Mobile ecosystems

The tick of the clock

Analysts

Richard Windsor   +44 (0)20 3239 9904

Tech, mobile and internet analyst

rwindsor@edisongroup.com

Jeremy Silewicz   +44 (0)203 077 5704

Head of institutional team

institutional@edisongroup.com

The heady days are over. Growth is slowing and competition is growing. There has always been opportunity for change in the mobile industry but both Apple and Google seem to have found the holes in the armour and are moving to address their weaknesses. This puts a time limit on any challenger as the risk is that these two become so big and so ubiquitous that users cannot be bothered to look elsewhere.

- **Maturity.** Both the smartphone and tablet markets are showing signs of maturity and even the pace of addition of smartphone users is beginning to slow. Ecosystems will increasingly have to poach users from each other to continue expanding rather than just adding new smartphone users. This is where the scope and quality of the ecosystems will start to matter.

- **Against the clock.** 12 months ago both Apple and Google appeared to be blissfully unaware of the weaknesses in their ecosystems. This gave the competition both the time and the opportunity to develop. Unfortunately, both now seem to have recognised their shortcomings and are moving to address these problems. There is now a time limit for the competition. The risk is that both Google and Apple become too big and too ubiquitous for anyone else to get a meaningful foothold.

- **China.** The big exception is China where the penetration of both of these ecosystems is limited. This essentially ensures that the home-grown ecosystems will rise to dominate this huge market. Currently the most advanced is new entrant Xiaomi, which we expect to hit the 100 million user milestone during 2015. The first step has been relatively easy, but now Xiaomi must develop its offering into a fully-fledged ecosystem, which brings it up against the much larger and much richer Baidu, Tencent and Alibaba.

- **Microsoft** is in the throes of change. The signs are now clear that Microsoft will pursue a full consumer and professional ecosystem strategy, which brings both opportunity and risk. If Microsoft can get it right, then its ecosystem will be unique, but executing this vision means uprooting 25 years of culture. Time is now a factor, as both Apple and Google are moving to cement their grip on the market.

- **Others.** Sony and Yahoo! remain the most interesting challengers outside of China but both of them have huge hills to climb. Sony must address its inability to create good software while Yahoo! seems unable to execute on its plans. Amazon's ecosystem continues to look like a random series of expensive experiments.

# Contents

Market update

Smartphones, tablets and ecosystem users

The smartphone market has continued to develop beyond most expectations. In the last three months our forecasts for 2014 have risen to 22% unit shipment growth from 19%. This makes growth in the later years harder to come by due to the law of large numbers. In 2015 we now expect 1,357m smartphone units to ship, up from 1,300m three months ago. The higher total for 2014 means that growth in 2015 will now only be 6% rather than 13%, despite the higher absolute number of devices shipping in 2015 (Exhibit 1).

The tablet market is showing every sign of maturity. Edison thinks that this has been caused by three main factors:

1. The rising popularity of large screen phones (5.5" and above) obviating the requirement for a lower end tablet.

2. Longer-than-expected ownership cycles. Many commentators had expected tablets to be replaced as often as phones, but without the subsidy model, this has not come to pass.

3. Tablets have been an easier and more convenient way for PC users who only browse the internet, send emails and watch videos to live their digital lives. Consequently there has been a trend for these users to replace their laptops with tablets. Edison believes that this has been a major driver of the tablet market. Edison sees this trend slowing as many of these users have already made the switch. Consequently, 2014 is expected to see a huge slowdown to just 4% growth after 44% in 2013.

Exhibit 1: Smartphone, tablet and ecosystem forecasts
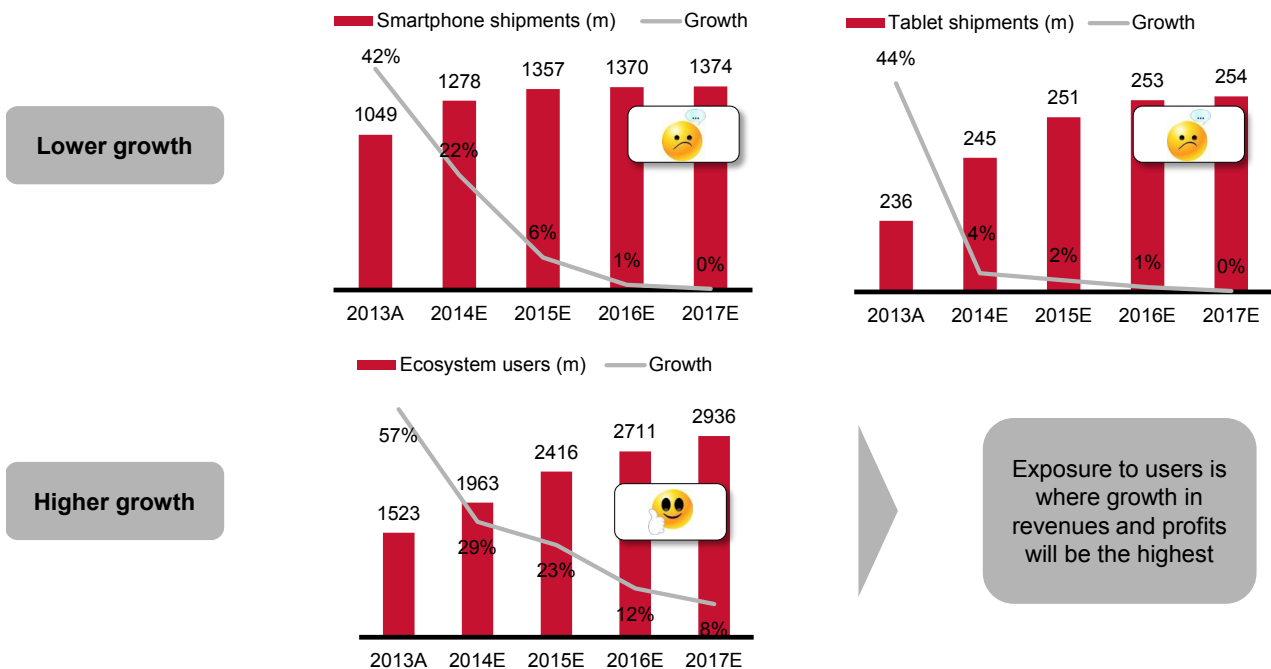
Source: Edison Investment Research, Counterpoint Research

In revenue terms, the smartphone market is likely to fare better than tablets. Assuming 10-15% ASP erosion in 2014 would give 7-12% revenue growth for the smartphone market and a decline of 6% to 11% for the tablet market. The fact that the tablet market has almost stopped growing, leads us to think that ASPs are likely to fall by less than they will in the smartphone market. Hence, we expect a flat market in revenue terms for the tablet market..

The star of the show continues to be ecosystem users. The greater number of smartphone shipments in 2014e means that the number of users will be higher than expected. We now expect the total number of ecosystem users (tablet and smartphone) to exceed 1.8 billion this year up from 1.3 billion at the beginning of 2013. Ecosystem users remain one of the most stable sources of growth in the technology industry and remain Edison's most favoured place to look for those companies that have the opportunity ahead of them rather than behind.
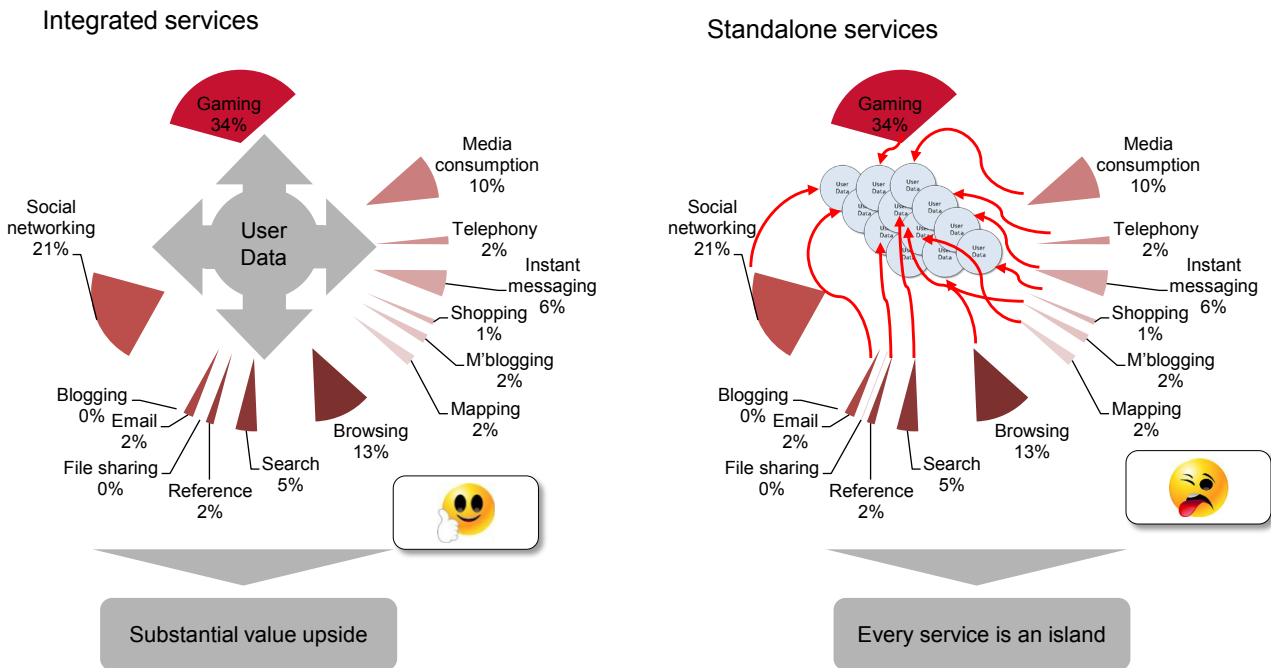
Ecosystems

Digital life

The digital life pie (Exhibits 3 and 4) remains central to Edison's analysis of the digital ecosystem. It is a measure of how much time users spend engaged with digital services on their devices outside of voice and text (and e-commerce). Analysing each ecosystem on this basis gives a very good idea about how well developed an ecosystem strategy is and how much more work or investment is needed to assemble the right assets to have a complete offering for the user's digital life.

A key observation from this analysis is that **the whole is much greater than the sum of the parts.** This is for two reasons. First: The more of the pie that is addressed, the more the ecosystem will know about the user. Therefore targeting will be more accurate, more relevant and hence carry much higher ASPs. Second: The greater portion of digital life that the ecosystem addresses, the more time the user will spend within that ecosystem. Hence there will be a greater opportunity to target the user. Combining, these two reasons makes it clear that the both ASPs and volumes will increase as coverage improves, giving a much greater uplift in overall revenues.

In order for this to become a practical reality one more hurdle needs to be overcome. To have greater value targeting, the ecosystem needs to have all of the information collected from the digital life services in one place. This means that the services are integrated with one another (Exhibit 2). This analysis assumes that all of the digital life services of an ecosystem are integrated in this way. It assumes that:

1. The digital life services are aware of each other such that the user is treated as a single entity within the ecosystem rather than a different user for each service (single sign-on).

2. The data for all of the digital life services is collected in a single database rather being stored solely within the server software that is providing any particular service.

3. Data and preferences between different services are shared and each service has access to all of the data created by all of the others. This will make the individual services more applicable to the user and therefore of more value.

Exhibit 2: User data integration in digital ecosystems

Integrated services

Gaming 34%
Media consumption 10%
Social networking 21%
Telephony 2%
Instant messaging 6%
User Data
Shopping 1%
M'blogging 2%
Blogging 0%
Email 2%
Mapping 2%
File sharing 0%
Search 5%
Browsing 13%
Reference 2%

Substantial value upside

Standalone services

Gaming 34%
Media consumption 10%
Social networking 21%
Telephony 2%
Instant messaging 6%
Shopping 1%
M'blogging 2%
Blogging 0%
Email 2%
Mapping 2%
File sharing 0%
Search 5%
Browsing 13%
Reference 2%

Every service is an island

Source: Edison Investment Research, Nielsen, Google, Pewinternet.org, comScore, NetMarketShare

A good example of this would be a digital assistant like Siri, Google Now or Cortana having access to the usage data created by all of the other digital life services. This would give the digital assistant much greater ability to offer relevant help to the user in question. The greater the relevancy, the greater the user engagement and consequently the stickiness of the ecosystem.

Unfortunately, the reality is that very few of the ecosystem contenders meet this ideal. **We think that Google is the only ecosystem where all of the services are properly integrated.** Next is Apple but it is far behind Google. All of the others have very little integration, meaning that their ability to really understand their users is very limited. Until they move to address this issue, there will be no real challenger to Google when it comes to monetisation through advertising.

