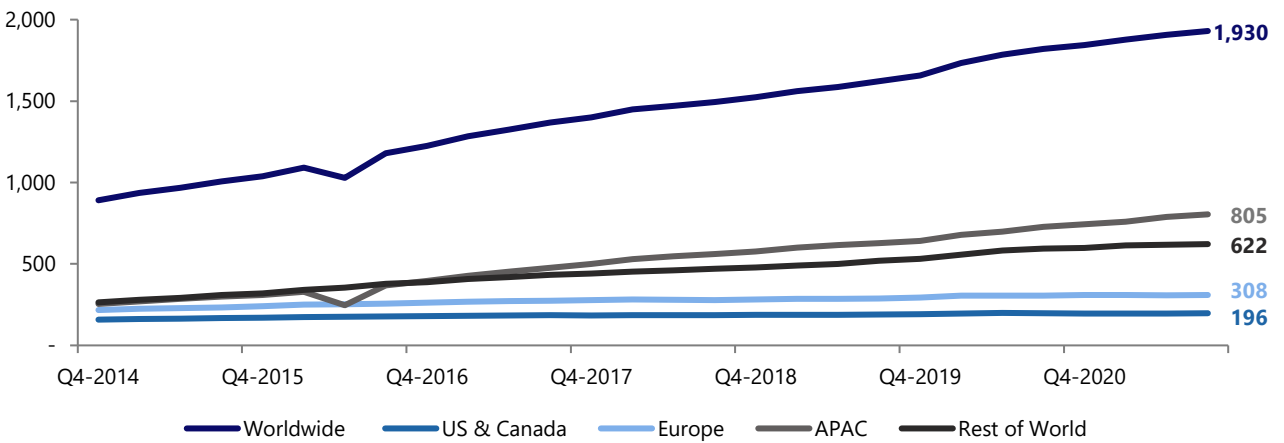


Source: WARC

## Company Overview

### EXHIBIT IV

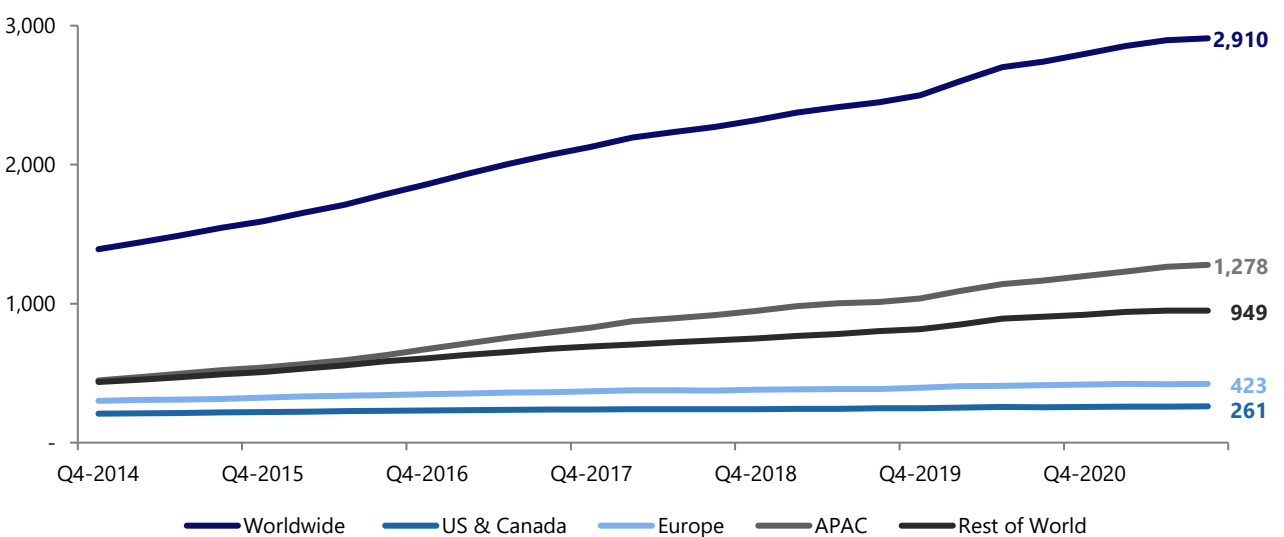
Meta Daily Active Users (DAUs) by Geography (MM)



Source: Company Filings

### EXHIBIT V

Meta Monthly Active Users (MAUs) by Geography (MM)

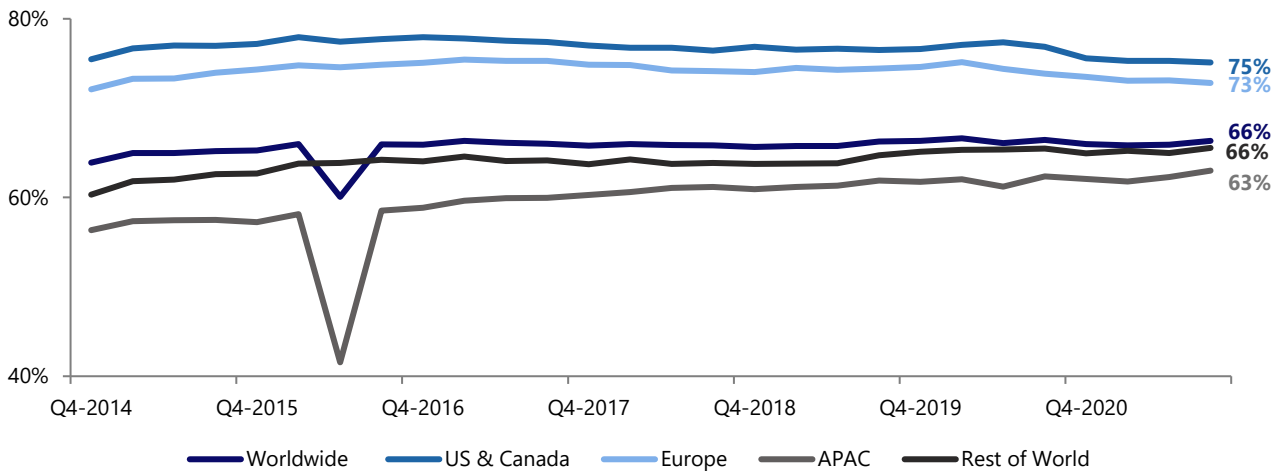


Source: Company Filings

## Company Overview

### EXHIBIT VI

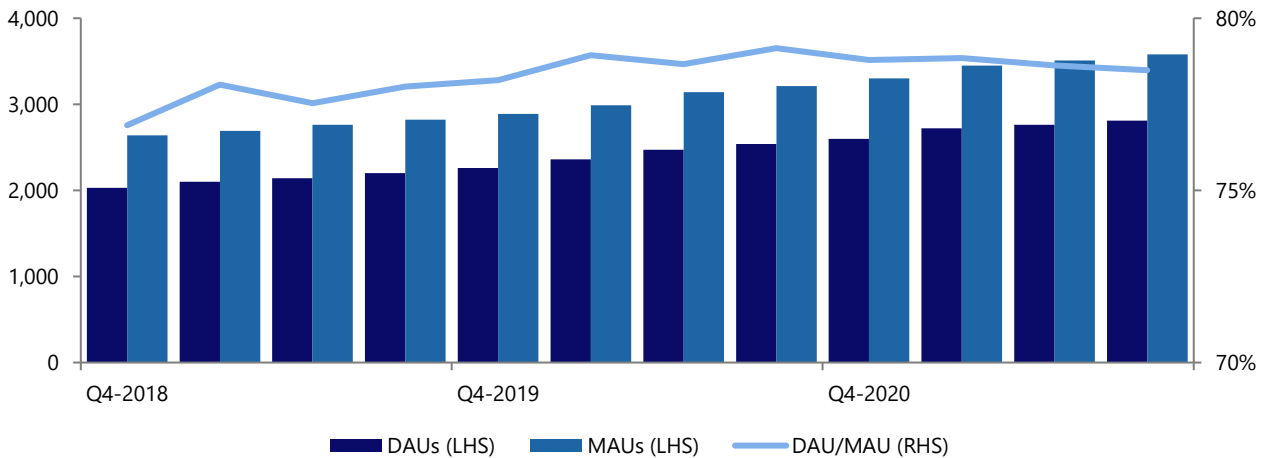
Meta Engagement Ratio (DAU/MAU) by Geography



Source: Company Filings

### EXHIBIT VII

Worldwide Daily Active People (DAPs), Monthly Active People (MAPs), and Engagement Ratio (DAP/MAP)



Source: Company Filings



## Company Overview

To understand Meta, one must understand the composition, location, and evolution of its users. The metrics Meta uses to track engagement are daily active users (DAUs), monthly active users (MAUs), and the engagement ratio (DAUs to MAUs ratio) – all of these metrics are solely for the Facebook and Messenger platforms. True DAU and MAU metrics are obscured by duplicate and false accounts. Duplicate accounts can be legitimate (e.g. a business or personal interest page), or illegitimate. Facebook estimates that ~5% of MAUs were associated with false accounts. The ratio of DAUs to MAUs measures user engagement and represents the frequency of users' interactions with the platform. Moreover, Meta recently added new "family" metrics which encompass Instagram and WhatsApp in addition to Facebook and Messenger. It includes daily active people (DAPs), monthly active people (MAPs), and the engagement ratio (DAPs to MAPs ratio).

A large majority of Meta's DAUs and MAUs are in the APAC and Rest of World segments (74% and 77%, as of Q3 2021, respectively). The U.S. & Canada segment

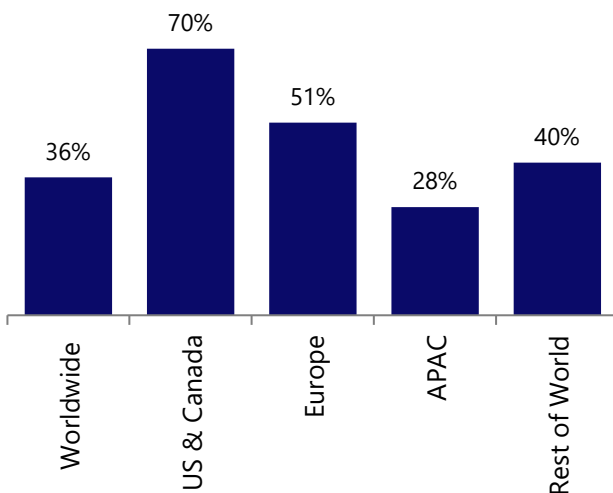
is the smallest region by DAUs/MAUs, although it is the most profitable and most engaged.

Growth of the user base is a major factor in Facebook's revenue growth, and hence valuation. Facebook has experienced recent slowdowns in the growth of U.S. and Canadian users, but contrary to what the market appears to believe, this slowdown is not the result of numerous security scandals but is a function of high saturation in this market.

If we compare the most recent MAU figure to the combined population of the U.S. and Canada (subtracting an allowance for those without internet), Facebook's penetration rate is 74%. Moreover, the penetration level would be even higher using the MAP figure and factoring out those under 13 years of age. At this level, growth is likely to be low, and may be negative from time-to-time. This is simply a sign of maturity. On the other hand, APAC's penetration rate is only 45%, thus faster growth in the APAC region makes sense.

### EXHIBIT VIII

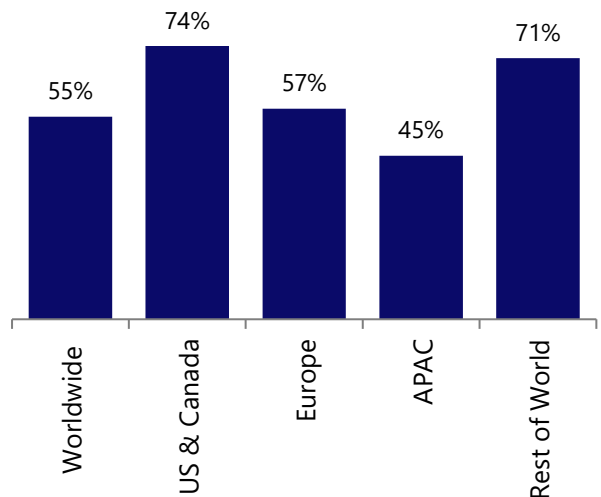
Penetration Rate based on Population



Source: Company Filings

### EXHIBIT IX

Penetration Rate based on Population with Internet



Source: Company Filings



## Company Overview & Social Media Competitors

While Meta may have dimmer growth prospects in the U.S. and Canada, they have great opportunity in the rest of the world. Rapid user growth resulting from high population growth, increased penetration, and expanding ARPU are the primary growth levers outside of North America. European growth may not be promising, given the threat of regulation and higher competition. If Meta can realize these growth catalysts, they will be more than able to compensate for any slowdowns or declines in North America or Europe. Such a bearish scenario is highly unlikely, given Meta's huge network effects. Users are unlikely to leave because of how entrenched modern communication is with Facebook's services, and advertisers are unlikely to leave due to the volume and quality of Meta's data. Meta has trapped its users and consumers within its ecosystem, and that is unlikely to change in the foreseeable future.

### Advertising Model Summary

Given that Meta earns almost the entirety of its revenue from its advertising business, the strength of its advertising model is important. The driving factors that make the advertising model nearly indestructible

#### EXHIBIT X

Advertising Model Summary

#### Advertising Model Summary

Largest user base in the world

Strong engagement

Immense data to allow for targeting

High ROI for advertisers

Fast and easy to set up

Measurable results (advanced real-time analytics)

Source: QUIC TMT Team

are shown in Exhibit X. As well, the level of detail that advertisers can go into on the Meta advertising platform is quite granular, allowing for more targeted ads (Exhibit XXXI).