This also highlights the single biggest problem with growing an ecosystem by M&A. From Yahoo! to Apple to Facebook, almost every deal announced has included commentary confirming the continued independence of the acquired company. In some cases this does not matter, but where the acquired company forms part of a digital life service within the ecosystem, it needs to be integrated in order to generate value for the ecosystem. The problem is that hot start-ups are in such demand at the moment that these companies can set their terms when it comes to being acquired. Almost all have demanded to remain independent, which gets the company in the door but does nothing when it comes to generating value for the ecosystem that made the acquisition.

Consequently, we believe that, over time, the acquiring companies must seek to bring these services in house in order to make them a full part of the ecosystem and increase the value of all of the other services already present. This must be done delicately as integration can easily lead to a degradation of the service and a loss of user interest and usage. Only when this has been done and the service has not suffered can the acquisition be called a success in Edison's opinion. The best example of this problem is Facebook's $19.6bn acquisition of WhatsApp (see Mobile ecosystems – Command and control, 26 June 2014, page 23).
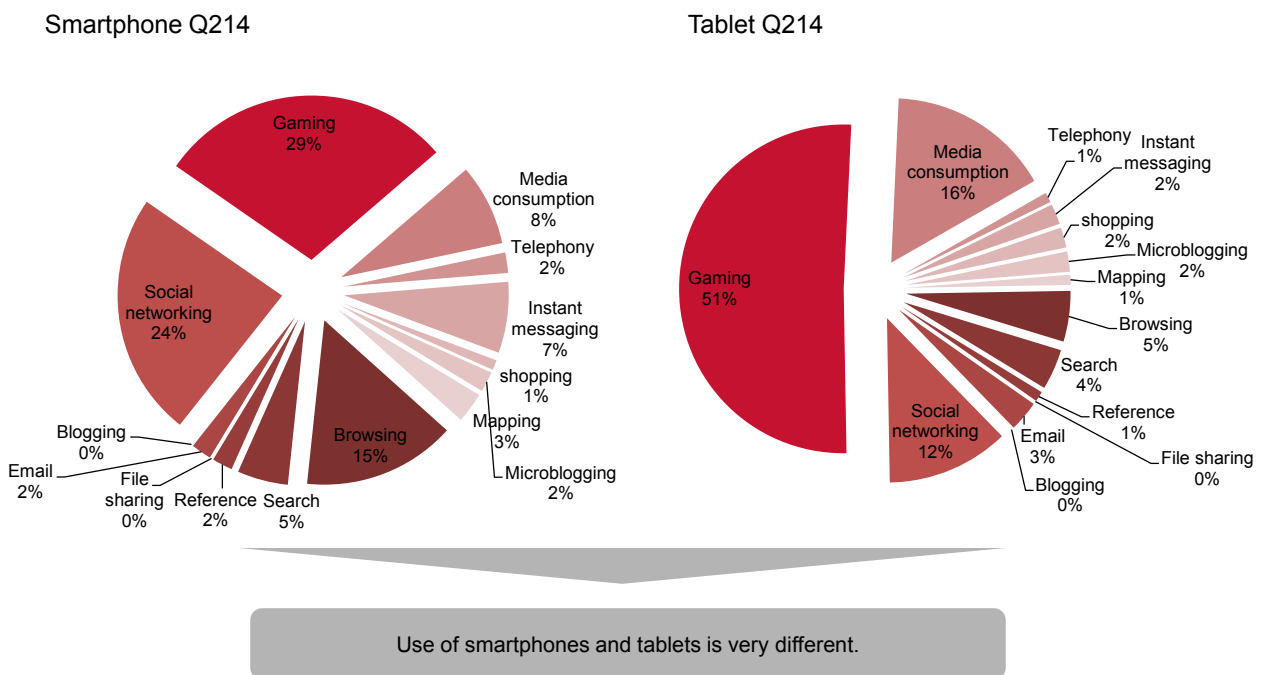
Smartphones vs tablets

Tablets have become a critical piece of the digital ecosystem as their convenience and ease for effecting basic computing tasks make them greatly superior to smartphones for particular functions. In a similar way to consumer PCs, tablet use peaks during the hours of 6-10pm, confirming that these devices have taken over from the PC as the preferred device for the consumption of content. The tablet market is much more of a two-horse race than smartphones, with Apple and Samsung being the only two with market share of greater than 5%. This market is totally dominated by iOS and Android as Edison does not count Windows 8 devices as tablets (see Mobile ecosystems – The second derivative, 6 March 2014, page 4).

We see tablets as an add-on for a smartphone. The use case is different as the vast majority do not connect to cellular networks and are not used to receive or send text or instant messages. Instead they are used for gaming, browsing and the consumption of media as evidenced by the fact that a tablet will on average generate far more data traffic than a smartphone. As it is clear that the uses of a tablet are different from those of a phone, then it stands to reason that the digital life pie for a tablet will look different from that of a smartphone. This is significant because some ecosystems are based only on smartphones or predominantly on tablets. This means that the services that are the most important to an ecosystem will depend on which devices that ecosystem is predominantly based on. Consequently, Edison has looked at the digital life pie for usage of smartphones and tablets separately.

The biggest difference in usage between the two devices is gaming. Over half of all tablet usage is related to gaming. This makes sense given that tablets are typically used during leisure time and have a larger screen that is more suited for gaming. Furthermore, they tend to use a Wi-Fi connection, which typically will have much a lower latency than a cellular connection, making these devices better suited for online and multiplayer games. The majority of the rest of the usage on tablets is unsurprisingly media consumption and social networking. Time spent shopping is also greater on tablets, which again makes sense given the continuing hesitancy of users to shop on smartphones, preferring something that is more akin to the desktop environment they are used to.

Exhibit 3: Edison Investment Research digital life pies

Smartphone Q214

Tablet Q214

Use of smartphones and tablets is very different.

Source: Edison Investment Research, Nielsen, Google, Pewinternet.org, comScore, NetMarketShare

Many of the ecosystems are available on both tablets and smartphones, and as a result the importance of the different digital life services will be an amalgamation of both use cases. Consequently, Edison has estimated the importance of digital life services to ecosystems that use both devices by weighting the service usage by the time users spend on the different devices. We estimate that device usage is split 24% on tablets and 76% on smartphones and have amalgamated the two pies to produce the pie in Exhibit 4.

We believe that this is the most relevant pie for most ecosystems, but where the ecosystem is present on only one device type, we have used the individual pie to ascertain digital life coverage. Readers will see which pie has been used for each ecosystem in the sections detailing that ecosystem specifically. Here, the relevant digital life pie is given.

Exhibit 4: Use weighted average digital life pie

Smartphone vs tablets % total time used
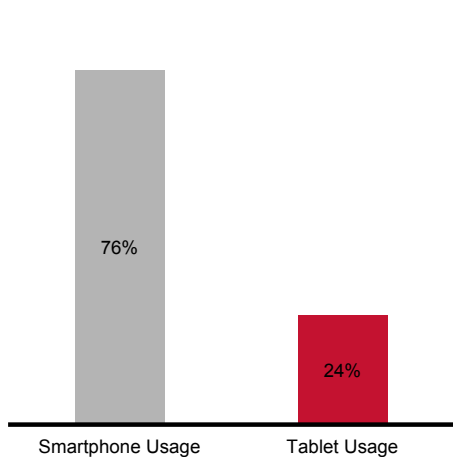
Weighted average digital life

Gaming and social networking are critical
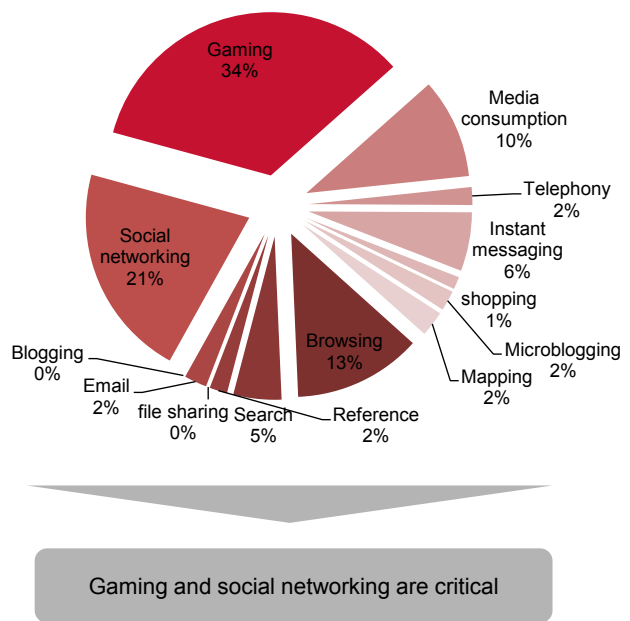
Source: Edison Investment Research, Nielsen, Google, Pewinternert.orgPewinternet.org, comScore, NetMarketShare

The net result is that gaming and social networking remain the most critical services to offer to users. Media consumption has also increased its relevance in this analysis at the expense of instant messaging and mapping. This makes sense as tablets are not regularly used for mapping nor are they ideal for the typing of instant messages.

Taking the adjusted pie and mapping the ecosystems onto it results in only small changes to the status quo (see Mobile ecosystems – Command and control, 26 June 2014). Google's weakness in gaming has cost it a few points of coverage, while Sony has improved meaningfully due to the increased importance of both media consumption and gaming. These are its two strongest areas. (In Q114 Sony's coverage was measured at 37%; see Mobile ecosystems – The second derivative, 6 March 2014, page 22).

Exhibit 5: Coverage of digital life by ecosystem, Q214
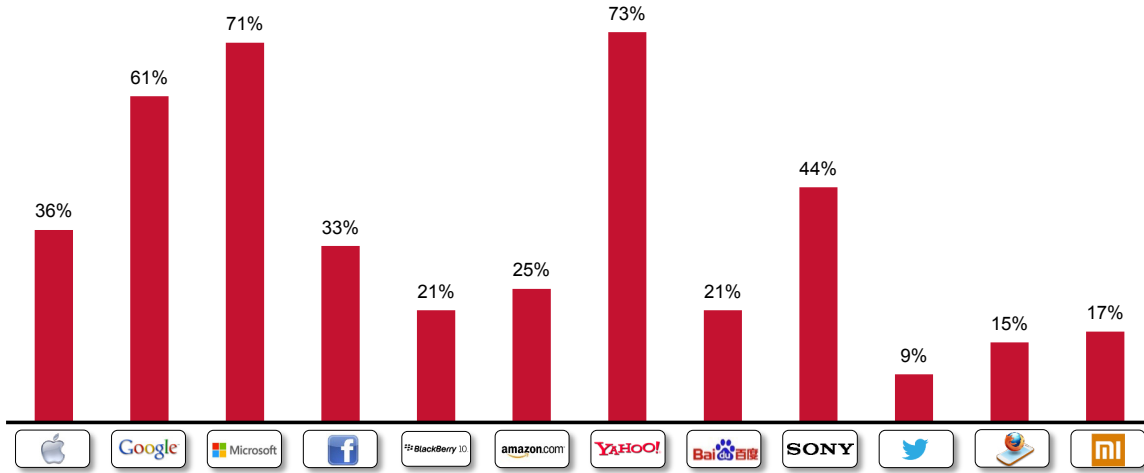
Leaders unchanged. Xiaomi, the new entrant. replacing Samsung

Source: Edison Investment Research, Nielsen, Google, Pewinternet.org, comScore, NetMarketShare

The net result is that Google (page 16) remains out front in terms of delivering an integrated ecosystem from which it can sustainably earn a significant return. Apple's (page 12) profitability remains very good but its weak position in digital life continues to put its long-term profitability at risk. Apple has made some moves in this direction with the launch of three services that are not yet part of the digital life pie but could create some of the exclusiveness that is required to keep its industry-leading margins where they are. These are HealthKit, HomeKit and Apple Pay (page 13). Microsoft's digital life coverage remains very good, but usage and user numbers continue to be a major shortcoming (page 20).

Three laws of robotics

In addition to digital life, we use three simple tests to assess each ecosystem to ascertain the degree of success each is likely to have as well as to get an idea of how user friendly and mature the offering is. We refer to these tests as the "three laws of robotics" and they are described in more detail in Mobile software – iRobot, 6 March 2014, page 14.

Developments within the ecosystems over the last few months have resulted in a few changes to the three laws since Q114:

1. Samsung is now excluded from the analysis as a result of its deal with Google where it agreed to exclude itself from any ecosystem activity that could be seen to be in competition with Google (see Samsung and Google, Gorilla war, 3 June 2014).

2. Into the space left by Samsung comes Xiaomi, which has been one of the most surprising companies so far in 2014 (page 23). Although its ecosystem is very far from being complete or mature, it has managed to become the number one smartphone vendor in China. **On top of this, its devices see more usage than the iPhone, which is testament to the popularity and quality of the few services that it does offer**. This is why Xiaomi scores well on law 1 but its lack of maturity causes it to fare badly against laws 2 and 3 (Exhibit 6b). See page 23 for more details on Xiaomi.