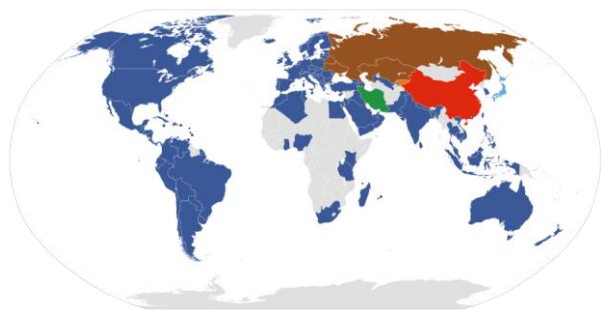
### Social Media Competitors

Meta operates as a near monopoly in North America. The only other major social media players are Twitter, Snapchat, and TikTok. However, Twitter and Meta serve distinctly different markets; Meta is rapidly eroding Snapchat's significance as a competitor; and Meta is competing with TikTok through Reels.

In Europe, however, Meta has a major competitor. The Russian network, VKontakte (commonly known as VK), has over 500 million accounts. Because VK is targeted at Russian speakers, it is enormously popular in Russia, Belarus, Kazakhstan, Estonia, Kyrgyzstan, Moldova, and Latvia. This competitive pressure may suppress Meta's pricing power in Eastern Europe, where click-through-rates (CTR) on ads tend to be higher than the rest of Europe. The other networks Meta competes with worldwide are pictured in Exhibit XI.

#### EXHIBIT XI

Most Popular Social Media Platforms by Geography



■ Facebook ■ Twitter ■ VK ■ Qzone ■ Odnoklassniki ■ Facenama ■ No data

Source: Amazon

## Competitive Landscape

Instead of looking at other social media platforms, another view on the competitive landscape would be to consider other forms of advertising services. The first aspect to consider is the growing share of digital advertising as a percentage of the total advertising market (~68% by 2024E). While digital ads have been gaining share for a long time, the pandemic has accelerated the transition. Within digital, mobile ads are gaining share over desktop ads as consumers are increasing prefer to use mobile devices. On average, consumers today spend an alarming three hours on their mobile devices each day – triple the time spent five years earlier. After digital ads, television ads are the second biggest segment (still declining however) at 26% as of 2022A.

Within the digital advertising market, Google and Meta have been considered a duopoly for much of the past decade – collectively Google and Meta held over 50% market share in 2019. A crucial factor for both Google and Meta’s success has to do with dominating the digital user experience. Collectively the two companies own all the major high-use apps for mobile devices. Google owns the Chrome browser, YouTube, Google Maps, and Google Search. Meta owns Facebook, Instagram, Messenger, and WhatsApp.

### Blurring Lines

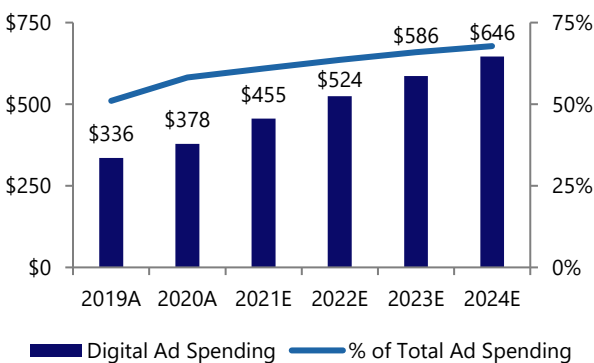
While Google and Meta have historically dominated the digital advertising space, Alibaba and Amazon are catching up. In 2020, Amazon’s share of the U.S. digital ad market grew to over 10% - while this figure is greater than the global number, it speaks to the rise of Amazon as a digital advertising company. These e-commerce platforms, Alibaba and Amazon, can offer immense advertising value since they have access to more purchase-level data (since they operate e-commerce platforms) which allows for more granular ad targeting. Amazon offers advertising to both endemic advertisers (brands that sell on Amazon and buy ads on Amazon) and nonendemic advertisers (brands that don’t sell on Amazon but buy ads on Amazon).

### Will the Lines Stay Blurry?

Yes – Amazon is not the only company crossing a line. Meta is already involved in the e-commerce space through Shops where U.S. users can even checkout without leaving the social media app – the e-commerce segment will be expanded in the Metaverse.

**EXHIBIT XII**

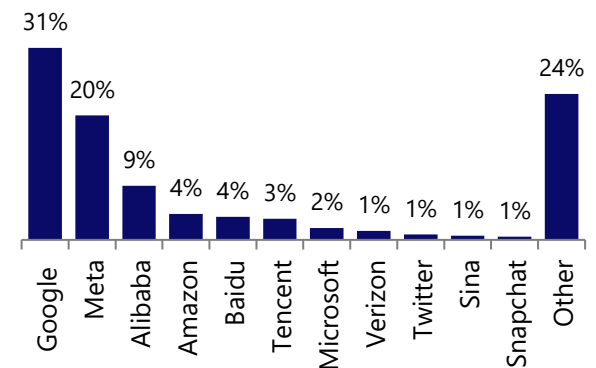
Digital Advertising Market (\$B)



Source: Insider Intelligence

**EXHIBIT XIII**

Global Digital Ads Players by 2019 Market Share



Source: Statista

## Competitive Landscape

Moreover, Meta is selling devices already through Oculus and Portal products – device sales are expected to rise as the Metaverse comes to life. Apple is pushing into advertising and has stated that it believes in glasses as the next smartphone, implying that Apple may be looking to create their own metaverse too. Even Mark Zuckerberg has stated that Apple is one of Meta's biggest competitors.

### Areas of Monetization

The TMT team believes that there are only a few major ways that big tech currently earns money: advertising (ex: Meta and Google), e-commerce (ex: Amazon), device sales (ex: Apple).

All three of the items above are driven by one central idea – the user experience. Firstly, the best platforms to advertise must have a high number of users and high user engagement – this can only be achieved through the best user experience. Secondly, the best e-commerce platforms should be seamlessly integrated into everyday life to make it easy to browse and buy items – this stems from creating a great user

experience. Lastly, device sales are driven by device's ability to create the best possible user experience.

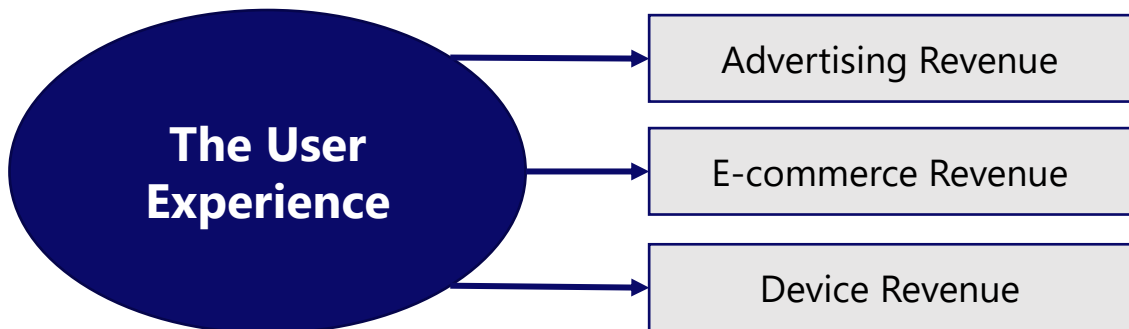
Many of the big tech companies have a specialty, however, as these companies continue to grow to become the world's largest companies, it is quite likely that they will begin to compete more directly with each other in other segments as well.

### Meta's position in the future

Therefore, while Meta's current competition may be in the advertising space, Meta's future competition includes all the big tech businesses. Meta's success in the future against the other big tech players will likely depend on the capital deployed, timing of innovative ideas, and existing user base, user experience, and platform strength. In our view, Meta is leading in the factors mentioned and, thus, is likely to remain competitive in the next level of multi-sectional competition against all the big tech players. Moreover, the Metaverse section of the report includes more details about Meta's future competition.

## EXHIBIT XIV

Core Aspect of the Future Competitive Landscape: The User Experience



Source: QUIC TMT Team

## Threats

### Threat #1: Societal Risk

Zuckerberg and the Facebook banner are regularly under pressure in the media for various subject matters. The rename to “Meta” was made to better encompass all the social media platforms and prepare for the Metaverse, however, it also helps distance the company from all of Facebook’s bad press.

While more concrete threats from Apple and regulators will be explored further in the report, the team believes that society’s perception of Meta will influence Meta’s future success given the nature of the company.

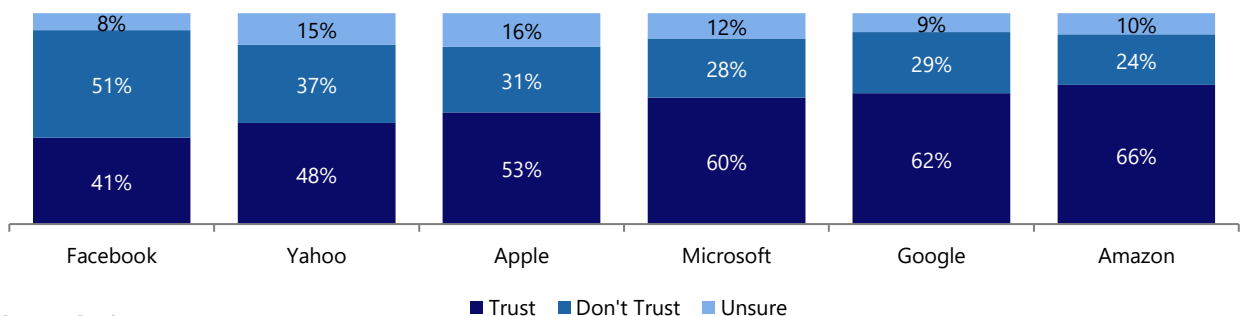
Firstly, we wanted to explore the threat of Mark Zuckerberg’s media image. From surfing with pounds of sunscreen to stating that he would only eat animals that he personally killed to insulting users for trusting him with data to wearing the same clothes everyday, it is more than safe to say that Zuckerberg is a character. While this could be alarming, the team does not necessarily view it negatively. Most billionaires have quirks, such as Elon Musk’s twitter episodes or Warren Buffet’s insanely unhealthy diet. While Zuckerberg’s quirks can sometimes be a bit much, the team does not view it as a risk. However, many people think of Zuckerberg as an “alien” or “non-human” life form that

is creating a massive social media platforms to “rule the world”. While this is likely not true, trust is a crucial component of running the world’s largest social media platforms. The trust needs to be there for both Zuckerberg and Meta as a company – the two items go hand in hand given his deep ties to the company (still owns 12.5% of CSO).

Firstly, the rename to “Meta” and expressed intent to rebuild ad tools with a focus on privacy (since Apple and Google are limiting third party data sharing) mark a new beginning for Meta. While Meta’s ability to continue to grow its advertising business under the new era of privacy remains a question (to be explored later in the report), the future of advertising will have more consumer privacy, which should increase trust in both Zuckerberg and Facebook. Secondly, Meta is not the only technology company that people don’t trust – only 41% of people trust Meta, however, the technology industry average for trust is only 55%. While there is a difference between those figures, it is not too far off. Lastly, while people may state that they don’t trust Meta in surveys (51% indicated they don’t trust Meta), Meta’s user metrics such as DAUs and MAUs does not support that story. Therefore, it is safe to say that most people value Meta’s network effect benefits over their personal privacy.

### EXHIBIT XV

2018 Consumer Trust Survey Results



Source: Statista

## Threats

### Threat #2: Apple

Every mobile device has an Identifier for Advertisers (IDFA) – it is a unique identifier for mobile devices used to target and measure the effectiveness of advertising on a user level basis across mobile devices.

In April 2021, Apple rolled out iOS 14.5 which gives users the ability to block the sharing of this unique identifier at the app level. Therefore, when a user installs or updates to this new iOS, a prompt will appear alerting the user to opt-in or opt-out of sharing their unique identifier across apps and websites – the prompt will appear for each individual app that is involved in this business. Effectively, this puts a near end to the use of 3<sup>rd</sup> party data, which is aggregated data across various apps and websites (Exhibit XVI).

### Impact to Meta

While Meta has access to great 1<sup>st</sup> party data, given its strong network of social media platforms, it relies heavily on 3<sup>rd</sup> party data as well to deliver more targeted and specialized ads to users. The opt-in rate for tracking on iOS 14.5 is expected to be around 16%, according to equity research analysts. Meta's management team acknowledges the threat of these changes and the negative impact on ARPU was seen in

Q3 2021 when it fell by 1.2% at the global level. The adoption of iOS 14.5 is over 90% for iPhones introduced in the last four years, so the impact is not expected to worsen significantly overtime. That said, it could act as a barrier to growth, especially as other companies, namely Google, introduce similar privacy blockages in their operating systems. However, Meta understands this risk and has a plan of action.

### Meta's Response

Since the start of Apple's proposed privacy changes, Meta has stated that small businesses will suffer the most – small business rely on personalized ads to compete with larger, more well-known, brands. Meta has communicated this narrative in the media quite well. It might help boost Meta's public image; however, it doesn't quite mitigate the threat from Apple.