Google has been doing everything it can to improve the quality of the user experience on Android in order to close the gap in terms of usability to iOS and Windows Phone. This has involved increasingly taking more and more of the Android software under its direct control (see Mobile ecosystems – Command and control, 26 June 2014, page 14). This will give Google far more control over its ecosystem and allow it to be more consistent and less fragmented. We think that this will go a long way towards addressing the usability issue that currently creates the opportunity for Windows Phone to gain some traction (page 19). In our opinion, this trend has already shown some results, with the user experience becoming more friendly, fun and easy to use compared to last year. **Consequently, Edison has upgraded Google's rating on laws 1 and 2 from 4 to 3.** There remains a long way to go but the seeds have already been sown.

Exhibit 6a: The three laws of robotics for mobile ecosystems – 1
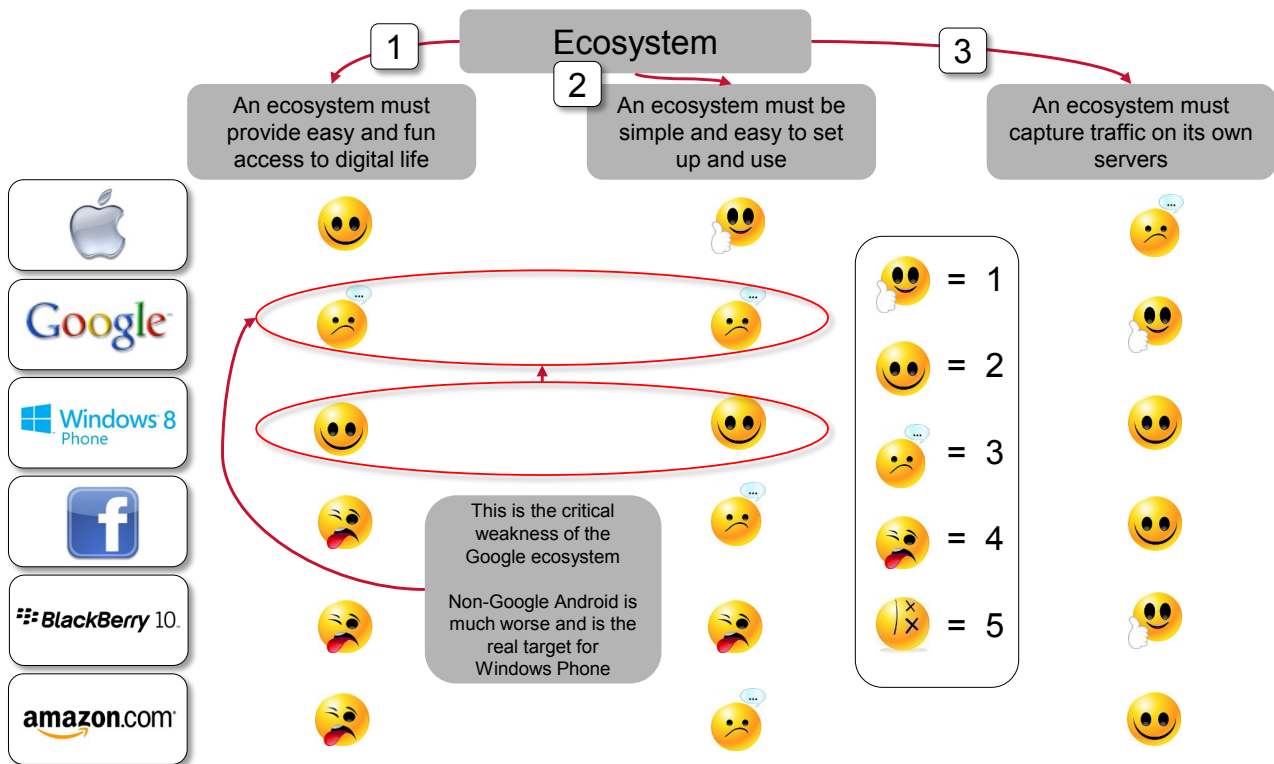
Source: Edison Investment Research

Exhibit 6b: The three laws of robotics for mobile ecosystems – 2
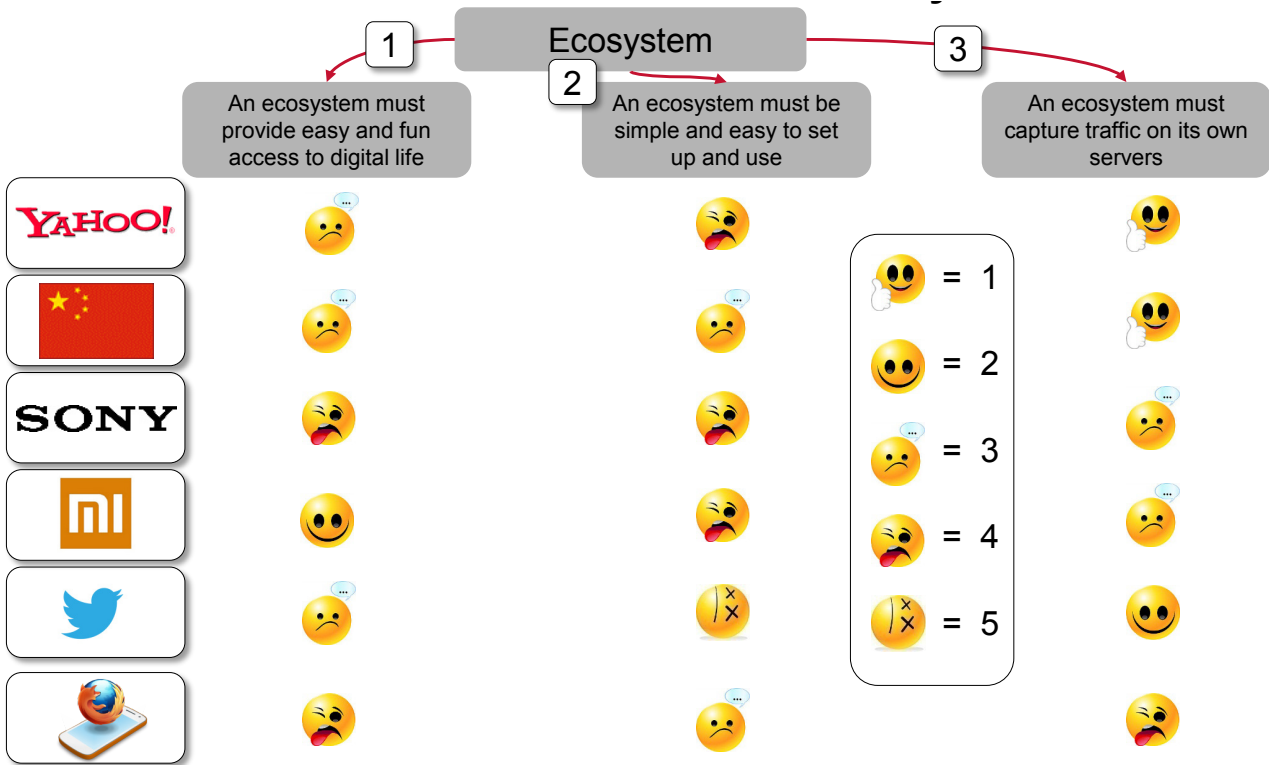
Source: Edison Investment Research

Edison believes that the size of an ecosystem is the single most important measure of how much value it can create for its owner. An assessment against the three laws combined with an assessment of digital life with data and forecasts from the device markets (page 1) contribute to estimates surrounding the size of the ecosystems. Edison calculates the current size of all the ecosystems now and forecasts how they will evolve over the next three to five years.

Edison Investment Research's key assumption that an ecosystem needs 100 million+ subscribers to be viable and more than 300 million to be really successful remains unchanged. Anecdotal evidence from the market is indicating that these assumptions are about right as the ecosystems that are failing are all below 100m in size and all those making good money are now well over 300m in size. Other consumer devices such as wearables, TVs PCs and consoles do not yet contribute meaningfully to the ecosystem and as such have not yet been included in this analysis.

Exhibit 7: Ecosystem users by provider, 2016e
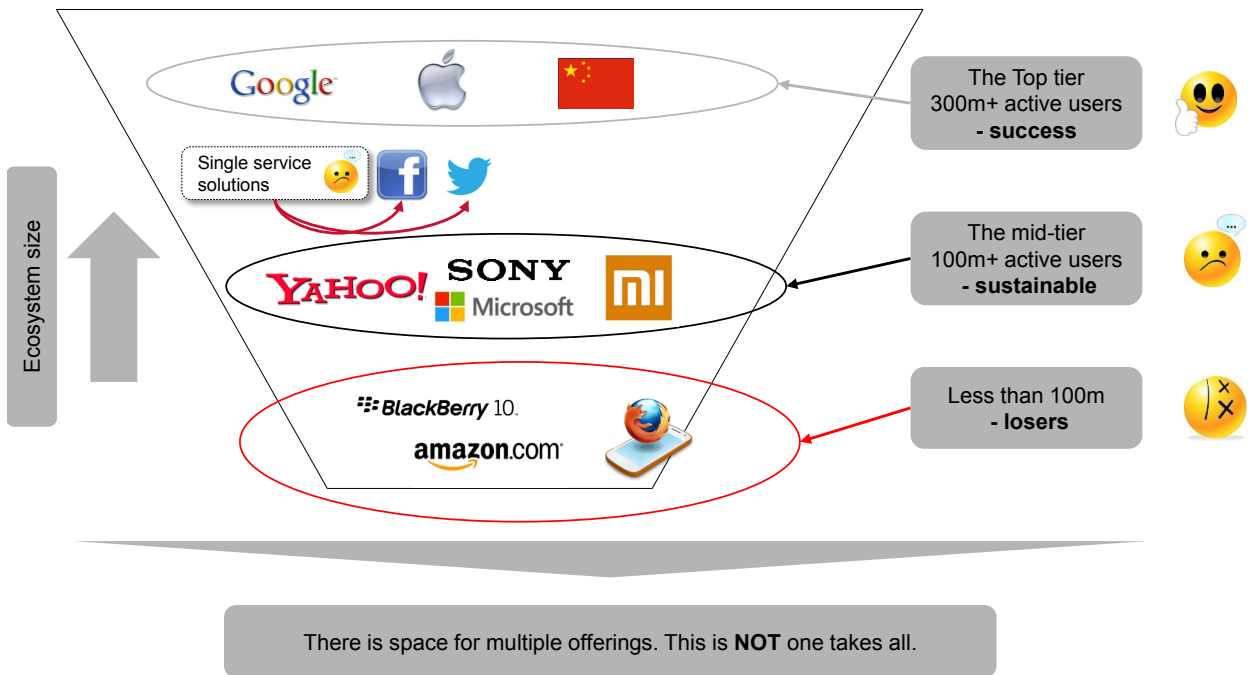
Source: Edison Investment Research

With Samsung removed as a contender, there is more space for the development of other ecosystems that would seek to compete with Google. Microsoft and Sony are already well established but the surprise entrant to the analysis is Xiaomi. Xiaomi specialises in very attractively priced handsets but also manages to rack up enormous usage on its devices thanks to its media assets (page 23). We think that Xiaomi will cross the 100m user barrier during 2015 and consequently we have placed it in the mid-tier. None of the other contenders in the losers or mid-tier category have seen much change to their outlook over the last three months, leaving Xiaomi as the only player on the move one way or the other.

Exhibit 8: Smartphone and tablet users by ecosystem, 2013-16e

2013-2016e users (m)

2016e ecosystem share of users (%)
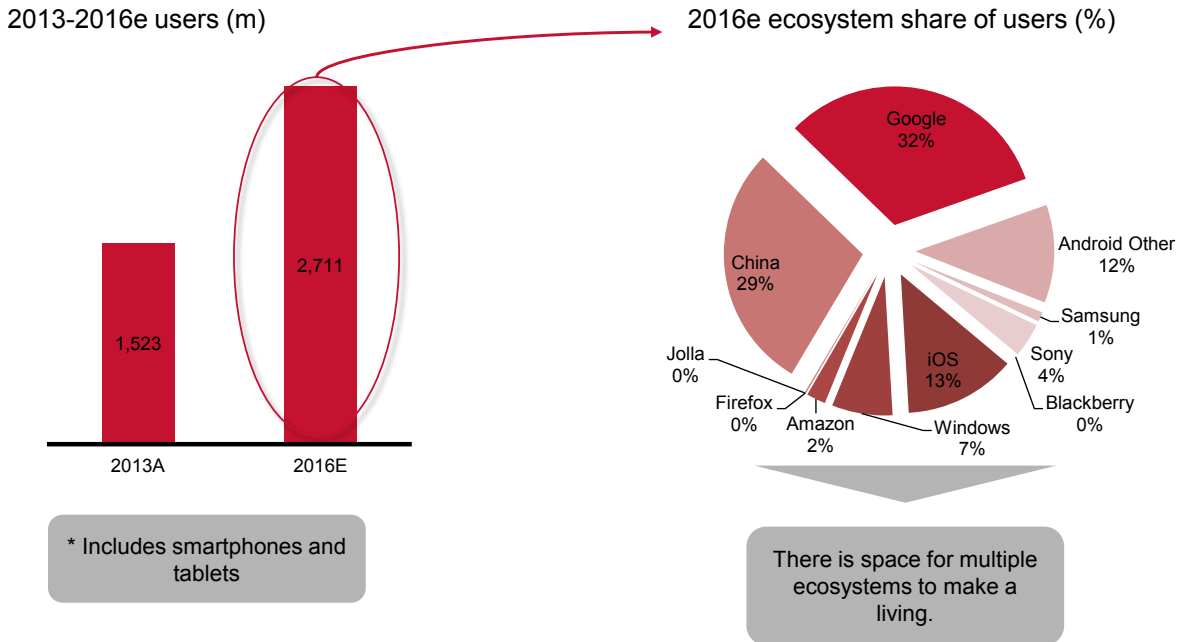
Source: Edison Investment Research, Counterpoint Research

iOS

Edison's analysis has long been indicating that while the success of the iOS ecosystem has never really been in doubt, Apple's ability to make high margins from it has. Apple's business model is based on providing a top-notch ecosystem on highly desirable devices, which are sold at premium prices. It is this premium that allows Apple to make a substantial return from its ecosystem. This has worked extremely well for the last seven years, but it is under threat of commoditisation. This is because Apple does not really have any must-have services of its own. It is very good at distributing the digital life services of third parties in an easy to use and fun way. This has worked very well to date, but the barrier to entry is much lower than it needs to be in order to secure long-term high hardware margins.

Both Google and Microsoft are catching up and Edison believes that eventually all digital life services will be available on all ecosystems to an equal level of quality. With hardware being increasingly commoditised this would give Apple less and less excuse to charge a premium price for its hardware, and if nothing is done Edison can see margins coming down.

Exhibit 9: Apple's position in digital life
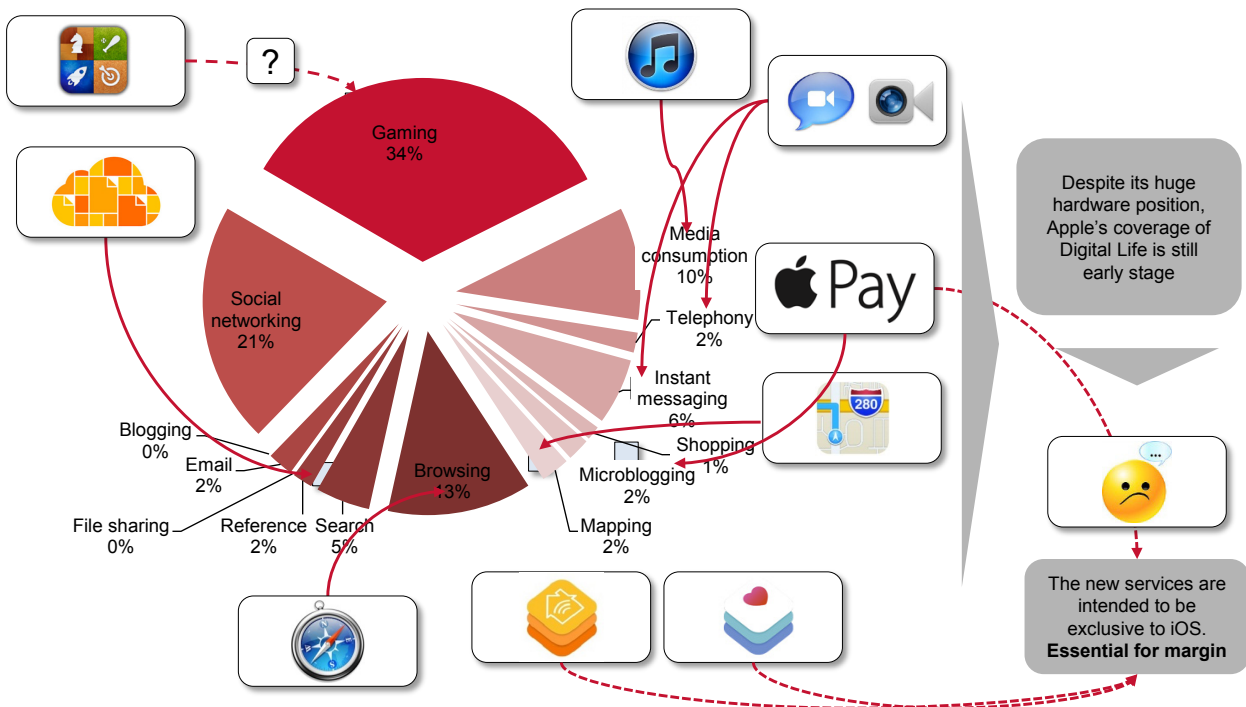
Source: Edison Investment Research, Apple, Nielsen, Google, Pewinternet.org, comScore, NetMarketShare

Edison has long held the opinion that the key to long-term profitability is Apple's development of its own digital life services that cannot be accessed on any hardware other than Apple's. These digital life services have to be fun and easy to use as well as useful in helping the user live their digital life. If this can be achieved then Apple will maintain its desirability and will be able to continue pricing its products at a premium. **However, progress to date has been poor and the services that it has developed have not been very successful**. Apple Maps and iCloud as well as a number of others have struggled for acceptance and have provided an inferior experience when compared to their counterparts within the Google or Windows ecosystems.

The more time that passes, the more concerned Edison has become regarding Apple's ability to create digital life services to compete with those of Google or Microsoft. Recent developments suggest that Apple is aware of this problem and has decided to take another route to achieving the same goal.

It is from this strategy that Edison believes that HealthKit, HomeKit (see Mobile ecosystems – Command and control, 26 June 2014, page 11) and Apple Pay have been born. **These are not digital life services in their own right, but they are facilitators that allow the services and devices of third parties to come together to create a service that is of far more value to the user**. For example, heart rate alone does not give a great picture of a user's health. However, the combination of heart rate, blood pressure, sleep patterns, blood oxygenation and physical activity may be combined together to give a useful picture of what is going on and where any potential problems lie. This requires a range of devices and services to all communicate with each other, which is where Apple's HealthKit API comes in. This allows all this data to be stored in one place and to be analysed together when device and service makers make their devices compatible with the API. The situation for HomeKit is the same.
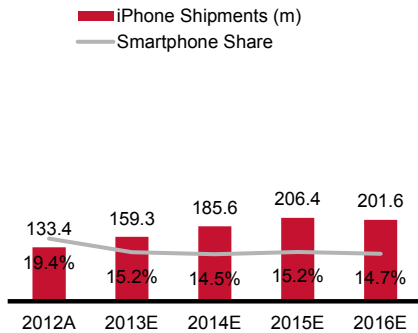
Exhibit 10: Analysis of the iOS ecosystem
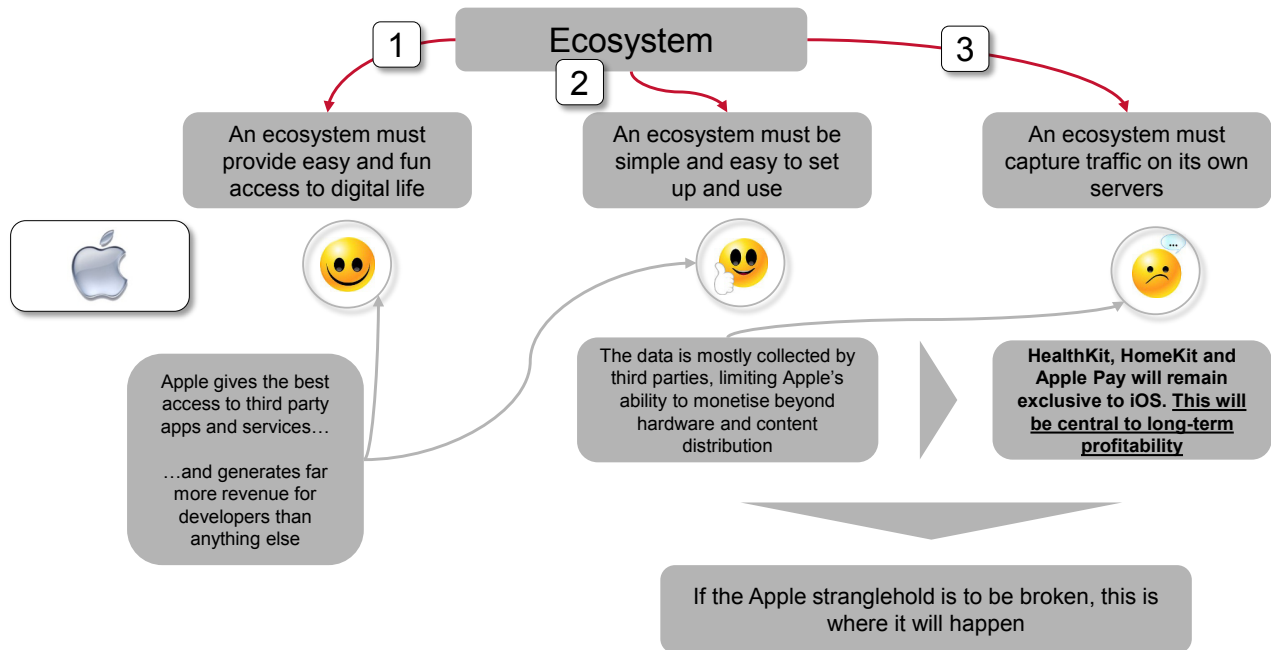
Source: Edison Investment Research

The use of HealthKit and HomeKit should allow Apple to ensure that the user experience for owners of these devices and users of home automation and health services have a superior experience on Apple than elsewhere. The same can be said for Apple Pay, which is a proprietary service that is exclusive to iOS devices. The fact that software consistency across the entire iOS ecosystem is extremely high makes targeting these devices much easier for developers. This is how Edison believes that Apple intends to maintain the exclusiveness of the iOS ecosystem even when all apps and services are available on all ecosystems to an equal level of quality. **Apple is in effect creating mini-ecosystems within iOS that will not be available on non-Apple hardware.**

In the meantime, all the signs are that the iPhone 6 and 6+ have a very high level of desirability, meaning that the iOS ecosystem looks set to continue its steady expansion over the medium term, taking some share from Samsung as well as expanding its reach marginally in the high end across the globe.

Exhibit 11: Forecasts for the iOS ecosystem

Apple iPhone units shipments and share

- iPhone Shipments (m)
- Smartphone Share

2012A	2013E	2014E	2015E	2016E
133.4	159.3	185.6	206.4	201.6
19.4%	15.2%	14.5%	15.2%	14.7%

Apple iPhone users and ecosystem share

- Users (m)
- Ecosystem Share

2012A	2013A	2014E	2015E	2016E
21.1%	16.9%	16.6%	15.9%	15.3%
195.4	257.1	325.7	384.2	415.4

300m +

100m – 300m

< 100m
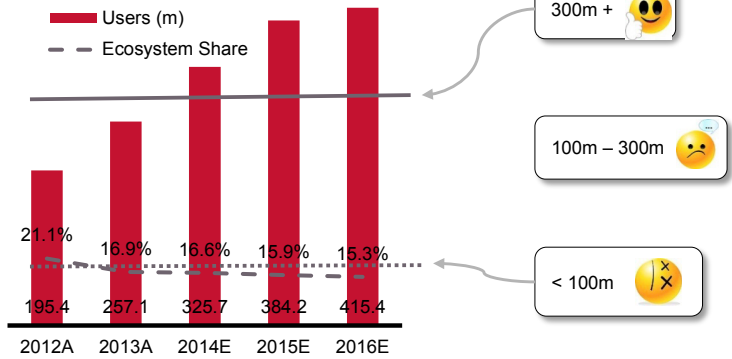
The Google and Windows ecosystems are catching up…

…but there remains a significant gap in terms of quality, fun and usage.

Source: Edison Investment Research, Counterpoint Research

Apple Watch

This report does not address the Apple Watch in detail, as Edison believes that the device does not create a new use case that is going to drive users to purchase it in very high numbers. Consequently, Edison thinks that it will have no meaningful impact on the iOS ecosystem or the financial performance of Apple for some time to come.

While the device is new and funky, the Apple Watch adds very little to the overall smartphone experience. The key spark of genius that transformed the smartphone industry is completely missing, meaning that only the Apple fan club is going to buy this product. The Apple Watch is square and fat. 85% of wristwatches sold in the market are round and, in terms of pure looks, Edison thinks the Moto 360 and the LG G Watch R are much better. At launch there was no mention of battery life, which combined with the array of functions and sensors implies that it will be short. Charging is with a magnetic cable that adheres to the back of the watch and charges via induction. This means the user will have to take off the device for one-third of their life as well as carry an extra cable around. This will make health functions that analyse any type of sleep monitoring impossible as well as being an inconvenience for the user.