More recently, Meta laid out two tangible mitigants for the threat. The short term mitigant is for advertisers to use Facebook's Conversions API and Facebook's Aggregated Events Measurement API. The Conversions API is designed to create a connection between a company's own marketing data and the Facebook systems, which ultimately helps optimize ad targeting, decrease cost per action, and measure results.

## EXHIBIT XVI

### Types of Data

#### 1<sup>st</sup> Party Data

Data collected directly by the organization or company

#### 2<sup>nd</sup> Party Data

1<sup>st</sup> party data sold in a private data marketplace transaction

#### 3<sup>rd</sup> Party Data

Aggregated data from various sources – bought and sold on an exchange

Source: Measurce

## Threats

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The Aggregated Events Measurement API uses Facebook's own data to improve targeting and accuracy in ads. In addition, the iOS changes have made measurability of ad success quite difficult. Measurability is a core driver of Meta ads since advertisers like to see the ROI metrics. That said, Meta is working on new ways to improve measurability under the new iOS system. Meta did not disclose further specifics surrounding the plan to combat the measurability issues.

Meta's long term mitigant to the Apple threat is two-fold. Firstly, Meta is designing their own privacy enhancing technologies that will allow them to do similar things as the past, such as ad optimization and measurement, but in a more privacy conscious manner. Specifically, it won't allow either party, the advertiser or Meta, to learn new information about individual users. To make this goal a reality, Meta has a few technologies in mind. The first is multi-party computation (MPC) which encrypts data about users to make it safer to move between companies – ultimately, it brings third party data back on the table and allows for more effective ad targeting. The second available technology is on-device learning, which effectively moves the ad targeting from the cloud to an algorithm that runs locally on one's phone. However, the issue with on-device learning is that the compute resources required to do it are under the control of the operating systems (Apple or Google, as of today) themselves. While Meta is interested in both technologies, its primary focus appears to be on multi-party computation (MPC).

Secondly, the whole reason behind the Apple threat stems from Meta's current lack of control over operating systems and devices. A large driving force behind the creation of the Metaverse is to gain control over the operating system and device. This would allow Meta to "call the shots" when it comes to data privacy. It can likely be assumed that Meta would allow third party data exchange to continue again under increased encryption standards.

### **Positive Impact from the iOS Change**

While the Apple threat is tangible, there is one unintended positive impact to Meta. As shown in Exhibit XVI, the two major types of data that advertisers use includes first-party data and third-party data. Given that the current dominant operating systems, Apple and Google, are looking to restrict third-party data, it makes first-party data even more valuable. First-party data is collected directly by the company. Then, the question becomes – which company has access to the highest amount and quality of first-party data? The answer is obvious: Meta. Meta has the highest membership base in comparison to any other company in the whole world, with over 3.5 billion monthly active people (MAPs). In addition, the engagement rate (DAPs/MAPs) is nearly 80%, displaying the high degree of customer captivity. Therefore, the move to restrict third-party data increases the value of first-party data. Given that Meta has the best or near-best first-party data, Meta might be able to gain market share in the digital advertising space as a result. The smaller players within the digital advertising space, who used to rely on third-party data, will suffer the most.

### **Threat #3: Regulation**

Regulation has been a long-standing issue for Meta and all big tech companies. As of today, Europe and China have the most regulation, while North America has the least. (Exhibit XIX). However, North America, and particularly the U.S. continues to debate the topic of regulation for big tech players, and it can be expected that standards will be introduced. Given Meta is not present in China, the team will explore the current regulatory climate of Europe and the U.S..

### **Europe**

In December 2020, the Digital Markets Act was proposed – the proposal establishes ex-ante rules.

## Threats

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The goal is to ensure that markets characterized by large platforms with significant network effects ("gatekeepers") remain fair and contestable. In doing so, the Proposal sets out provisions for the designation of gatekeepers; obligations and prohibitions; rules for market investigations; and provisions concerning the implementation and enforcement of the Proposal.

The proposal does not look to ban the use of personal consumer data, rather, it seeks to promote fair and open markets where there is fair processing of personal data. The Digital Markets Act would be a complement to the existing General Data Protection Regulation (GDPR), which was implemented in 2018. The GDPR is a European Union regulation designed to reshape the way data is handled by firms, replacing the 1995 Data Protection Directive. The GDPR applies to all firms that collect data on individuals from the EU, regardless of where the firm itself is located, as well as to all firms that process data within the EU. While the regulation applies to firms of all sizes across every industry, internet companies that are built around the collection and utilization of personal data are most impacted by it. Violations of GDPR carry strict penalties that can reach up to 4% of the offending firm's global revenues.

The objective of the General Data Protection Regulation is to ensure transparency, lawfulness, and fairness in the use and handling of personal data. In practice, this means that companies must disclose to users how they are using personal data and provide a legitimate reason for each use. Once data is collected for a certain purpose, it cannot be re-used for other purposes. The GDPR also requires companies to collect and store as little personal data as possible to achieve the intended purpose, and to only retain such data for as long as necessary. Furthermore, companies must take steps to ensure the security of data, and to allow for personal data to be erased or rectified if requested.

In response to the GDPR, Meta rolled out many of the required changes to users outside of the EU. Around

the world, users now can download their information, restrict Facebook from using data from partners to show ads, and control how certain data, such as religion and political views, are used by the company. At the same time, the company has changed their terms and conditions so that only EU customers are governed by EU privacy laws, instead of all countries outside of Canada and the United States. When probed if users worldwide would receive the protections of GDPR, Zuckerberg could only promise that "directionally...in spirit, (users would receive) the whole thing". This implies that certain aspects of the regulation are helpful for the business – otherwise, such complication would not be necessary. Despite the higher regulations in Europe, Meta's Europe ARPU, DAUs, and MAUs continue to rise. The company has not expressed any serious concerns recently relating to the threat of European regulation. As well, a driving factor behind the lack of impact felt by Meta is that regulation impacts all companies in the industry, not just Meta. Therefore, those that are best positioned and industry-leading, such as Meta, can best navigate headwinds and even gain market share over smaller players. It also creates another barrier to entry for new entrants without an established reputation, these firms will face difficulty persuading users to explicitly grant them permission to utilize data. This could widen Facebook's economic moat and bring the firm additional security.

### United States

A prominent piece of legislation in the U.S. is the California Consumer Privacy Act (CCPA). The CCPA was passed on June 29, 2018, to give Californians more ownership, control and security with regards to their personal information. The act mandates that businesses disclose the categories and specific pieces of information they collect, why they collect this information, and who they share it with.



## Threats

It also allows Californians to request for their data to be deleted or withheld from being sold. While it is structured relatively similarly to the GDPR, it includes fewer restrictions. The act came into effect on January 1, 2020.

Given that Facebook has introduced many of the GDPR changes to its customer base worldwide, the California Consumer Privacy Act is unlikely to have a material impact on Facebook. This is especially true since many original provisions of the bill that differed from the GDPR, such as the right for Californians to sue companies directly for rule infringement and the misuse of data, have been removed. The CCPA does serve as an indicator that legislative bodies around the world are likely to follow the EU's lead in implementing more encompassing privacy laws.

As far as the broader U.S. goes, the Biden

administration has advocated for Big Tech regulation since day one. In July 2021, Biden signed an executive order which effects main sectors including Big Tech. It intends to reshape the thinking around corporate consolidation and antitrust laws. There are two major areas of impact for Big Tech. Firstly, it established an administration-wide policy to scrutinize mergers more heavily, including completed mergers. It focuses on "killer acquisitions" which end competition – Meta's acquisition of Instagram and WhatsApp would be great examples. Secondly, the order calls upon the Federal Trade Commission (FTC) to establish rules on the use of surveillance, gathering of user data, and to create rules "barring unfair methods of competition" that could harm smaller businesses. Biden's request to the FTC may not be a tangible regulation impact as of today, but his views on regulation increase the likelihood of increased regulation becoming a reality.

### EXHIBIT XVII

Proposed Regulation Acts in the U.S.

Regulation	Scope
Competition and Antitrust Law Enforcement Act (CALERA)	"Dominant" firms that have >50% of total market share or "significant" market power
Augmenting Compatibility and Competition by Enabling Service Switching Act (ACCESS Act)	Platforms that satisfy criteria for (i) monthly active users (individual or business); (ii) market capitalization; and (iii) critical trading partner status
Platform Competition and Opportunity Act	Identical scope as the ACCESS Act
American Choice and Innovation Online Act	Identical scope as the ACCESS Act
Trust Busting in the 21st Century Act	Dominant platforms, determined by evaluating the (i) extent and durability of market power; (ii) government involvement (contracts, etc.), (iii) exclusivity agreements; (iv) network effects; and (v) vertical integration
Bust up Big Tech Act	Platforms that satisfy criteria for (i) yearly active users; and (ii) total revenue

Source: Bank for International Settlements

## Threats

Moreover, Exhibit XVII displays the current six proposed Big Tech regulation acts in the U.S. All the acts go after large-scale technology companies and aim to regulate the usual areas of concern with technology. Similar to our conclusion on Europe, it is unlikely that new regulation will make a material impact on Meta's financial results – new regulation will impact the whole industry and Meta is best positioned (highest number of users, highest engagement, strong network effects, high customer captivity, etc.) to manage headwinds and take share from smaller players in the case of industry-wide changes.

### \$5 Billion Fine

In 2019, the FTC issued Meta a \$5B penalty to settle charges from when Meta violated a 2012 FTC order by deceiving users about their ability to control the privacy of their personal information. Meta did ~\$35B in EBITDA in 2019, thus, \$5B is relatively meaningful at 14% of EBITDA. Moreover, the FTC imposed restrictions, a new privacy structure, new tools for the FTC to monitor Meta, and a modified corporate structure to hold Meta accountable for the decisions it makes regarding user privacy. The order requires Meta to restructure its approach to privacy from the corporate board-level down and establishes strong new mechanisms to ensure that Meta executives are accountable for the decisions they make about privacy, and that those decisions are subject to oversight.

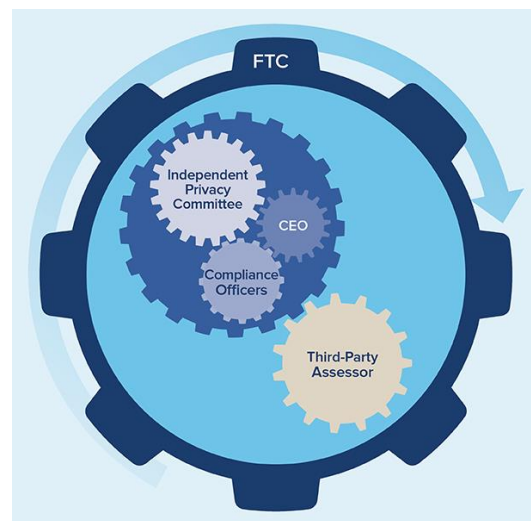
The order establishes an independent privacy committee of Meta's board of directors, removing unfettered control by Mark Zuckerberg over decisions affecting user privacy (Exhibit XVIII). As well, Meta will be required to designate compliance officers who will be responsible for Meta's privacy program. These compliance officers will be subject to the approval of the new board privacy committee and can be removed only by that committee. As well, Zuckerberg and the designated compliance officers must independently submit to the FTC quarterly certifications that the company follows the privacy program mandated by the order, as well as an annual certification that the

company is in overall compliance with the order. The order includes numerous other requirements from exercising greater oversight on third-party apps to encrypting user passwords to a prohibition on using telephone numbers obtained during a security feature for advertising purposes.

The goal behind the increased oversight is to prevent future fines and Zuckerberg is on board, "we've agreed to pay a historic fine, but even more important, we're going to make some major structural changes to how we build products and run this company". The team views this positively as the new oversight limits the chance of future fines and Meta is ready to embrace the changes – that said, the increased hurdles have compressed margins slightly in 2020 and 2021 and the team expects this trends to continue in the coming five years. The margin compression is reflected in the model.

### EXHIBIT XVIII

Meta's New Privacy Compliance System



Source: Federal Trade Commission (FTC)

## Threats

### Conclusion on Regulation

Zuckerberg and the management team recognize the regulatory pressures and are working to stay ahead of them. In Q3 2021, Zuckerberg highlighted Meta's efforts in the area. Firstly, the company expects to spend \$5 billion in safety and cyber-security in 2021 and afterwards. Secondly, Meta creates an internal Oversight Board to be proactive towards privacy and anti-competitive challenges. Lastly, Zuckerberg acknowledges that being the world's largest social media platform inherently has its challenges, however, he would prefer more dialogue with regulators. As of today, particularly in the U.S., Meta is expected to make many societal decision on its own – a common

decision is the balance between freedom of speech and censorship. Zuckerberg wants input from regulators and clear guidelines and rules. Moreover, the move to restrict the use of third-party data will take some of the regulatory pressure away from Meta.

The TMT team believes that while increased regulations can be expected (particularly in areas such as the U.S. that currently have proposed Acts), Meta is aware of these hurdles and working to pivot in advance, in order to stay ahead of the competition's reaction. In addition, while the team does not expect regular fines, any small fines are captured in the model through higher SG&A.