With a price of at least $349, it is significantly more expensive than its better-looking competitors (Moto360 $249, LG G Watch R $230), which is likely to deter all but the hard-core fan base.

Consequently, Edison thinks that the limitations of this device are likely to keep its appeal limited to the die-hard Apple fan base. While Edison thinks that it will outsell all of its competitors by miles, critically, it will fall short of bullish expectations. This will prevent the Apple Watch from moving the needle meaningfully when it comes to revenue and profit generation.
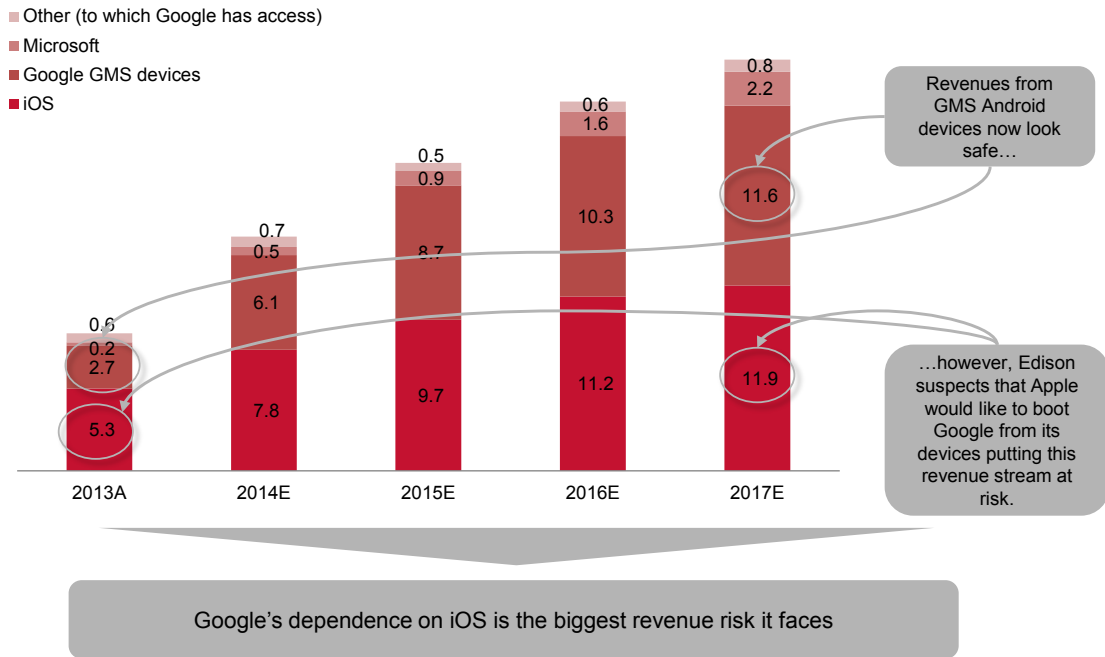
Google

Android

Android is not an ecosystem. **It is an operating system upon which an ecosystem can be installed** (see Mobile ecosystems – Command and control, 26 June 2014, page 12). Android is an open-source software package (AOSP) that can be used to provide the basic functionality of a smartphone or a tablet. It is the Google applications that make up the Google ecosystem and it is these that generate the data that Google uses for monetisation. Critically, these applications are not open source. They come as a package called Google Mobile Services (GMS) that is only for devices that meet the specification set by Google. Furthermore, vendors wishing to use GMS must agree to Google's terms of use, referred to as MADA (Mobile Application Distribution Agreement). These devices are exclusively part of the Google ecosystem and there is no real opportunity for a handset maker or an ecosystem provider to add any value beyond hardware specification or form factor. **This is why anyone that wants to make above-commodity margins in Android devices in the long term must create their own version of the Google applications and entice users to prefer them over Google**. Amazon (page 25), Sony (page 28), Xiaomi (page 23) and the large Chinese Internet players are all working to create an equivalent to the Google experience on top of AOSP.

Google

Google's model is very different to Apple's. While Apple makes money through hardware, Google gives its services away but then makes money selling targeted advertising based on the data that its services generate. Google is second only to Apple in terms of earning a return on its position in the mobile ecosystem, as Edison forecasts that it will generate $15.1bn in revenues in 2014 from mobile advertising, of which $6.1bn will come from Android (Exhibit 12).

Despite these large figures, Google is still only making money from less than half of all Android devices in the market today. **Edison has long been of the opinion that reasonable data usage (which Google can monetise) requires the device to have GMS and to be running Android version 4.1 (Jelly Bean) or better**. When these two requirements are taken into account, it becomes clear that a large part of the opportunity to monetise Android is passing Google by as it is only earning revenues from 39% of the Android devices in the hands of users (Exhibit 13).

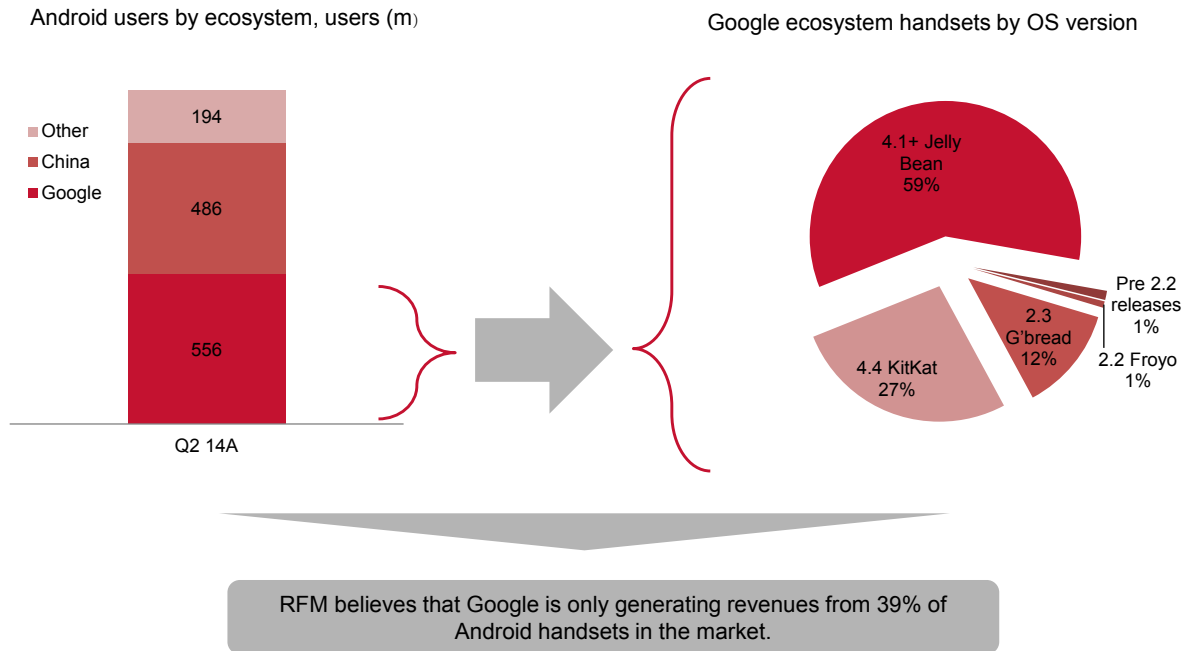**Exhibit 12: Google mobile advertising revenues by ecosystem**

Legend:
- Other (to which Google has access)
- Microsoft
- Google GMS devices
- iOS

2013A: 0.6 / 0.2 / 2.7 / 5.3
2014E: 0.7 / 0.5 / 6.1 / 7.8
2015E: 0.5 / 0.9 / 8.7 / 9.7
2016E: 0.6 / 1.6 / 10.3 / 11.2
2017E: 0.8 / 2.2 / 11.6 / 11.9

Callout: Revenues from GMS Android devices now look safe…

Callout: …however, Edison suspects that Apple would like to boot Google from its devices putting this revenue stream at risk.

Callout: Google's dependence on iOS is the biggest revenue risk it faces

Source: Edison Investment Research, Counterpoint Research

This is where Android L becomes important. A number of GMS devices are still running Gingerbread (2.3), which Edison thinks does not offer a good enough experience to generate data that can be monetised. Handset makers still use this old version of Android because it is much easier to make a low-end device using Gingerbread than it is Jelly Bean (4.1) or KitKat (4.4). This represents lost opportunities for Google and Edison thinks it aims to fix this with Android L.

Android L is a big Android release sporting a new UI and 5,000 new APIs. Significant work has also gone into making it easier to build low-cost devices using Android L rather than Gingerbread. This should finally eliminate Gingerbread from the market, bringing a greater share of Android devices within Google's reach. These users will be in a much lower demographic than existing users and so, consequently, advertisers will be spending less on campaigns. Even so, it still represents significant revenue upside given the user numbers that will become accessible by Google (see page 16).

Exhibit 13: Fragmentation of Android by ecosystem and by OS version

Android users by ecosystem, users (m)

Google ecosystem handsets by OS version

RFM believes that Google is only generating revenues from 39% of Android handsets in the market.

Source: Edison Investment Research, Developer.android.com

This is where the Android One project comes in. Android One is a reference design specified by Google whose sole purpose is to push Google's ecosystem into the lower tiers. The launch of this design has gone hand in hand with availability of three devices from Micromax, Spice and Karbonn, which will sell for around $105. MediaTek is also a central piece of this initiative as the initial designs are all based on the MT6582, which is a big factor in the reasonable specifications being able to hit the $105 price point.

This reference design specifies stock Android meaning that it will come with the full suite of Google services as well as Google Play. There is no real scope for OEM or operator customisation but Google has allowed their apps to be installed alongside its own. When a vendor agrees to the MADA, it also agrees to the positioning and setting of the key Google ecosystem digital life services on the device. Default settings and app placement are critical factors in determining usage and the vast majority of Android One users are going to be unsophisticated. This means that they will have no idea how to change defaults or uninstall certain applications and substitute them for others. For this reason Edison thinks that applications and services from the vendors will have very little impact on the real activity of these devices, making them first and foremost Google ecosystem devices. Furthermore, it is Google that will control the updating of these devices, meaning that Google will have almost total control.

Edison thinks that the vast majority of Google's ecosystem users are in developed markets today but it is emerging markets Google must penetrate to grow its user base. Here Android is a fragmented free for all where the vast majority of devices are forked versions of Android where Google is not present. Google learns virtually nothing about these users, and therefore its ability to earn revenues from advertising is non-existent.

These users are individually of less interest to advertisers compared to developed markets, but there are so many of them that the revenue opportunity is very substantial even at a tiny spend per device. Furthermore, this is where most of the growth will come from in the smartphone, market making this space a must for both advertisers and for Google.

The Android One reference design is aimed at lowering the barriers to entry for handset makers in emerging markets and also to bring them into the Google family. The logic for using this reference design is undeniable as it makes it much easier and cheaper to make a smartphone but historically no one has been able to stick to the design. This has meant that, in practice, reference designs have never offered the savings promised, making the handsets very uncompetitive.

However, with Android One things may be a bit different as these manufacturers will have all agreed not to deviate from the Google software specification (through the MADA), which has never happened before. Unfortunately, undifferentiated handsets mean brutal competition and very low margins for those participating in the programme. Consequently, Edison expects that just as it is in developed markets where Android vendors compete brutally on hardware specification, the only winner will be Google. In developed markets the vendors make the best specified devices they can at the lowest price as this is the only way they can compete effectively. This means that users get a lot of smartphone for their money, enabling greater use of Google services. In effect Google has drained the Android handset industry of any hope that it has of decent profitability.

The exception is Samsung, which still makes good margins, but now that it has ceded control of the ecosystem to Google (see Samsung and Google – Gorilla war, 3 June 2014), it too is in the same boat as all the others. Edison does not see emerging markets being much different. Everyone who implements the reference design will be shipping undifferentiated Google ecosystem handsets at the lowest possible price. In this scenario, margins of 2-4% are likely in the best instance, leaving Google to capture all the value through its advertising business.

This combined with the increasing smartphone replacement of feature phones in emerging markets are the main drivers of the growth of the Google ecosystem over the next few years. Edison thinks that Android L will have some impact when it comes to getting handset makers off Gingerbread (2.3), but remains pretty cautious regarding the success of Android One. Consequently, Edison thinks that the Android market will remain fairly fragmented, with the bulk of the very low end using just AOSP and little else.

Exhibit 14: Forecasts for the Google ecosystem

Google Android units shipments and share
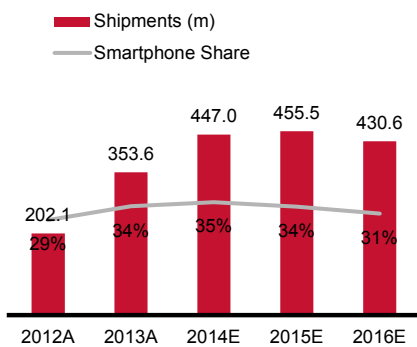
Google Android users and ecosystem share
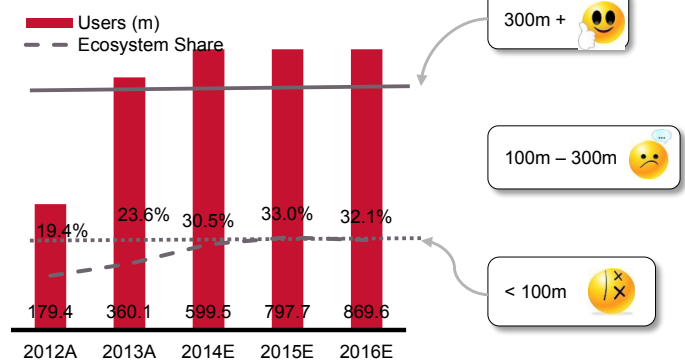
Google's revenues are dependent on users not devices. Hence it can grow medium term

Source: Edison Investment Research, Counterpoint Research

Microsoft

Microsoft's progress in the ecosystem has continued to be slow, but the upheaval that is being caused by the transformation is probably responsible for most of the sluggish performance. One thing is clear and that is that CEO Satya Nadella is firmly behind Microsoft's transformation from a lumbering software vendor into an ecosystem company. The announcement on 15 September 2014 that Microsoft would acquire Minecraft makes this abundantly clear. Outside of tax efficiency, the only reason for Microsoft to acquire Minecraft is the development of its ecosystem and this was an acquisition that Satya Nadella would have killed should he have wished to take Microsoft in another direction.

The destination is set. Microsoft will become an ecosystem company for both consumer and the enterprise and will aim to leverage its unique strengths in both these areas to put the two together in a seamless, fun and easy to use way. For a company like Microsoft, this is a colossal task and one that is going to take some time. Historically, Microsoft has been a collection of independent businesses that very rarely communicated with each other. The only common contact point between these businesses was Steve Ballmer (and Bill Gates before him) and as a result this thinking is indelibly etched on the culture of the company. This worked well in the PC era but has no hope of succeeding when trying to create a vibrant ecosystem.

To become an ecosystem company, all parts of the business now have to know about each other. Their products need to be in sync with one another and they have to work together to ensure that the digital life and digital work experiences are as good as they can be. Microsoft has a very good collection of assets for both digital life and digital work, but historically they appear to be randomly scattered throughout the company and are left to live or die on their own. To uproot all of this takes time, will power, courage and patience. This is why there have been significant personnel changes at the top of Microsoft and why progress continues to look sluggish. A good example of this is the handset business, which has rescheduled a lot of its launches in order to be in sync with product releases and updates from other parts of Microsoft. Unfortunately, the result of this has been fewer models launched and slower progress in terms of winning the critical mass that is badly needed. This is the main reason why market share in 2014 will remain more or less flat compared to 2013 at 3.5% (Exhibit 16).

Ecosystem development

On the ecosystem development front, 2014 has been a reasonable year so far. During 2013, the single biggest reason for a device being returned was poor application availability. 12 months ago a user could be pretty sure that they would not be able to find the latest and greatest iOS app on their Windows phone, but in the last nine months this has improved. There are still a number of glaring omissions, but in terms of how well Windows Phone can replicate the experience of the Apple App Store there has been improvement.

In order to get a better sense of the current status quo, Edison has compared the top apps in the Apple App Store and checked to see what the Windows Phone store had to offer. This is not a black and white comparison. This is because an app from another developer that has exactly the same function as one in the Apple App Store may end up being just as good as the original. Consequently, each app needs to be judged on how well it offers the same service or experience available on iOS. Edison has developed a four-tier system for comparing Windows Phone apps to those available on iOS:

1. A score of zero indicates that there is no equivalent app or service available on Windows Phone.
2. A score of 1 indicates that there is a similar app available.

3. A score 2 of indicates that there is an app available on Windows Phone where the functionality is almost exactly the same.

4. A score of 3 indicates that the same app from the same developer is available on Windows Phone.

Edison compared the top 10 paid, top 10 free and top 10 grossing apps in the UK Apple App Store to what is available in the Windows Phone store. Two apps were excluded as they are specific to iOS and hence will never appear on Windows Phone. This makes a total of 28 apps. Equivalents of apps that relate to specific services such as a dating network, social network or a network based game were scored at zero as Edison believes that users have no interest in clones or similar apps within this category. Either the service is available or it is not and hence the score is 3 or 0.

The results of the analysis indicate that while there have been significant improvements over the last 12 months, there still remains a very long way to go. Windows Phone scored well (70%) against the top free apps chart, which are apps with the highest volume of downloads, but against the top grossing chart and the paid chart it performed much worse, with scores of 37% and 30%. Windows phone has the same app or an equivalent for 57% of all iOS top apps, but when the quality of the overall experience is scored against iOS, Windows Phone scores only 45%.

Exhibit 15: Windows Phone store vs Apple App Store, 24 September 2014

Number of 0,1,2 or 3 scores for 28 apps. examined
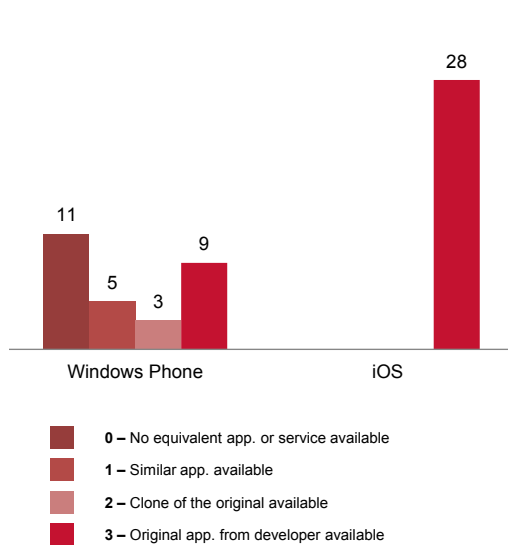
Coverage of iOS apps. on Windows Phone

0 – No equivalent app. or service available
1 – Similar app. available
2 – Clone of the original available
3 – Original app. from developer available

Windows score on Paid iOS
Windows score on Free iOS
Windows score Top Grossing iOS
iOS
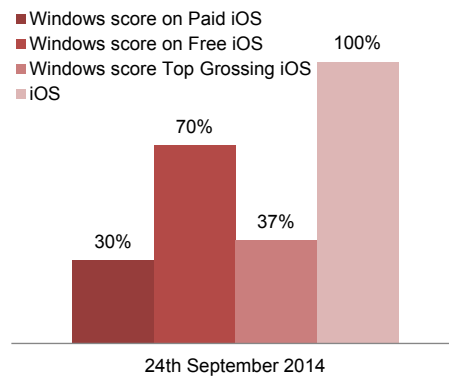
Windows Phone Store has an answer for 57% of iOS top apps.
Windows Phone scores 45% overall compared to all iOS top apps.

Source: Edison Investment Research, Microsoft, Apple

The other finding was that the newer the app tended to be, the less likely it was that the Windows store would have the original or something similar. Furthermore, the smaller the developer, the less likely it is to support Windows Phone. Only 32% of the 28 apps in the iOS charts are available on Windows Phone from the original developer, which clearly points to where work is needed. Microsoft needs to convince developers to port their apps to Windows Phone from launch and it needs to improve the support by developers of the platform overall.

In many ways this is a chicken and egg problem. With only 3.6% (Exhibit 16) share of the installed base of smartphones and tablets, there is much less reason to develop for the platform when considering the economic returns. At the same time, a lack of decent apps is a hindrance to the take-off of the ecosystem. This combined with the fact that the Windows ecosystem is still not

properly marketed to users (see Mobile software – iRobot, 6 March 2014, page 24) is likely to keep a lid on success in the short term. Edison continues to believe that if the message can be delivered in the right way and users begin to understand the merits of the ecosystem, then traction is still possible.

The Windows ecosystem still has a lot going for it. The deep offering in digital life, the ability to access the ecosystem from multiple devices, and dominance in the enterprise and PC markets give it a lot of ammunition. This brings one right back to the problem of getting all the separate parts of Microsoft to pull together. This combined with a total revamp of how Microsoft markets itself is required for the ecosystem to start gaining proper traction. Users of the ecosystem are reasonably happy with it, but there are so few of them. This is what Satya Nadella must address if he is to leave his mark on the history of the technology sector.

Exhibit 16: Forecasts for Windows ecosystem, 2012-16e

Windows Phone 8 units shipments and share
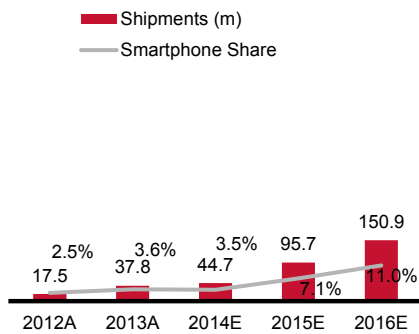
Windows Phone 8 Users and ecosystem share
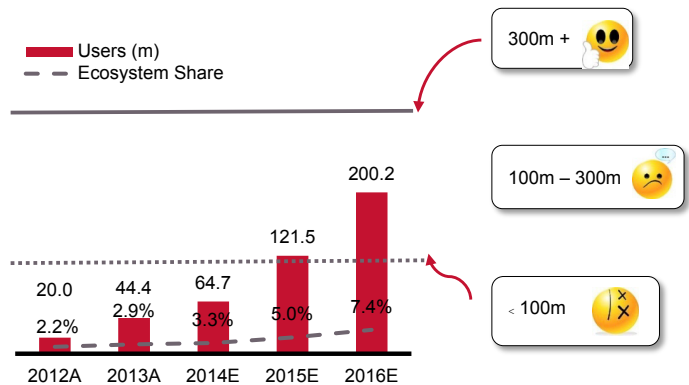
The leadership and the strategy is in place. Its time to execute as the window of opportunity is limited.

Source: Edison Investment Research, Counterpoint Research

Xiaomi

Xiaomi is a new entrant into the ecosystem race. In terms of device shipments it remains relatively small just behind Lenovo, LG and Huawei, but there is more to this company than just a handset maker. In Q214 it overtook Samsung to become the number one smartphone vendor in China and has ambitions to ship 60m units this year.

Edison has included Xiaomi in the list of ecosystem contenders because the company is showing every sign of understanding the importance of the ecosystem and of moving to address the opportunity. Edison thinks that it is the only handset maker in Asia outside of Sony that understands the importance of the ecosystem to its long-term future. Furthermore, its initial moves in this direction appear to have been extremely successful. Data from Flurry shows that Xiaomi devices consume 7% more data than iPhones in China. This usage is predominantly related to media consumption where Xiaomi devices rack up 67% more use than the average.

Exhibit 17: Xiaomi in digital life
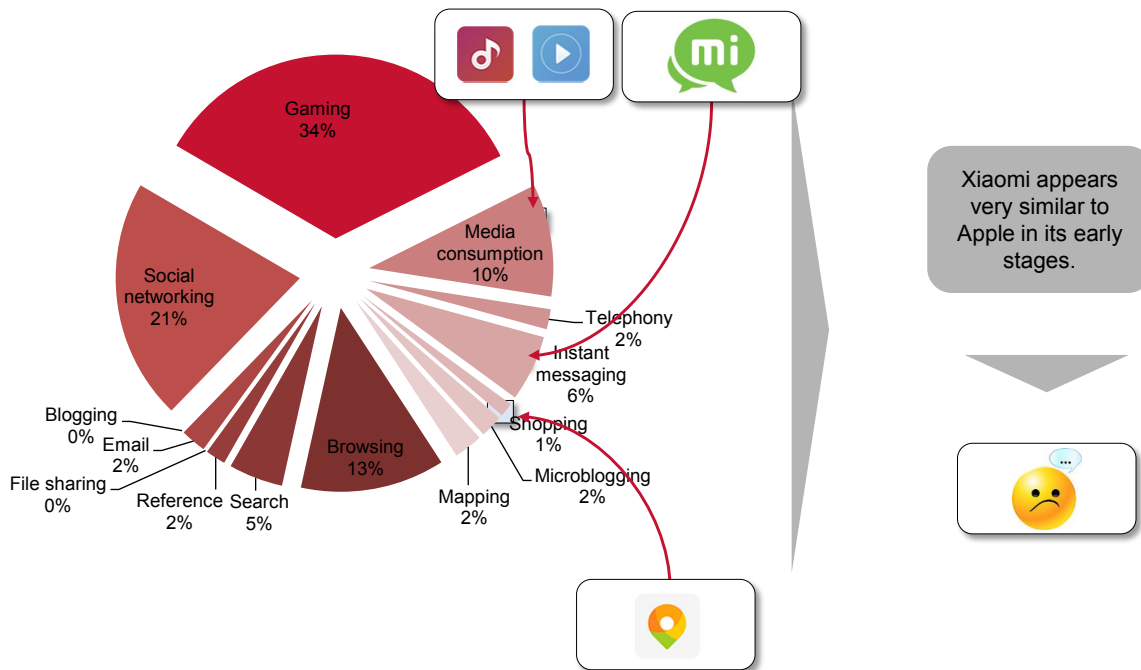
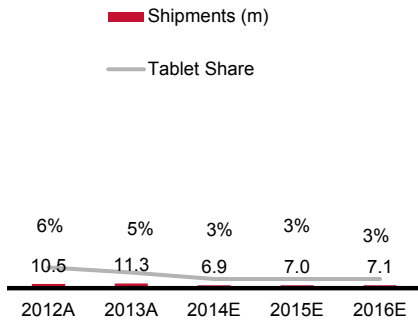Source: Edison Investment Research, Nielsen, Google, Pewinternet.org, comScore, NetMarketShare

Consequently, it is not surprising that Xiaomi has very strong coverage of the media consumption segment of digital life. However, outside of that segment it has very little coverage. Xiaomi does not ship the Google ecosystem and consequently it distributes apps through its own store, which is known as Xiaomi App Market. The company has claimed very aggressive download rates from Xiaomi App Market, but this has not been verified by independent sources.