### EXHIBIT XIX

#### Data Protection and Data Sharing Approaches in the EU, U.S., and China

	EU	US	China
<b>Data Protection</b>			
<b>Collection and use of personal data</b>			
<i>Of which: Lawfulness, fairness, and transparency</i>	✓	✓	✓
<i>Purpose specification</i>	✓	*	✓
<i>Security</i>	✓	✓	✓
<b>Users' data rights</b>			
<i>Of which: Consent and access</i>	✓	*	✓
<i>Rectification and deletion</i>	✓	*	✓
<i>Data portability</i>	✓	*	✓
<b>Data Sharing</b>			
<b>Open Banking</b>			
<i>Approach: prescriptive, facilitative, market-driven</i>			
<b>Legend:</b>	Comprehensive	Partial	Early Stages

Source: Bank for International Settlements

## Introduction to Metaverse

Mark Zuckerberg at the Facebook Connect 2021 event stated that his goal for the metaverse is to reach 1B users, \$100B of economic activity, and host millions of creators within the next decade. Facebook went through its second turn of name change to Meta this past month. This name change demonstrates Mark Zuckerberg's desire to shift away from being so tightly linked to one product and to have a corporate name that encompasses all of their products ranging from their traditional social media platforms to the new metaverse. So what does Meta mean? More specifically, what is the metaverse?

### What is a Metaverse?

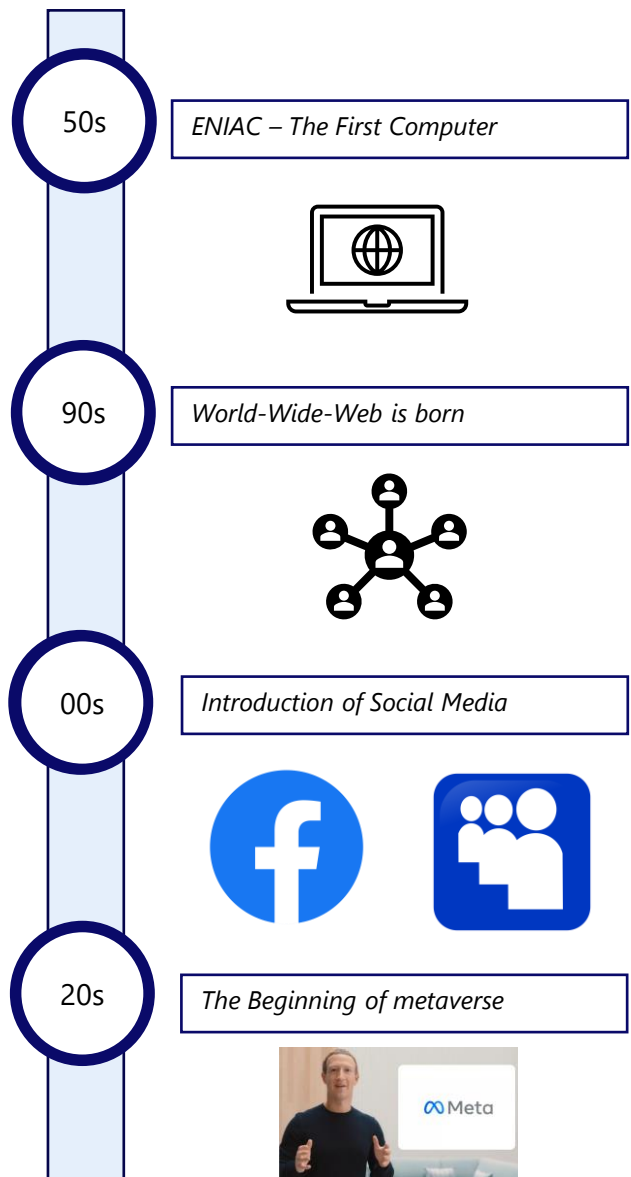
The metaverse refers to a more immersive and embodied internet where you can do almost anything from shopping, collaborating with colleagues, and playing. Early iterations of the metaverse include the video games Sims, where people control their avatars in a virtual world. The metaverse isn't a new concept but rather reinvented by the advancement of augmented reality and virtual reality technology. Recent advances allow users to truly embody their characters, and through VR headsets and hand tracking controllers, they can interact with other users in this space.

In an ideal world, the metaverse is just one shared single virtual world where the rules between all users are all the same. However, this becomes a difficult task, and it will likely be split into shared servers where a smaller group of users will interact depending on their objective.

Although, metaverses often exist in video games such as Minecraft, Roblox, and Fortnite. Mark Zuckerberg's vision is a complete revolution of the online experience and Meta hopes to create an environment where users will spend most of their time online. Meta believes that the metaverse will replace that "flat" internet that we know today, and we will use the metaverse from everything from corporate meetings to shopping and social gatherings.

### Exhibit XX

#### Evolution of Computing



Source: Wikipedia

## Introduction to Metaverse (cont.)

### Mark Zuckerberg: The New God?

If there was a single platform where we communicate, make relationships, keep assets, and interact with politics, controlling the metaverse would be the closest thing to a god. If Mark Zuckerberg's metaverse does pan out, it could be scary to see him have mass control over the way humans interact, view advertisements, and it will likely have a lot more controversy regarding politics and privacy concerns.

Meta's history is filled with misfortunes such as Cambridge Analytica, recent app outages, and constant information leaks. It is difficult to assume that Meta will suddenly fix all their problems, especially in the metaverse. No single company should own the metaverse, and it would need to be open-source, so different sources can have an input on the virtual world. Lastly, as Meta does have a multi-tier stock structure, it raises concerns if Meta can create a democratic virtual world where it is regulated from different entities other than Mark Zuckerberg.

### What does the Metaverse solve?

Taking a corporate meeting in a virtual environment might make Zoom meetings less awkward, or shopping could be more enjoyable. However, with the added infrastructure needed like VR headsets,

augmented reality software, and other tools required, it makes a task like a meeting more time-consuming and complicated than the marginal utility you will be gaining from the metaverse. Now, many companies are entering this space to gain a first-mover advantage, but it will still be years, if not decades before the world begins to live in a self-contained VR metaverse anytime soon.

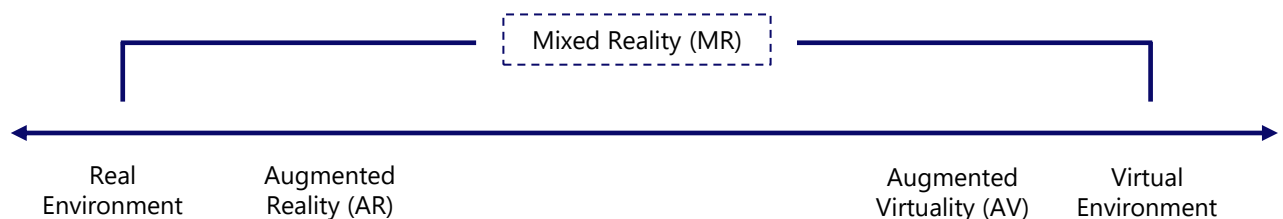
The metaverse opens a variety of opportunities to collaborate and the way we view our society. Furthermore, it opens possibilities for Meta to diversify away from solely relying on advertisements and expand into other streams of revenue such as ecommerce and device sales.

### Reality-Virtuality Continuum

The Reality-Virtuality Continuum shows us what the metaverse could potentially be. The reality-virtuality continuum holds all possible variations and compositions of real and virtual objects. The metaverse would be considered within the realms of mixed reality which includes both augmented reality, where the virtual augments the real and augmented virtuality, where the real augments the virtual.

#### Exhibit XXI

Reality-Virtuality Continuum



Source: Wikipedia

## Potential of the Metaverse

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### Problems with the Metaverse

Imagine a scenario where your friend is at a concert in London, England, and they tell you to join via the metaverse. Do you get your trusty 5-pound Oculus, and begin listening?

It will be difficult for mass adoption if the tools needed are clunky, difficult to carry around, and embarrassing to put on in public. Compared to Apple's AirPods, which sold 110 million AirPods last year, Oculus sold only 2 million. Unless Meta finds a way to make their VR headsets easier to use, it becomes difficult to justify its mass adoption.

In September, Meta launched a partnership with Ray-Ban to introduce first-generation smart glasses. Ray-Ban Stories are a new way for smart glasses to capture photos and videos and upload them on social media platforms. Meta believes that these lightweight glasses will be the future of wearable tech allowing easier access to VR and the metaverse.

To make the metaverse viable, these devices must be more accessible to people. Zuckerberg said he would continue to subsidize VR devices or sell them at a cost to accelerate adoption. However, at the current price point of about \$400 for a VR headset, it must be more affordable for widespread use. On top of this, VR headsets may require special computers or chips that can run into thousands of dollars as of today.

### Controlling Distribution

Following Apple's recent iOS updates where app tracking transparency impacted Facebook's advertising business heavily, making it harder for the company to collect data about mobile users' activity. If Facebook's apps continue to run on iOS and Android, and phones remain the dominant way that people interact online, it will never truly control its destiny.

Often, Apple and Google have opposing views that are not favorable to Meta. The metaverse creates a whole

new platform where now they are King. Additionally, having your own platform means Meta doesn't have to pay a 30% commission on any sales on their platform to their competitors. By circumventing Apple or Microsoft's ecosystem, Meta won't have to pay the commission on their in-app sales for small businesses.

Meta recently tried to bypass Apple's App Store fee with new Subscription payment link to allow content creators to bypass Apple's customary 30% cut of App Store transactions. The in-app link sends users to a website and complete their transaction via Facebook Pay. As the metaverse develops, Meta is focused on different ways content creators to make money for their work without paying commission to their rivals.

### Potential Business Models

The metaverse creates a multitude of opportunities to monetize on the platform and will introduce digital currency such as crypto and other non-fungible tokens (NFT) for items in the metaverse.

Some possible ideas include personalized ads in virtual real estate but other opportunities like creator tipping for metaverse creators for various other goods like 3D digital sculptures, live digital entertainers or even selling tickets to real concerts through VR are all plausible. Last year, Fortnite hosted Travis Scott's Astronomical tour and the concert was viewed by 45.8 million people. Assuming that the lowest-priced skins were to be for sale, at an 3% engagement rate, this would've generated at least \$12.5M for Epic Games.

Facebook Reality Labs (FRL) has begun working on integrating crypto technology that is now used in the NFT space to ensure that ownership of digital goods can exist in the metaverse. With various ways to monetize on the new platform, metaverse's user adoption is more important than to determine at this moment which business model will be dominant.

## The Future of Metaverse

### The Near Future

Meta executives expect their initial investment into Facebook Reality Labs, the metaverse focused group, to decrease overall operating profit by approximately \$10B in 2022. Additionally, Meta plans on breaking out its financial results separate from the family of apps which includes Facebook, Instagram, Messenger, WhatsApp, and Other services. Mark Zuckerberg has indicated that the \$10B declines in operating profits are only the beginning, and that number is likely to increase as the metaverse continues to evolve.

### Digital Market

Digital items are already a \$10B market, with Epic Games' Fortnite alone selling over \$1B in digital goods. Although, the threat with the Fortnite digital marketplace is that it is only available in Fortnite – meaning that if the game were to shut down, all items would be rendered worthless, and a billion-dollar market would disappear overnight.

For the digital market to have real tangible value, it must be independent of the entity that can remove or disable the item. Therefore, the metaverse must be an open ecosystem, not dominated by any single company.

Gaming companies have been building the metaverse for years. Roblox is an example where users can create digital worlds which operates through its own virtual economy powered by Robux currency. The early adoptions of the metaverse will mainly be through gaming platforms.

### Benefits of the metaverse

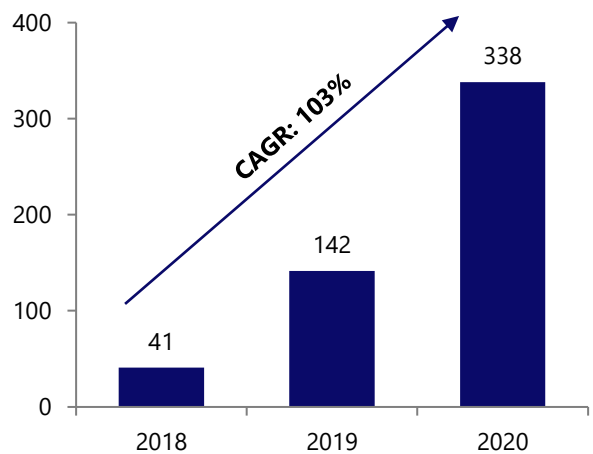
For Meta, the metaverse is a way to have complete control over their platforms, compete with their competitors in other areas like device sales or e-commerce, improve advertising and customer captivity.

Through this new platform, Meta is expecting customer captivity to increase. One assumption is that daily users will increase as people are more immersed in this new technology and use it for every aspect of their lives. As users are more dependent on the metaverse, this will increase daily engagement, improve the quality of ads and ad pricing power for Meta. Meta's new platform will improve ad targetability and measurements as well as shift towards ads with higher quality formats which will become increasingly valuable to advertisers.

Secondly, they are able to compete with their competitors like Amazon and Apple through the metaverse. For e-commerce, it becomes straightforward to grow the shops' platform. Through the metaverse, users will be able to shop through their platform easily. Furthermore, Apple and Microsoft have indicated their interest in entering the metaverse through device sales like smart glasses. Meta can compete with Apple and Microsoft through Oculus and continue to innovate to diversify their offerings.

### Exhibit XXII

NFT Market Cap (U.S.D MM)



Source: Statista



## Additional Themes

### Communities

Facebook is a way for billions of people around the world to connect with friends and family and help find communities that are meaningful to them. According to an internal Meta survey, there are over 600 million people who are now members of a group which they find meaningful to their lives.

Facebook's next goal is to develop the community infrastructure beyond the original features like feeds and message boards to help users build self-sustaining community institutions. This includes messaging, video chat, and even community's own website. The community can choose to raise funds through donations, merchandise, and membership fees to continue the operations of the community.

### Private Messaging

Meta has always struggled with privacy concerns since its inception. Now, they are looking to develop a modern social platform based on the principles of privacy. That's why Meta's messaging platforms like WhatsApp and Messenger are end-to-end encrypted. Furthermore, Meta are trying to make messaging interoperable as possible across all apps which is shown by the ability to message on Facebook and Instagram both on Messenger.

Lastly, Meta has declared that they will only store user's data in countries where it is secure and oppose keeping data localization in countries with weak records on human rights or privacy.

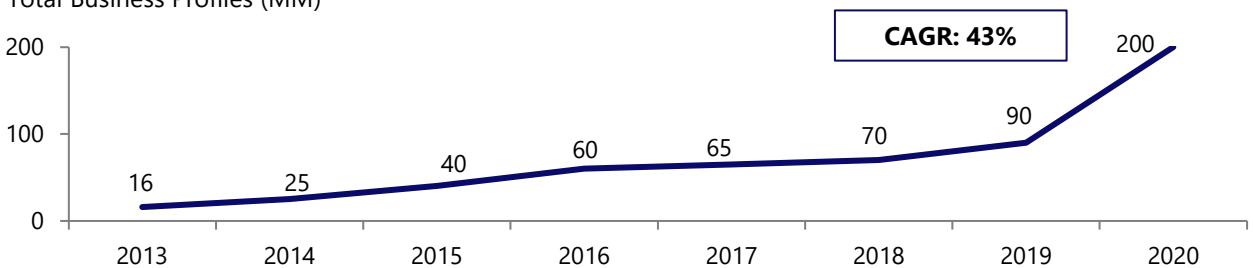
### Commerce Tools

Meta's goal with commerce tools are to give individual entrepreneurs and small businesses access to the same tools that were traditionally available only to big corporations. One essential tool that is often too expensive for small businesses to develop is analytics and targeted advertising capacity to reach their customers. However, Meta plans on offering these services for free allowing small businesses to reach customers more efficiently. With the new commerce tools, businesses can set up a shop once, and then they will have a store front in both Facebook and Instagram with Messenger and WhatsApp to soon follow. They also expanded checkout to all U.S. businesses to ensure that the process of shopping on Meta's platform is seamless.

WhatsApp also plays an important role as there are over 175 million people a day messaging on WhatsApp business accounts. To make transactions easier, Meta introduced carts which lets people browse catalogs, select multiple products and send the order as a message to a business.

### Exhibit XXIII

Total Business Profiles (MM)



## Competitive Landscape of the Metaverse

Meta's introduction of the metaverse is intriguing and does create a lot of new potential for the future of the internet. However, the lack of content and a higher price point for devices such as the Oculus could limit its near-term adoption. According to equity research, for the metaverse ecosystem to function, Meta must install a base of 15-20 million users, which could take at least three years. Oculus currently has 5.6 million users.

Meta has a limited amount of content available for its Meta Quest VR headsets, and they must implement a lot more for the platform to be established. Although, at the Connect event, they debuted the famous "Grand Theft Auto" by Rockstar. Without partnering with game developers like Unity or Roblox, Meta could take a long time to develop the content needed to attract avid gameplaying consumers organically.

Meta introduced its next-generation wireless headset, which offers a higher quality experience to draw people into the metaverse. However, the higher price point for the devices (\$300 for Quest 2) makes it difficult for quick adoption. Mark Zuckerberg has planned to continue subsidizing the VR headsets or sell at a cost to expanding their use among gamers and early adopters.

Companies such as Apple, Google, Amazon have all expressed their interest into the metaverse. Microsoft is working on building an "enterprise metaverse" as the digital and physical worlds converge in its offerings. Apple has also entered the metaverse race by debuting an advanced HMD Virtual Meetings App. There will likely be multiple metaverses which will converge into one platform eventually. The metaverse must be interoperable and allow digital items and other features to be moved throughout all different metaverses.

### Early Adopters

Currently, Meta does have the advantage with their 3.5 billion user base and likely going to be the pioneer in

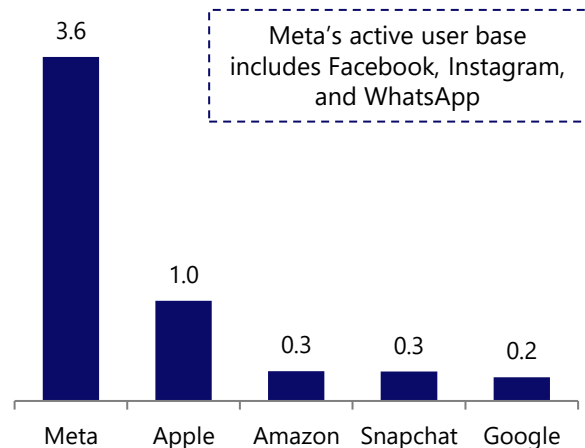
the space. However, their rivals will still continue to evolve and shift into the metaverse as well. Apple through its hardware, Amazon with e-commerce, and Microsoft with their suite of enterprise software.

We are unsure what the intentions of each company as the metaverse is still in early stages. However, given Meta's dominant user base, we believe that they are in the best place to attract new users. Meta's dominant user numbers compared to their competitors. Apple is the closest with a little over a billion users, but it does not compare to Meta's family of apps which are up to 3.5 billion users.

Some are in a better position to capture a market within the metaverse but there isn't a single company who will capture everything. Meta has an advantage in advertising, Amazon in ecommerce, and Apple in device sales. This network effect is very relevant in the metaverse, and in this aspect, Meta are clearly the leaders.

### Exhibit XXIV

Active Users by Billions



Source: Company Filings

## Younger Generations Losing Interest/Facebook's Reform into Meta

After months of speculation and the recent bombardment of PR disasters, Facebook has rebranded as Meta on the 28th of October. Like Google's rebranding as Alphabet, Meta will maintain their existing platform Facebook, Instagram, and WhatsApp.

The main reason is that Zuckerberg does not want the company to be known solely as a social media platform. There have been steady leaks of negative news highlighting issues within the company leaked by whistleblower Frances Haugen. All of the negative press is aimed at privacy concerns and Facebook's negligence to stop misinformation on its platform. So, this rebranding allows them to attempt to shift focus from its controversial image and start fresh without fundamentally changing any problematic products.

One concern with Facebook being the dominant player and controlling the metaverse is its pivotal role in maintaining the virtual world. Meta has struggled with outages on its key apps that shut down communication for a lot of the world in recent months. If something like an outage happened in a virtual world, the consequences would be much larger.

### Ageing Customer Base

Teenage users of Facebook in the U.S. have declined by 13% since 2019 and are projected to drop over 45%

in the next two years. Furthermore, the younger users that do use Facebook, they are less likely to stay engaged with the app. This points to an apparent problem with Facebook: they are quickly losing traction with the younger generation and dealing with an ageing user base. The ageing user base serves as a clear existential threat to Facebook's viability. If the trend continues, they could lose an entire generation of users and put a ceiling on its future growth.

In comparison, rivals like TikTok are gaining market share on new incremental users. Internal Meta research estimates that teens spend 2-3x more time on TikTok than on Instagram, and Snapchat remains the most popular way to communicate over Messenger who ranks 4th.

Instagram's reels have performed well against TikTok and remains a key captivator of the younger generation on its platform. More than 60% of video revenue now comes from mobile-first video, meaning videos that are shot vertically or are under 15 seconds. Meta has indicated their desire to focus their attention on younger users from ages 18-29 through different initiatives such as Group+, which allows people to join groups for specific personalities, and a whole pillar of products which aims at competing against LinkedIn, allowing people to post resumes and find jobs on Facebook.

### Exhibit XXV

#### North America DAU Growth

	1Q19	2Q19	1Q20	2Q20	3Q20	4Q20	1Q21	2Q21	2yr CAGR
Facebook	2.2%	2.2%	4.8%	5.9%	3.7%	2.6%	0.0%	(1.5%)	1.6%
Pinterest	8.7%	7.3%	5.9%	12.9%	12.6%	11.4%	8.9%	(5.2%)	2.3%
Snap	6.3%	8.9%	10.0%	8.4%	7.1%	7.0%	570.0%	5.6%	6.3%
Twitter	15.4%	14.8%	17.9%	24.1%	20.0%	19.4%	15.2%	2.8%	11.1%

Source: Bloomberg

## Monetization of Subsidiaries

### What is Facebook Shops?

Facebook Shops allows businesses to set up a single online store on both Facebook and Instagram. This allows users to explore the business's page and place an order either on the business's website or without leaving the app. In the future, Meta's goal is to allow customers to make purchases right within a chat in WhatsApp, Messenger or Instagram Direct.

At the end of 2020, Facebook had more than 200 million business profiles. From these profiles, Meta also disclosed that they have over 10 million advertisers and 4 million on Instagram. From these advertisers, the conversion rate from free to paying is about 5%. With the improved services across its products and the trend of merchants moving their operations online will help not only the number of businesses, but also the conversion rate as well. The increase in advertisers paired with higher ad pricing power places Meta at an attractive intersection.

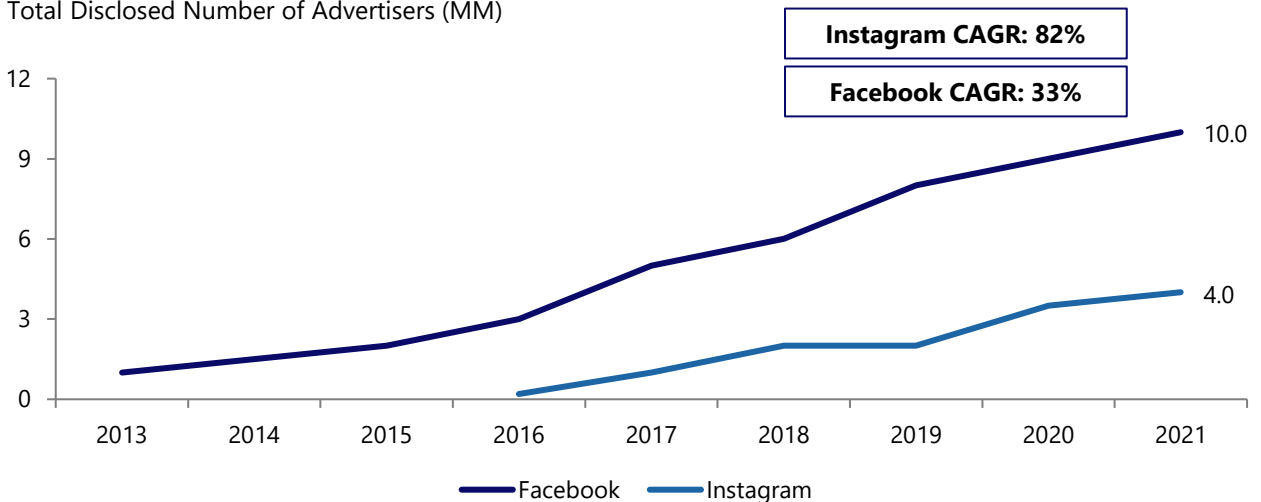
### Monetization of WhatsApp

Unlike the core Facebook and Instagram, where ad sales drive revenue, Meta's shift of focus into payments and e-commerce will be the key in monetizing WhatsApp and Facebook Messenger sales. According to internal research, WhatsApp could contribute as much as \$1.5B by 2023, primarily driven by the rollout of payments functionality on the app. Facebook's Messenger could become involved through fintech with peer-to-peer payments.

WhatsApp's introduction of catalogues and shopping carts from retailers is a major step towards establishing e-commerce on its platform. Meta will need more contributions from WhatsApp and Shops to continue their historically high growth rate. Although the company has been trying to improve monetization on its platforms, the revenue contribution has been inadequate. Despite Facebook Shops' 2 billion users, it only generates less than \$500 million in gross merchandise value (GMV).

### Exhibit XXVI

Total Disclosed Number of Advertisers (MM)



Source: Company Filings

## Valuation

### Valuation Commentary

Our valuation displays a base case implied share price of \$406.78 which translates into a 20% implied return. Additionally, we ran an IRR analysis to find an average IRR of 14.2%. Given that there is a reasonable margin of safety, and the team believes in the viability of the metaverse, and Meta's strong position within it, we will be actively looking to add to our existing position at this price.

For our projections, we took a conservative approach as we are unsure on how the metaverse will impact both the top and bottom line in the future. However, we adjusted expenses to match management's expectations of increasing operating expenses. The total operating expenses for 2022 is projected to be around \$91 – 94B with CapEx expected to be around \$27-34B in 2022. Furthermore, we believe Meta's push towards ecommerce and payment tools and the continued progress towards monetizing their existing platforms such as WhatsApp and Messenger will be favorable and are likely going to take a bigger portion of revenue moving forward.

### Key Assumptions

The Major assumptions for the DCF and IRR analysis

include the hurdle rate of 10% and the exit EV/EBITDA multiple of 17x. The EV/EBITDA multiple was achieved through an average of equity research. Our team also made a sensitivity analysis based on the exit multiple and different cases for Meta. Even at a bear case with 15x EV/EBITDA multiple we still see a return of 8.5%, displaying little downside for a greater upside.