For an ecosystem to be successful and long-lived it must see take-up and usage of its own exclusive services. An app store is important for distributing the apps and services of third parties as well as one's own, but it is the exclusive apps and services that make the difference. That is why Edison thinks that the very high usage that Xiaomi sees in media is important. This media consumption service is exclusive to Xiaomi and provides it with differentiation within the commoditised Android market.

Exhibit 18: Forecasts for Xiaomi

Xiaomi handset shipments and share
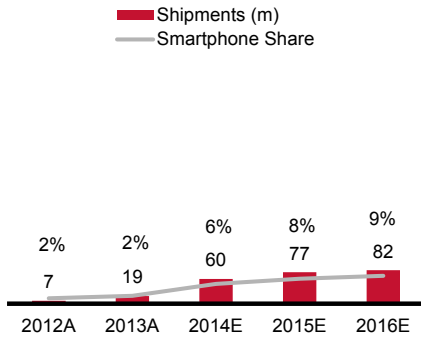
Xiaomi users and ecosystem share

300m +

100m – 300m

< 100m
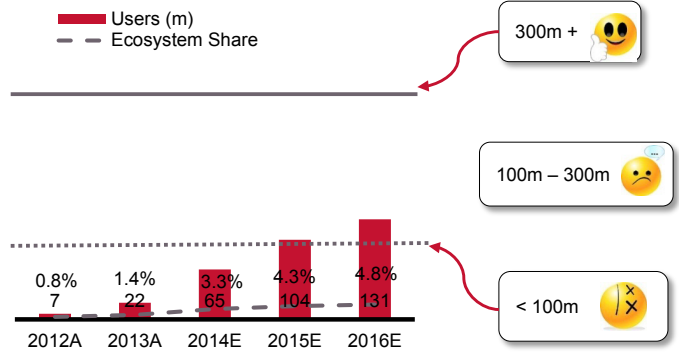
Xiaomi is a now a contender but now it must contend with the big players in China

Source: Edison Investment Research, Counterpoint Research

This is how Apple started with iOS prior to the launch of the app store and we think that Xiaomi intends to follow a similar route. This will require significant investment in other digital life services, but importantly Xiaomi is already doing well with its existing services and consequently it has a fair chance of being able to fill out the digital life pie and take its users with it. This is not going to be easy, and Xiaomi faces formidable competition in its home market from Baidu, Alibaba and Tencent, all of which have ecosystem ambitions of their own.

The Chinese market is huge and Edison forecasts that there will be 780 million smartphone users in China alone by 2016. This has potential to grow to over 900 million users by 2020, giving enough room for three large ecosystem to flourish. Unfortunately for Xiaomi, there are three very large and strong companies already vying for those slots. This means that Xiaomi will have to be nimble in its strategies and very innovative in terms of its services. The other three are already investing hundreds of millions in acquiring and developing their ecosystems, but have yet to really put something coherent together. This gives Xiaomi a chance, but there is a huge hill to climb.

Amazon

Amazon's strategy to develop its ecosystem continues to put the cart before the horse (see Mobile ecosystems – Command and control, 26 June 2014, page 24). It has a wide series of assets in hardware, software and services, but there does not appear to be the kind of cohesion or interaction between them that is required to result in a successful ecosystem. As a result, users are very happy to shop with Amazon, but in terms of extending that relationship into digital life, they would rather go elsewhere.

We think that the main problem is that Amazon has not really worked out what the ecosystem means to its long-term future. Consequently, it seems to be engaged in a random series of experiments and acquisitions, none of which seem to be related to any coherent strategy beyond selling content. The launch of its Fire Phone has been a disaster, with estimates of less than 50,000 units shipped to date. Its attempt at offering a mapping service has received pretty bad reviews and its recent acquisition of Twitch looks very unlikely to develop into a coherent game offering for its ecosystem users.

Exhibit 19: Amazon in digital life
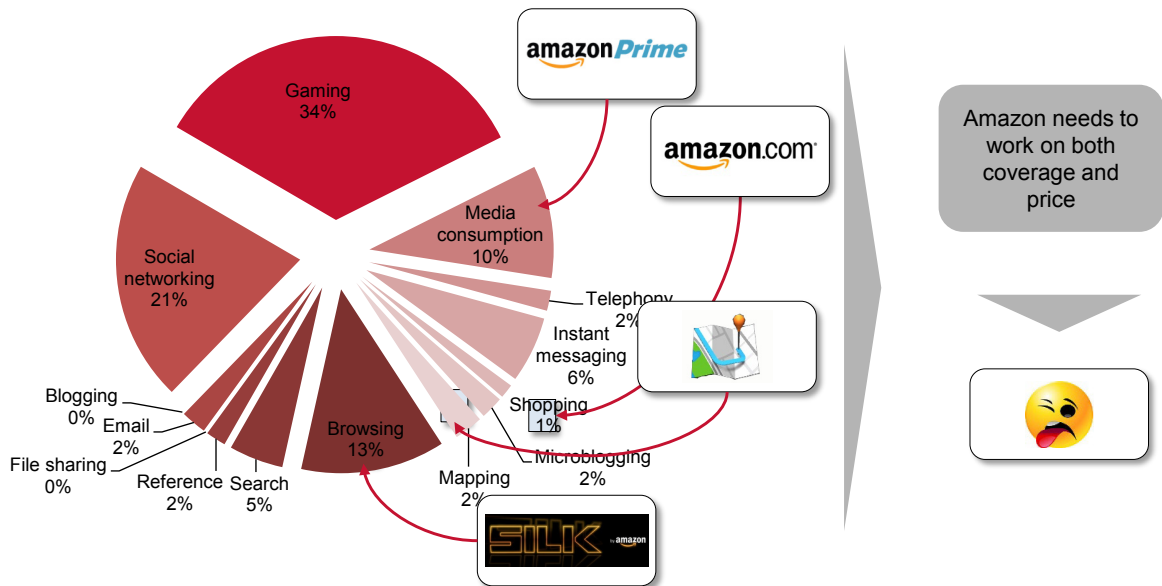
Source: Edison Investment Research, Nielsen, Google, Pewinternet.org, comScore, NetMarketShare

The biggest problem of all remains the price. In order to be a part of this ecosystem, the user really needs to be an Amazon Prime member. Amazon Prime started out as an all-you-can-eat shipping service, which then had media consumption bolted onto the side to make the $99 per year fee easier to swallow. An examination of both the Fire phone

and the relevant tablets make it very clear that the devices only really come to life when the user has a Prime subscription. This is why Edison thinks that Amazon offered a year of free Prime membership with the Fire phone at launch.

However, in offering the Fire phone, Amazon forgot that phone users spend very little of their time on smartphones shopping (Exhibits 3 and 4). Consequently, the service where the device will recognise an object and automatically buy it has very little relevance in the use case for the Fire phone, despite being a centrepiece of the device. Obviously it is hoped that this service will increase shopping usage on smartphones, but even if it quadruples it users will still spend six times more time social networking.

Exhibit 20: Forecasts for Amazon 2012-16e

Amazon units shipments and share

Amazon users and ecosystem share
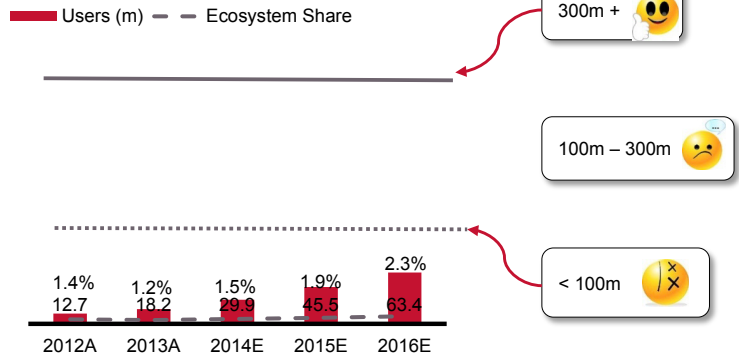
Free shipping needs to be separated from the ecosystem to increase its accessibility

Source: Edison Investment Research, Counterpoint Research

Amazon needs to do four things:

1. It needs to extend its services to cover more of the digital life pie.

2. It needs to put its services together to create a coherent suite of services that are uniquely "Amazon".

3. It needs to split Amazon Prime into two packages. One piece for the free shipping where the bulk of the subscription lies, and another for membership to the ecosystem and access to the services, of which media consumption needs to one of many. This will bring Amazon within reach of many more consumers and substantially increase the attractiveness if its offering.

4. It needs to integrate its services such that they work together to provide an overall experience. This is very far from happening today and while it continues to allow acquired companies like Twitch operate independently, there is no way that they will be able to contribute to a viable ecosystem. Amazon has a TV box and a game console but this will not be able to benefit from the acquisition of Twitch while it continues to operate in its bubble. This is why Edison believes that acquisitions in the ecosystem have to be integrated in order for there to be any real benefit to the acquired company.

While these four issues remain unaddressed, Edison thinks that Amazon prime numbers will remain very small in the context of the size needed for a viable ecosystem. There seems to be no end in sight to the disappointments that Amazon has to offer.

Yahoo!

Unless something changes, it looks like the incredible run of Yahoo! is coming to an end. Speculation regarding the value Yahoo!'s stake in Alibaba has been the main driver of the stock for the last two years. Now that the value of Alibaba is plain for all to see and now that one can invest in it directly, there is no need to use Yahoo! as a proxy. Anyone with a pocket calculator can work out what Yahoo!'s Asian investments are worth, leaving only the core business as an unknown quantity. This means that from here on in, the company's value will depend on the performance of the core business and for the last two years very little has happened. Marissa Mayer's grace period is now over and further failures are likely to be quickly reflected in the market valuation of the company.

Yahoo! has a great online presence but this remains almost entirely in the fixed world. In mobile, Yahoo! continues to have almost no presence and there is little sign of execution of its strategy to create a mobile ecosystem. Yahoo! has made many acquisitions to facilitate this but has completely failed to execute on these assets. As a result of these and the assets that it has in the fixed-line world, it continues to have an excellent position when looking at its digital life services (Exhibit 21). This is why it scores well on digital life but badly on the three laws of robotics (Exhibit 6b).

Exhibit 21: Yahoo! in digital life
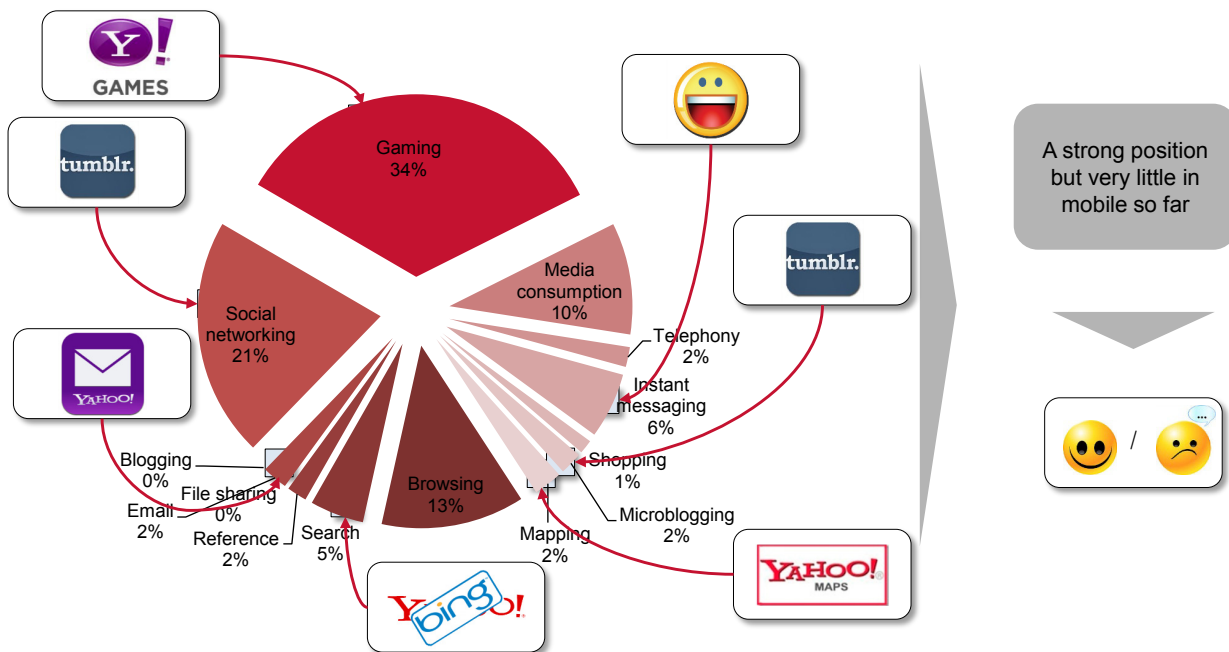
Source: Edison Investment Research, Nielsen, Google, Pewinternet.org, comScore, NetMarketShare

One bright spot has been Aviate. Yahoo! acquired Aviate, a home screen curation app, which offers a great opportunity to pull together its ecosystem in one place, but very little has been made of it so far. Now known as Yahoo! Aviate, the app presents the user with a range of options for content and services based on their recent activities, current location and context. For example when the app detects that the user is in a moving vehicle, a range of music and mapping options are presented. It provides news and weather apps in the morning and productivity options while at work. It is effectively a sophisticated launcher but could be the springboard for Yahoo! on the mobile device. For the moment, Aviate is completely agnostic but if Yahoo! wants to make the most of this functionality, it will have to be eventually migrated primarily to Yahoo! content and services. This is how Yahoo! could migrate its strong loyalty in fixed internet into mobile. However, results to date have not been encouraging, despite this being the first coherent move into mobile.

Putting all of the acquired services into mobile in a way that is easy and fun to use could see mobile usage and loyalty to Yahoo! properties increase. This would have a commensurate increase in revenues and profits, as this is where all the growth in online advertising is to be found. Unfortunately, Yahoo! has been very slow to execute any of this vision and, the longer it takes, the more Edison is concerned that execution is going to be the stumbling block that prevents any recovery at Yahoo! The shares have had a free run thanks to Alibaba, but that is now over. The core business needs to take over but there is very little sign of it doing that.

Sony

In its core market of consoles, Sony has won a big victory over Microsoft as the PS4 is comfortably outselling the Xbox One. Gaming is the most important slice of digital life (Exhibits. 3 and 4) and Sony's return to dominance of this slice in the console world represents the best opportunity that Sony has had for some time to become a proper ecosystem. Most ecosystems tend to start by offering media consumption and here Sony also has it covered, with its music and movie assets. However, there is still no real coherent ecosystem allowing users to live their digital lives on Sony devices, meaning that much more needs to be done.

Since the launch, PlayStation has systematically beaten Xbox One at every turn. On price, accessories, used game policies, independent game developers, performance and geographic restrictions Sony has Microsoft on the run. Sony has also soundly beaten Microsoft when it comes to the PR campaign and has forced Microsoft to dance to its tune. This has resulted in PlayStation 4 substantially outselling Xbox One by 10m units to 5m to date.

This is a great start, but the user experience on the Xbox One is vastly superior to the PlayStation 4, which feels crude and rushed at best. The Xbox user experience is fun and it is cool compared to PlayStation 4, which simply allows the user to play games and very little more. It is almost a relief to leave the user experience and fire up a game as Sony has provided the user with no reason whatsoever to discover and explore. These differences speak volumes about the mind-set and culture of the two companies. This is a major problem for Sony as the emphasis over time is going to move away from hardware and into the ecosystem and user experience. Microsoft has made horrible mistakes with the launch of the Xbox One, but it has learned its lesson and is now making real headway in developing the features and functions that are going to draw users and drive loyalty in the future.

This is where Sony must step up and make the most of the assets it has available. Its mobile handset business and moderately successful PS Vita need to be leveraged to make a seamless gaming experience from the console into the mobile world. This requires the console experience to be improved such that it is fun and easy to use. This needs to be extended to PS Vita and onto its Android devices in a way such that users can identify with these products as giving them the best user gaming experience available. If this can be achieved then Sony will then have a platform with which it can start to think about expanding its digital life offering (Exhibit 22).

Exhibit 22: Sony in digital life
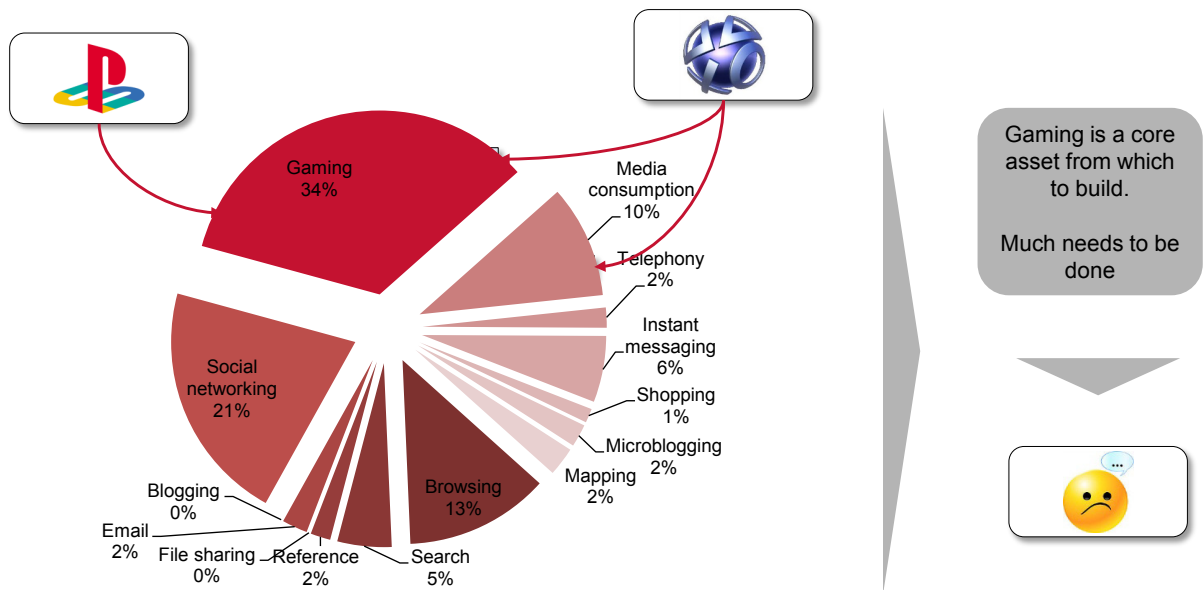
Gaming 34%

Media consumption 10%

Telephony 2%

Instant messaging 6%

Shopping 1%

Social networking 21%

Microblogging 2%

Mapping 2%

Blogging 0%

Browsing 13%

Email 2%

File sharing 0%

Reference 2%

Search 5%

Gaming is a core asset from which to build.

Much needs to be done

Source: Edison Investment Research, Nielsen, Google, Pewinternet.org, comScore, NetMarketShare

Sony's coverage is basic at 37% (Exhibit 22), but with the most important segment covered and a decent online network in existence, it has a platform from which it can build. Adding in the media assets will be reasonably straightforward, but the other pieces will be much more difficult. These pieces require Sony to create exclusive digital life services that are fun, useful and easy to use. Sony's record in this area over the last 10 years has been very poor and most doubters believe that it is here where Sony will fail.

We believe that Sony has the opportunity and, most importantly, that the management of Sony understand this problem and is doing its upmost to create a vibrant and valuable ecosystem. The big question is whether it can break with history and produce the software needed to make it great once again. For any company, this is a big ask.

Exhibit 23: Forecasts for Sony

Sony mobile device unit shipments and share
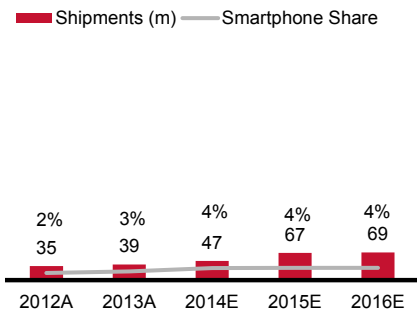
Sony users and ecosystem share
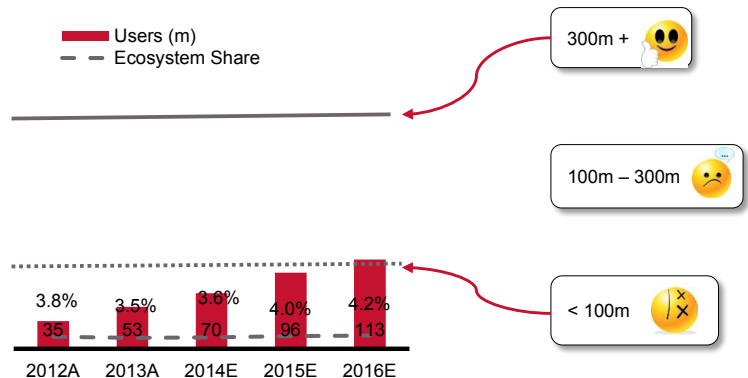
Sony is on target for a viable ecosystem but little else.

Source: Edison Investment Research, Counterpoint Research

Facebook and Twitter

Both Facebook and Twitter remain single services rather than ecosystems. This is because both of these companies are very good at providing one aspect of digital life but have virtually no presence to speak of anywhere else. In the case of Facebook it is social networking (21% of digital life, Exhibit 4) and for Twitter it is microblogging and messaging (2% and 6% of digital life respectively). However, both are utterly dominant in the spaces that they occupy, which has allowed them to generate significant revenues and to have a large user base.

Their revenues are driven by two main factors, which are likely to ensure that growth should remain healthy for a little while yet. Firstly, neither of these two companies yet fully monetise the mobile traffic that they generate. This gives them the opportunity for revenue growth as they develop their systems and their offerings to make the most of the traffic that they generate. Secondly, advertisers are continuing to expand their spending in mobile advertising. This is coming at the expense of print and also to some degree from the desktop and is expected to grow nicely for some time to come. When these two factors are put together it is clear that both have some space left to grow without having to address the other segments of digital life.

Eventually both Twitter and Facebook will need to address the other segments of the digital life pie in order to maintain their growth and the valuation of their shares. Neither have had much success to date. In order to make this work, when a service is added, it needs to become part of the overall offering. Simply buying a start-up and bolting it onto the side might allay fears in the short term, but unless it is integrated into the offering, the value will never be released. This is because the real value in the ecosystem is to be found in having all of the digital life services integrated, such that a complete profile of the user is built up. This is far more valuable when it comes to monetisation than each app only knowing about what the user does within its own domain (see Mobile ecosystems – Command and control, 26 June 2014). This is because a single profile for multiple apps will be far more valuable to advertisers as the targeting will be much more accurate and therefore more likely to result in a transaction. Until Facebook and Twitter are successful in moving outside of their respective segments, growth will eventually grind to a halt and the lofty valuations currently being paid for these companies will rapidly unwind.

Conclusion

As growth slows down in the smartphone and tablet markets, ecosystems will increasingly be forced to compete with each other to win additional users. This is why the quality of the ecosystem is going to become more and more important. Since the launch of this research product in 2013, it has been clear that both Google and Apple are the leaders, but both of them have significant weaknesses. This afforded challengers the opportunity to develop their ecosystems and compete effectively against these two. Until recently it appeared that both Apple and Google were not aware of their shortcomings or had no real idea how to address them.

The last six months has seen a change. The most recent updates to the ecosystems of Apple (via iOS8) and Google (via Android L and GMS) have shown the initial stages of moving to address those shortcomings. If these are successful, it will make it much harder for any ecosystem that is not protected (like China) to establish itself as a major force in the digital world. The transition of both Apple and Google is going to take time, but for the first time there is a time limit to how long the challengers have. Execution is now of paramount importance for all the contenders and will be the deciding factor between who succeeds and who fails. Against this backdrop, Microsoft emerges as having the best chance, as Sony, Amazon and Yahoo! all have huge hurdles to overcome.

EDISON

To entertain as well as inform

Disclaimer

The views and opinions expressed in this report represent the views and opinions of Edison Investment Research. They are not the views and opinions of any third-party past or present with whom the author of Edison Investment Research has been or is associated. Edison Investment Research is objective and independent. Edison Investment Research aims to entertain as well as inform and in this vein can be irreverent at times. This is the expressive style of the author and should not be construed in any other manner