### Exhibit XXVII

#### DCF Output

Implied Equity Value and Share Price	
Enterprise Value	\$1,118,141
Less: Total Debt	13,219
Less: Preferred Securities	-
Less: Noncontrolling Interest	-
Add: Cash & ST Investments	58,075
<b>Implied Equity Value</b>	<b>\$1,162,997</b>
Diluted Shares Outstanding	2859
Implied Share Price	\$406.78
Current Share Price	\$338.84
<b>Implied Return</b>	<b>20%</b>

### Exhibit XXVIII

#### IRR Sensitivity Report

		EBITDA Exit Multiple					
MAU	ARPU	15.0x	16.0x	17.0x	19.0x	21.0x	23.0x
Bear	Bear	8.5%	9.2%	9.9%	11.1%	12.2%	13.3%
Bear	Base	10.4%	11.1%	11.8%	13.1%	14.2%	15.3%
Bear	Bull	13.1%	13.8%	14.5%	15.8%	17.0%	18.1%
Base	Bear	9.7%	10.4%	11.1%	12.3%	13.5%	14.5%
Base	Base	11.7%	12.4%	13.1%	14.3%	15.5%	16.6%
Base	Bull	14.4%	15.1%	15.8%	17.1%	18.3%	19.4%
Bull	Bear	10.9%	11.6%	12.3%	13.6%	14.7%	15.8%
Bull	Base	12.9%	13.6%	14.3%	15.6%	16.8%	17.9%
Bull	Bull	15.6%	16.4%	17.1%	18.4%	19.6%	20.7%
Average IRR							14.2%

## Valuation

### Exhibit XXIX

#### Unlevered Free Cash Flow Projection

	Historical					Projection Period									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Revenue</b>	\$27,638	\$40,653	\$55,838	\$70,697	\$85,965	\$114,922	\$138,677	\$161,446	\$185,428	\$210,083	\$234,763	\$258,745	\$281,274	\$301,618	\$319,128
% growth		47.1%	37.4%	26.6%	21.6%	33.7%	20.7%	16.4%	14.9%	13.3%	11.7%	10.2%	8.7%	7.2%	5.8%
Cost of Goods Sold	3,676	5,276	9,071	12,393	16,245	22,292	27,593	32,930	38,749	44,952	50,233	55,364	60,185	64,538	68,285
<b>Gross Profit</b>	<b>23,962</b>	<b>35,377</b>	<b>46,767</b>	<b>58,304</b>	<b>69,720</b>	<b>92,630</b>	<b>111,084</b>	<b>128,515</b>	<b>146,679</b>	<b>165,131</b>	<b>184,530</b>	<b>203,381</b>	<b>221,090</b>	<b>237,080</b>	<b>250,843</b>
% margin	86.7%	87.0%	83.8%	82.5%	81.1%	80.6%	80.1%	79.6%	79.1%	78.6%	78.6%	78.6%	78.6%	78.6%	78.6%
SG&A	2,182	3,056	6,136	8,629	10,122	14,940	26,349	29,666	32,913	35,977	38,736	41,076	42,894	44,112	44,678
R&D Expense	3,425	4,934	7,251	10,112	13,529	17,238	19,415	22,602	25,960	29,412	32,867	36,224	39,378	42,227	44,678
Stock-Based Compensation	3,586	4,159	4,152	4,836	6,536	8,738	10,544	12,275	14,098	15,973	17,849	19,673	21,386	22,932	24,264
<b>EBITDA</b>	<b>14,769</b>	<b>23,228</b>	<b>29,228</b>	<b>34,727</b>	<b>39,533</b>	<b>51,715</b>	<b>54,777</b>	<b>63,972</b>	<b>73,707</b>	<b>83,770</b>	<b>95,078</b>	<b>106,408</b>	<b>117,431</b>	<b>127,810</b>	<b>137,224</b>
% margin	53.4%	57.1%	52.3%	49.1%	46.0%	45.0%	39.5%	39.6%	39.7%	39.9%	40.5%	41.1%	41.7%	42.4%	43.0%
Depreciation & Amortization	2,342	3,025	4,315	5,741	6,862	8,066	10,521	13,065	15,665	18,277	20,847	23,313	25,609	27,669	29,433
<b>EBIT</b>	<b>12,427</b>	<b>20,203</b>	<b>24,913</b>	<b>28,986</b>	<b>32,671</b>	<b>43,648</b>	<b>44,256</b>	<b>50,907</b>	<b>58,042</b>	<b>65,492</b>	<b>74,231</b>	<b>83,095</b>	<b>91,823</b>	<b>100,141</b>	<b>107,791</b>
% margin	45.0%	49.7%	44.6%	41.0%	38.0%	38.0%	31.9%	31.5%	31.3%	31.2%	31.6%	32.1%	32.6%	33.2%	33.8%
Tax Expense	(2,301)	(4,660)	(3,249)	(6,327)	(4,034)	(8,730)	(8,851)	(10,181)	(11,608)	(13,098)	(14,846)	(16,619)	(18,365)	(20,028)	(21,558)
<b>EBIAT</b>	<b>10,126</b>	<b>15,543</b>	<b>21,664</b>	<b>22,659</b>	<b>28,637</b>	<b>34,918</b>	<b>35,404</b>	<b>40,726</b>	<b>46,433</b>	<b>52,394</b>	<b>59,385</b>	<b>66,476</b>	<b>73,458</b>	<b>80,113</b>	<b>86,233</b>
Plus: Depreciation & Amortization	2,342	3,025	4,315	5,741	6,862	8,066	10,521	13,065	15,665	18,277	20,847	23,313	25,609	27,669	29,433
Less: Capital Expenditures	(4,491)	(6,733)	(13,915)	(15,102)	(15,115)	(18,962)	(31,896)	(35,518)	(38,940)	(42,017)	(44,605)	(46,574)	(47,817)	(48,259)	(47,869)
Less: Increase in NWC	(583)	(1,015)	253	6,530	(2,185)	(2,921)	(3,525)	(4,104)	(4,713)	(5,340)	(5,967)	(6,577)	(7,149)	(7,666)	(8,111)
<b>Unlevered Free Cash Flow</b>	<b>7,394</b>	<b>10,820</b>	<b>12,317</b>	<b>19,828</b>	<b>18,199</b>	<b>21,102</b>	<b>10,505</b>	<b>14,169</b>	<b>18,446</b>	<b>23,315</b>	<b>29,660</b>	<b>36,638</b>	<b>44,101</b>	<b>51,856</b>	<b>59,685</b>
Discount Period						0.5	1.5	2.5	3.5	4.5	5.5	6.5	7.5	8.5	9.5
Discount Factor						0.96	0.89	0.82	0.76	0.71	0.65	0.61	0.56	0.52	0.48
<b>Present Value of Free Cash Flow</b>						<b>\$20,305</b>	<b>\$9,360</b>	<b>\$11,689</b>	<b>\$14,090</b>	<b>\$16,490</b>	<b>\$19,424</b>	<b>\$22,217</b>	<b>\$24,761</b>	<b>\$26,959</b>	<b>\$28,730</b>

### Exhibit XXX

#### IRR Analysis

Fiscal Year	2020	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>EBIT</b>	<b>28,986</b>	<b>32,671</b>	43,648	44,256	50,907	58,042	65,492	74,231	83,095	91,823	100,141	107,791
Less: Taxes	(6,327)	(4,034)	(8,730)	(8,851)	(10,181)	(11,608)	(13,098)	(14,846)	(16,619)	(18,365)	(20,028)	(21,558)
<b>NOPAT</b>	<b>22,659</b>	<b>28,637</b>	<b>34,918</b>	<b>35,404</b>	<b>40,726</b>	<b>46,433</b>	<b>52,394</b>	<b>59,385</b>	<b>66,476</b>	<b>73,458</b>	<b>80,113</b>	<b>86,233</b>
Plus: D&A	5,741	6,862	8,066	10,521	13,065	15,665	18,277	20,847	23,313	25,609	27,669	29,433
Less: Increases in NWC	6,530	(2,185)	(2,921)	(3,525)	(4,104)	(4,713)	(5,340)	(5,967)	(6,577)	(7,149)	(7,666)	(8,111)
Less: Capital Expenditures	(15,102)	(15,115)	(18,962)	(31,896)	(35,518)	(38,940)	(42,017)	(44,605)	(46,574)	(47,817)	(48,259)	(47,869)
Unlevered FCF	19,828	18,199	21,102	10,505	14,169	18,446	23,315	29,660	36,638	44,101	51,856	59,685
Terminal Value												2,332,808
<b>Implied IRR</b>			<b>(910,469)</b>	<b>10,505</b>	<b>14,169</b>	<b>18,446</b>	<b>23,315</b>	<b>29,660</b>	<b>36,638</b>	<b>44,101</b>	<b>51,856</b>	<b>2,392,493</b>
<b>13.08%</b>												<i>EBITDA Multiple: 17.0x</i>

## Appendix

### EXHIBIT XXXI

#### Facebook Advertising: Targeting Options

Account: **TEGNA Loc...** Create New Open Save More - Create Ad

**CREATE AUDIENCE**

Location  + Country, region, or city

Age and Gender

Age: 18 - Any

Gender:  All  Men  Women

Interests  + Interest

Connections

Pages

People Connected to  + Your Page

People Not Connected to  + Your Page

Advanced

Behaviors

Language

Relationship Status

Education

Work

Financial

Home

Market Segments

Parents

Politics (US)

Life Events

More Categories

**(New Audience)**  **People on Facebook**

More than 1B monthly active people

Demographics | Page Likes | Location | Activity | Household | **Purchase**

**Retail Spending**  
 Estimated US retail spending compared to i...

2% of audience matched

**Online Purchases**  
 Estimated US online retail spending compar...

3% of audience matched

**Purchase Behavior**  
 US consumer behavior based on purchase activity. Source: Datalogix, Epsilon and Acxiom

Category	Selected Audience	Compare
Home and garden	17%	+0%
Clothing	65%	+0%
Business purchases	3%	+0%
Sports and outdoors	29%	+0%
Pet products	39%	+0%
Kids products	4%	+0%
Health and beauty	42%	+0%
Subscription services	58%	+0%
Food and drink	70%	+0%
Household products	32%	+0%

9% of audience matched

**In Market For A Vehicle**  
 US automotive purchase behavior based on geography, demographics and vehicle registration...

Category	Selected Audience	Compare
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Source: LYFE Marketing



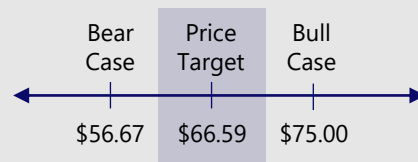
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November 15, 2021

Stock Rating **BUY**  
 Price Target **\$66.59**



Ticker	INTC
Market Cap (\$U.S. B)	\$205
P/E	9.8x
EV/EBITDA	5.9x

**52 Week Performance**



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Intel Corp. (NASDAQ: INTC)  
**Chip Off the Old Block**

Intel was apart of a semiconductor industry exploration that the TMT team completed earlier this year. Our initial opinion reflected that while the company had historical outsized success in various verticals of the semiconductor space, it struggled to keep up with fierce competition. The root of this issue was the then management team's inability to efficiently allocate capital and maintain operations at a pace that kept clients satisfied.

The CEO has since been replaced, giving the team an opportunity to assess the changing landscape and whether the newly developed turnaround strategy is feasible. While it can be recognized that Intel's core competitive advantages are eroding, existing deep Intel integrations, Intel's chip ecosystem, and the prime example of AMD's turnaround all strengthen the argument for a future comeback.

Assumptions embedded in the discounted cash flow model display the cases of 1) current business performance not materially changing and 2) management's turnaround achieving moderate success. Through this, it is evident that the market has been severely underpricing Intel despite the dominant role it continues to play in the industry. Thus, on top of the return the TMT team can gain from a market correction, there is room for additional upside via the potential success of the turnaround strategy. At the current price, the team feels comfortable opening a position in Intel until a market correction occurs, upon which another analysis will be performed at a time when there is better visibility into the turnaround's execution.

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## CCG Strength Waning, Other Segments Stronger

### Client Computing Group

Intel's Client Computing Group (CCG) business comprised over 50% of the company's revenue in 2020, down from 58% in 2015. The segment's unit sales declined by 7% YoY in Q3 2021, with revenue down 2% (offset primarily by increases in price) and operating income down 7%. CCG is Intel's legacy business and a cash cow. The segment's future is at risk for several reasons: AMD has relentlessly and successfully attacked Intel's CCG market share over the past 5 years, Intel is still 2 cycles behind in its chip size due to manufacturing challenges (10nm vs 5nm of TSMC and close competitors like AMD), past clients like Apple have moved chip design in-house, and finally, an industry-wide chip shortage.

Intel has ambitious plans to reach technological chip parity by 2024 and regain leadership in 2025. Despite all the headwinds, and AMD continuously taking market share, Intel remains the clear industry leader in CPU unit sales and revenue. Its CCG segment is more than 6 times larger AMD's segment equivalent (Exhibit I). While AMD's segment is growing significantly faster than Intel's, the size difference shows that Intel can leverage its scale to fight back and potentially regain an advantage.

That said, CCG's competitive advantage is eroding, and the team believes that there is a material possibility that the downtrend continues. However, there are certain positive points to consider:

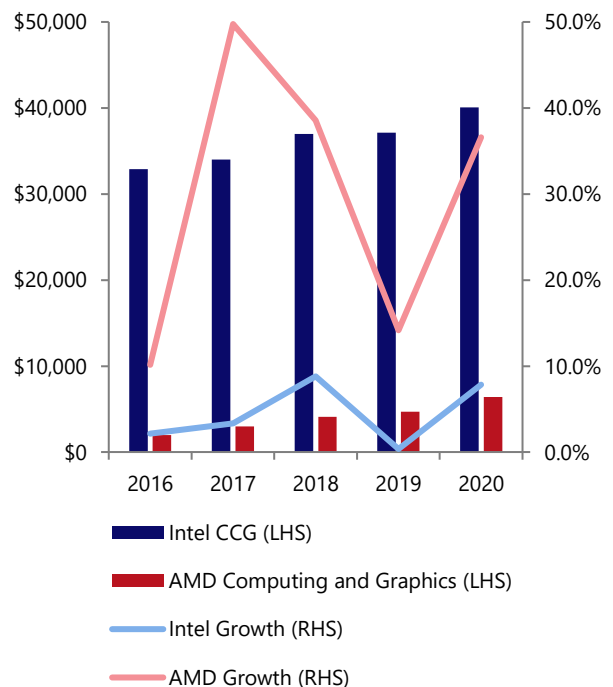
- 1) Chip size cannot be directly compared as each manufacturer uses slightly different conventions and measurements. Intel renamed its chips (an Intel 10nm chip is now called Intel 7) to more accurately describe its chips by comparable industry performance.
- 2) Simply having the best product(s) does not declare one company the clear winner. To succeed in the semiconductor industry, a firm must invest smartly and lead in the entire ecosystem (chip

software, application optimization, channel partner development / distribution, etc.).

- 3) If Intel successfully executes its vision of reaching technological chip parity in 2024 and technological advantage in 2025, then the company can materially regain market share. While difficult, with Intel's array of execution failures justifiably damaging its outlook and investor sentiment, this has been done before: AMD is a prime example of how a chip manufacturer made a comeback.

### EXHIBIT I

Intel vs AMD Historical Revenue (\$M)



Source(s): Capital IQ

## CCG Strength Waning, Other Segments Stronger

### DCG & IoT Businesses

Intel's Data Center Group (DCG) and Internet of Things (IoT) segments are performing much better compared to CCG, with DCG's revenue up 10% and IoT's income up 54% YoY in Q3 2021. The team believes DCG, IoT, and Mobileye segments will be the drivers of Intel's future growth. Intel retains a leadership position in the enterprise data chips segment, with AMD beginning its attempt to mirror its success in attacking Intel's CCG segment. However, Intel retains strong scale majority market share in this segment.

Increasingly, tech giants like Microsoft, Google, and Amazon are following Apple's lead in designing chips in-house for both consumer and cloud-focused businesses. Just like the case with Intel's CCG business, this poses a serious threat to Intel's DCG segment, which is partially offset by two factors.

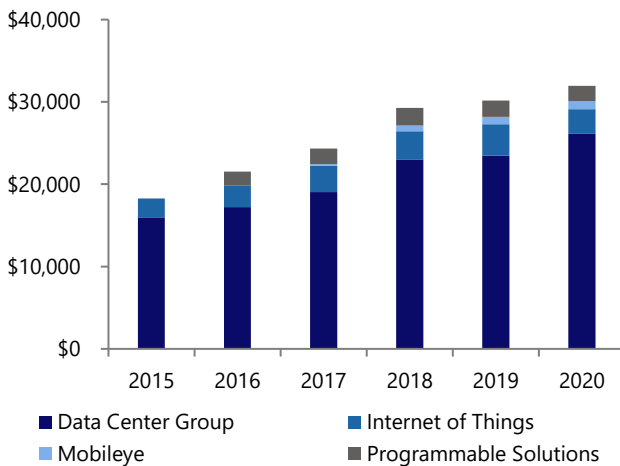
First, the value of data and computing data is

exponentially increasing, as AI technology advances and unlocks more "dark data" (data that is captured but never analyzed, which is around 98% of all data). More advanced computing applications with greater amounts of data require significantly more computing resources. Ultimately, the exponential growth in AI tech, data, and cloud as well as the resulting breadth of applications available is causing the TAMs of Intel's emerging-tech centric businesses (DCG, IoT, and Mobileye) to grow as well (Exhibit III).

The second factor is that despite many big tech firms looking to move away from purchasing semiconductor company branded chips (e.g., Intel-branded chips), all of them are planning to enter the business through a fabless model, where Intel can still capture value by offering foundry services (which is what the company intends to do – see "New Management and Turnaround Strategy Shows Early Promise").

#### EXHIBIT II

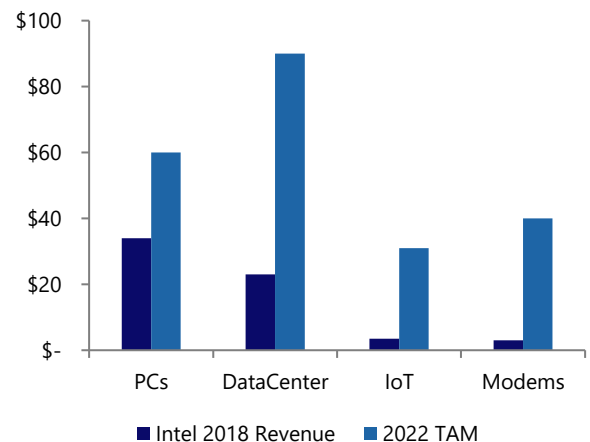
Intel Historical Segment Revenue (K)



Source(s): Capital IQ, Company Filings

#### EXHIBIT III

Intel Revenue Compared to TAMs (\$B)



Source(s): Credit Suisse

## CCG Strength Waning, Other Segments Stronger

The TMT team believes in the future of Intel's DCG and IoT businesses, and believes Intel has the capabilities to execute and continue to grow both segments and carry the organic growth of the entire business moving forward in the long term.

### Declining Margins

Intel's gross margins have been steadily dropping since 2015 – from 62.6% to 56.0% in 2020. Management guidance expects gross margins to drop further, down to 51% to 53% over the next 2-3 years due to increased expenditure, competitive pressures, and start-up costs of its next gen chips. The picture looks grim when compared with AMD's gross margin upward trajectory, which was 27.1% in 2015 and 44.5% in 2020 (Exhibit V).

While management expects the gross margin to recover in the long term, the TMT team is skeptical that Intel will be in a competitive position to do so.

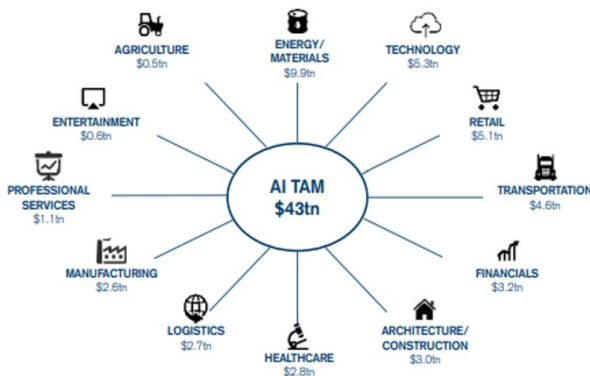
### Conclusion

There is a lot of uncertainty with Intel's future. On one hand, the company's misplays over the past decade has caused its competitive advantage to diminish to the point where there is a possibility of AMD one day replacing Intel as the semiconductor leader in CPU chip sales. On the other hand, if Intel executes according to its plan, it has the potential to regain lost ground in its CCG and DCG segments and expand its margins and bottom line.

While the TMT team believes Intel has a better shot of accomplishing the later under this new management, the team is skeptical in the company meeting some of its ambitious targets and will ensure valuation reflects our view through conservative forecasts.

### EXHIBIT IV

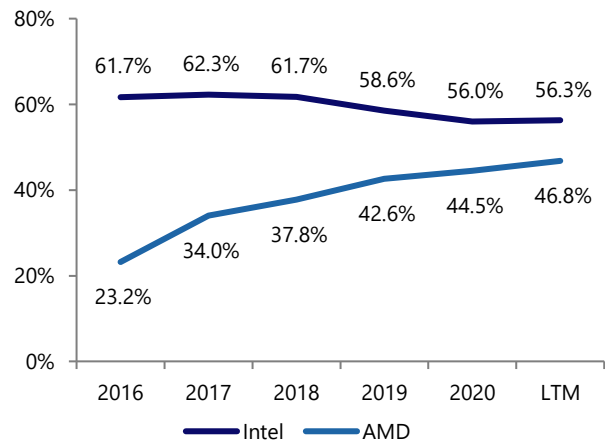
High Level Projected AI TAM



Source(s): Company Filings, Credit Suisse

### EXHIBIT V

Intel vs. AMD Historical Gross Margins



Source(s): Capital IQ

## Intel's Scale Provides the Company with the Opportunity to Recover

### Overview

While Intel's competitors are winning the battle for technological advantage, time will tell if Intel can turn the war around. The TMT team believes there may be cause for optimism for three reasons:

#### 1) Scale of Intel's R&D spending

Intel spends more in R&D than AMD generates in revenue, with an R&D budget more than 7 times greater than that of AMD (Exhibit VI). The company has also invested over \$250 billion in R&D and capital expenditures over the past 11 years. The pure scale enables Intel to do more in a shorter amount of time, which has historically proven to be a material competitive moat that was weakened by mismanagement and design/manufacturing issues.

While one may argue that outspending competitors has not necessarily helped Intel retain its competitive advantage in the past, it certainly can in the future if capital is allocated effectively and R&D spend produces meaningful results, which requires strong

talent and leadership.

#### 2) Management has been good stewards of capital

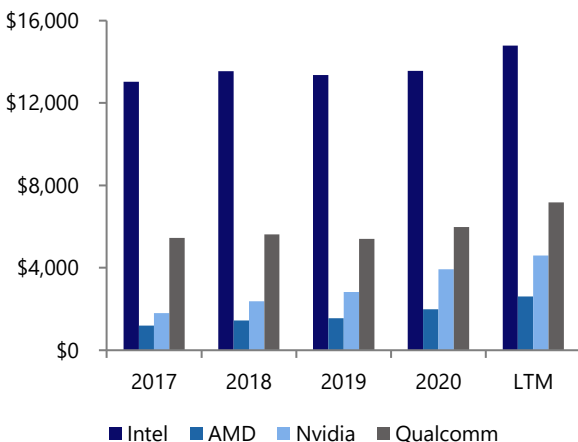
Despite the challenges facing Intel, the company's ROIC has remained relatively high (Exhibit VII). While the team expects ROIC to drop over the next few years due to increased investments in new foundries and R&D, the team believes in management's ability to remain good long-term stewards of capital.

#### 3) Intel's ecosystem strength & customer stickiness

Having the best hardware chip is not enough to determine the industry winner. A clear semiconductor leader must invest intelligently across the entire ecosystem including areas such as software, application optimization, distribution, and channel partners. The TMT team believes Intel has done just that – its strong ecosystem power and deep knowledge may provide the company with more time to "right the ship" before more customers leave.

### EXHIBIT VI

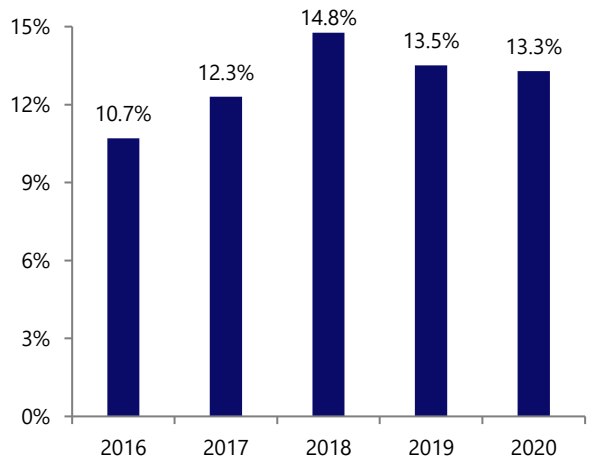
R&D Spending of Different Incumbents (\$B)



Source(s): Capital IQ, Company Filings

### EXHIBIT VII

Intel Historical ROIC



Source(s): Capital IQ

## **New Management and Turnaround Strategy Shows Early Promise**

---

### **Overview**

Patrick Gelsinger was appointed as Intel's 8th CEO on February 15, 2021, replacing Bob Swan who has held the position since 2018. Gelsinger began his career at Intel, working at the company for 30 years, eventually becoming the company's CTO between 2000 and 2005. This is in stark contrast to Bob Swan, who was an outside hire and joined Intel as CFO in 2016 with no technical background. The recent management change was well-received by the markets initially, but skepticism remains as to whether Intel can turn around under Gelsinger's leadership, especially given the slew of technological challenges and delays facing the firm.

### **Intel's Turnaround Strategy**

In March 2021, Intel announced its new Integrated Device Manufacturing (IDM 2.0) plan. The plan has three components:

#### *1) Continuing to grow Intel's internal factory network*

To the surprise of many, Gelsinger re-affirmed that the company would continue to manufacture most of its products internally, justifying that it was a key source of competitive advantage through unparalleled control and scale. Geopolitical tailwinds (e.g., U.S. and EU's growing worry that critical chip manufacturing is concentrated in Southeast Asia) may drive this narrative further, with Intel expected to receive billions of dollars in subsidy from the CHIPS for America Act, a proposed \$52 billion act to fund domestic semiconductor industry growth.

#### *2) Expanding use of third-party foundry capacity*

Intel expects to expand its third-party foundry partnerships into the production of some of its core products in its CCG and DCG segments, which can provide the company with more flexibility and allow it to take advantage of the technological strengths of companies such as TSMC and Samsung, which are both two technological cycles ahead of Intel.

#### *3) Building a world-class foundry business: Intel Foundry Services (IFS)*

Intel plans on becoming a major foundry services provider through plants in the U.S. and EU to serve fabless companies in need of semiconductor manufacturing capabilities. The new business arm will be led by Dr. Randhir Thakur, a semiconductor and Intel veteran. Intel has already announced AWS will be its first packaging partner, and Qualcomm will be its first silicon partner by 2024.

The company also announced a slew of investments to support the new strategy, including a \$20M investment into two new fab plants in Arizona.

### **Commentary on Turnaround Strategy**

In other words, Intel is adopting a "hybrid" approach, going against investors that pushed for the company to adopt a fabless model embraced by its competitors. The team believes Intel's willingness to work more closely with those traditionally seen as competitors is a good sign. The team also believes IFS is well positioned with numerous geopolitical and market tailwinds supporting its launch. That said, this seems like a "do everything" approach, and the company may easily spread itself too thin and perform below-average on every component.

### **Conclusion**

Intel's future rests on management's ability to execute on its strategy vision, double down on the components that are winning, and cut investments in areas that are underperforming. Since Gelsinger's term started, Intel has shown initial signs of remaining on track with its tech roadmap and development plan. The team believes that Intel will be able to execute relatively well and remain competitive in the industry, but not meet all its ambitious goals in the short- and medium-term.



## Risks and Catalysts

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### Risks

#### *I. Semiconductor Shortage*

The start of the semiconductor shortage was primarily caused by the COVID-19 pandemic. The lockdowns during COVID-19 caused production facilities to shutdown, lowering semiconductor inventories. With people working from home during the lockdowns, there has been a rise of demand for laptops, smartphones, monitors, and web cameras. The Worldwide PC shipments grew 4.8% in 2020 from 2019. From the millions of products that rely on semiconductors, there are not enough being produced to meet the demand. The industry has been struggling to keep with up the surge in sales. Semiconductor sales grew 6.5% between 2019 to 2020 and there has been continuous growth as semiconductor sales for May 2021 were 26% higher than May 2020. Although, the semiconductor shortage is starting to hamper the PC market. During the 2021 third quarter, PC shipments to Canada and the U.S. have dropped 9% compared to 2020. The shortfall in supply of PCs is caused by the industry's struggle with the supply chain.

The chip shortage has put a strain on Intel's supply chain. Intel does not have any immediate solutions to their shortage crisis and will continue to struggle on their ability to meet the demand. The Intel CEO, Patrick Gelsinger says that he expects the chip shortage to last a "couple of years". The lack of supplies is causing Intel to lose revenue and will continue to until the shortage is solved. Intel reported a \$19.6 billion revenue in their 2021 second quarter, which is down from last year's \$19.7 billion. In hope of resolving their supply shortage, Intel announced on March 2021 a \$20 billion plan to build 2 foundry facilities in Arizona, each worth \$10 billion. It will take until 2023 for the facilities to be completed and will not help Intel with its current

shortage position. This build will only be helpful for future production capacities. The chip shortage is still ongoing and with it will continue to affect Intel's ability to increase their revenues.

#### *II. In-House Production*

Intel customers have now also become their competitors. Over the past few years, it has become increasingly popular for companies to produce their chips in-house, disrupting Intel's business model. Apple is an example of a previous Intel customer that moved chip production in-house. In November 2020, the company launched its Apple Silicon M1 ARM-based chip. After 15 years of Apple's laptops and desktops using Intel x86 architecture processors, Apple developed their own central processor, implementing them into its new Macs. This has replaced its need for Intel's chips and caused Intel to loss around 2%-3% of its annual sales. The M1 chip enabled Apple to realize certain cost and product differentiation benefits. It costs Apple an estimate \$40-50 to produce their M1 chip against \$200 for the Intel Core i5 processor. This is saving Apple an estimate \$2.5 billion in costs. The M1 also outperforms Intel-based Macs. Apple gained the ability to control and improve their performance as the M1 provides 3.5x faster speed, double battery life, and superior graphics.

AWS and Microsoft have also begun pursuing similar intentions of moving chip production in-house for the company's data servers. This will negatively affect Intel's DCG segment as will as Amazon and Microsoft are both one of the world's largest cloud infrastructure platforms. Currently, AWS uses many of Intel's processors for instance the Intel's Xeon Scalable processors for the Amazon EC2. Microsoft also relies heavily on Intel for their processors for majority of their Azure cloud services. Intel has accepted this risk and has decided to support the process of manufacturing chips. Intel Foundry Services

## Risks and Catalysts

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for third-party foundry capacity has announced their deals with Amazon and Qualcomm to produce their chips for 2025. The development of chips in-house has been a turning point in the semiconductor industry. From the trends of moving towards in-house production, it is a risk for Intel to be commoditized by their customers. Additionally, the semiconductor supplier market is an oligopoly – losing key customers is risky as semiconductor revenues become more reliant on fewer consumers.

### Catalyst

#### *I. Intel Management Team*

Patrick P. Gelsinger was appointed the new CEO of Intel on February 15<sup>th</sup> 2021. Gelsinger entered this position with extensive leadership experience. He was the CEO of VMware from 2012-2021 and was ranked the best CEO in America in 2019 by Glassdoor. Gelsinger was also a part of Intel for 30 years at the beginning of his career as the CTO, and Sr. VP and GM of the Digital Enterprise Group. He is well fit for the CEO position and has the knowledge to lead Intel as he graduated from Stanford University with a Master's in engineering.

As CEO, Gelsinger has pledged to restore and build Intel's leadership and credibility. He has already quickly taken into action a new segment called Intel Foundry Services. Gelsinger hope to enter this market to follow the industry's demands for third-party manufacturing. The establishment of Intel Foundry Services will help build chips for other firms, even their competitors based on their own designs. Intel as already gained Amazon Web Services and Qualcomm as customers for Intel Foundry Services. The company has also been courting potential costumers in Europe, in attempts to further build Intel's revenue on contract chip-making.

Another big step Gelsinger hopes to make is in the automotive industry. Intel's new business as a producer of automotive chips will help develop a larger portfolio. The automotive chip market is in high

demand as the semiconductor shortage has affected car production. To address the rising demand, Intel plans to dedicate its Ireland plant to manufacture automotive chips. The plant is set to convert its microchip fabrication plant over to automotive-grade chips in the next 6 months. Gelsinger also hopes to start Foundry Services Accelerator to help automakers learn to make chips using the Intel 16 chip manufacturing technology. Gelsinger has predicted Intel will push its share of semiconductors of new premium vehicle BOM to more than 12% by 2025 and 20% by 2030.

These ambitious timelines for Intel are a necessary step to rebuild the company from its past mistakes. Intel has had a bad track record for poor management since 2013, under former CEO Brian Krzanich and then Bob Swan. Krzanich was responsible for Intel's process delays caused by the dereliction of duty for product designs and internal leadership decisions. During Krzanich's management, Intel was exposed for a massive cybersecurity vulnerability in 2018. Dubbed Meltdown, it allowed hackers to easily access a computer's kernel level, containing passwords, photos, documents, and other sensitive information. Krzanich was later forced to step down as CEO because of his fraternizing relationship with an employee.

Then Bob Swan took interim CEO in June 2018, then full-time in January 2019, although he was unfitting for the role since he had no engineering experience. This resulted in poor management decisions, making Intel fall behind in the industry. Internal decision-making problems caused issues for Intel to release their 14 nm processor while still waiting on the 10 nm.

Moving away from Intel's history of poor management, this new era for Intel under Gelsinger can lead the company to success. In implanting his plans for Intel, it can help turnaround the company by bringing in more revenue and customers. There are high hopes for his vision for Intel and previous leadership experience to rebuild Intel as a stronger company.

## Valuation

### Commentary

To supplement the sum of the parts analysis completed by the TMT team earlier this year, a discounted cash flow analysis has been performed on INTC. Revenue is broken down into the legacy CCG and evolving DCG segments. Under the base case, the legacy component is shrinking at a pace of ~2.5%, while Data-Centric is growing at double the pace. Both rates are a relatively conservative version of street estimates. Under the management case, revenue shrinks over 2021-2023, but achieves parity by 2025 assuming the turnaround execution is moderately successful. A more aggressive turnaround would lead

to a healthier return; however, for the purposes of this analysis, by 2025 INTC is set to return to its recent peak 2020 revenue. Per historical figures, margins will continue to shrink at a slow pace. To maintain our conservative views, we assumed margins will shrink going into 2025. Further, CapEx and D&A are growing aggressively to reflect the immense investments management is making to fuel the turnaround.

At a discount rate of 8.5%, the TMT team can expect a return of ~13% if the state of the business remains weak. Realistically, however, our analysis indicates the decent plausibility of a turnaround, thus leading us to anticipate a return of ~20-30%.

### Exhibit VIII

#### Intel Discounted Cash Flow Summary – Base Case

DCF Summary	2017A	2018A	2019A	2020A	2021E	2022E	2023E	2024E	2025E
	<b>Actual</b>				<b>Forecast</b>				
<b>Revenue</b>	62,761.0	70,747.0	71,965.0	77,867.0	73,500.0	72,550.0	73,570.5	74,837.8	76,393.2
PC-Centric	32,286.0	36,394.3	37,020.8	40,057.0	39,310.0	34,760.0	33,891.0	32,975.9	32,019.6
Data-Centric	30,475.0	34,352.7	34,944.2	37,810.0	34,190.0	37,790.0	39,679.5	41,861.9	44,373.6
Cost of Revenues	23,663.0	27,111.0	29,825.0	33,044.0	31,945.0	32,003.0	33,716.3	34,568.1	35,489.7
<b>Gross Profit</b>	39,098.0	43,636.0	42,140.0	44,823.0	41,555.0	40,547.0	39,854.3	40,269.7	40,903.5
Margin %	62.3%	61.7%	58.6%	57.6%	56.5%	55.9%	54.2%	53.8%	53.5%
<b>Operating Expenses</b>	20,664.0	20,493.0	19,712.0	19,531.0	20,773.0	22,114.0	22,837.9	23,157.7	23,516.6
% Total Revenue	32.9%	29.0%	27.4%	25.1%	28.3%	30.5%	31.0%	30.9%	30.8%
<b>Operating Income</b>	18,434.0	23,143.0	22,428.0	25,292.0	20,782.0	19,883.0	18,370.8	18,248.1	18,145.2
% Total Revenue	29.4%	32.7%	31.2%	32.5%	28.3%	27.4%	25.0%	24.4%	23.8%
<b>Less: Income Taxes</b>	2,640.0	2,768.5	3,250.0	4,388.0	2,417.0	2,696.0	2,497.0	2,480.8	2,467.3
% Effective Tax Rate	12.0%	11.3%	13.0%	11.6%	11.6%	13.0%	11.6%	11.3%	10.8%
<b>Net Operating Profit After Tax</b>	15,794.0	20,374.5	19,178.0	20,904.0	18,365.0	17,187.0	15,873.9	15,767.3	15,678.0
Plus: D&A	8,129.0	9,085.0	10,826.0	12,239.0	11,473.0	11,551.0	11,695.4	11,859.2	12,043.0
Less: CapEx	11,778.0	15,181.0	16,213.0	14,259.0	19,500.0	20,000.0	20,999.3	21,673.1	22,394.8
Less: Change in NWC	1,380.7	1,556.4	1,583.2	1,713.1	2,458.0	829.0	1,672.5	1,695.9	1,722.2
<b>UFCF</b>	10,764.3	12,722.1	12,207.8	17,170.9	7,880.0	7,909.0	4,897.5	4,257.5	3,603.9
Discount Period					0.50	1.50	2.50	3.50	4.50
Discount Factor					96%	88%	82%	75%	69%
<b>Present Value UFCF</b>					7,556.4	7,689.1	6,532.3	6,036.1	5,692.2

Source(s): Capital IQ

**Exhibit IX**

Intel Discounted Cash Flow Output – Base Case

Share Price Calculation (Base Case)	
Discount Rate	8.50%
Terminal Year Growth Rate	2.5%
PV Unlevered FCF	33506.1
PV Terminal Value	202637.1
<b>Enterprise Value</b>	<b>236143.2</b>
Less: Total Debt	40304.0
Plus: Cash and Cash Equivalents	34635.0
Implied Equity Value	230474.2
FDSO	4067.0
<b>Implied Share Price</b>	<b>56.67</b>
Current Share Price	50.31
<b>Implied Upside</b>	<b>12.64%</b>

Source(s): Capital IQ

**Exhibit X**

Intel Discounted Cash Flow Output – Management Case

Share Price Calculation (Management Case)	
Discount Rate	8.50%
Terminal Year Growth Rate	2.5%
PV Unlevered FCF	28655.3
PV Terminal Value	247840.6
<b>Enterprise Value</b>	<b>276495.9</b>
Less: Total Debt	40304.0
Plus: Cash and Cash Equivalents	34635.0
Implied Equity Value	270826.9
FDSO	4067.0
<b>Implied Share Price</b>	<b>66.59</b>
Current Share Price	50.31
<b>Implied Upside</b>	<b>32.36%</b>

Source(s): Capital IQ

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