Partnering for the future
Opportunities and challenges for mobile network operators
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The mobile operator market has always been a complex web of agreements, partnerships and rivalries. But disruptive change in the industry means these relationships are changing. From friends to enemies, partners to rivals, the space is evolving rapidly as new technology, products and service models change how business is done.

In the face of tech giants, the mobile operator industry faces significant challenges if it wants to continue to survive and thrive. Apple and Google - the duopoly underpinning the smartphone revolution - could overhaul the traditional operator-customer nexus and, arguably, relegate operators/carriers to nothing more than low-margin infrastructure providers.

Google has established a virtual network in the US, called Project Fi, which lets customers pay the tech giant for connectivity directly. Meanwhile, the Apple SIM lets people select their carrier/mobile network operator virtually at a whim, displacing the carrier from a position of control. Both scenarios reduce operators to second-class citizens.

At the same time, mobile operators are desperately struggling to drive revenues in the face of over-the-top (OTT) content providers that piggy-back on the networks and cannibalize their income streams.

To fight back, operators are looking for partners and building new relationships. A spate of merger activity across Europe has been, in part, a response to fears new tech giants are gaining greater control of the market. Larger operators mean more clout and less chance of being cut out of the best deals.

Operators have also started to look at blocking ads on their customers’ devices. Ad blocking, although blunt, is a chance to charge OTT providers. But as content providers find ways around, this may not be sustainable and partnerships may be the way forward.

Mobile operators are also looking to the future and the forthcoming battle over the Internet of Things. Embedded SIMs, remote provisioning and so-called ‘Soft SIM’ technology - which are likely to be at the heart of machine-to-machine systems - throw up vital questions around who owns what in the mobile kingdom and where the customer-provider relationship really lies.

Finally, and perhaps of greatest significance, the arrival of FireChat is of concern as operators grapple with a new era of connectivity shaped by software.
No two companies dominate the mobile space like Google and Apple and now both are inserting themselves between operators and consumers in ways not seen previously. By displacing mobile operators these firms pose a threat. However, operators cannot afford not to work with these two giants.
Apple: Friend or Foe?

Recent moves by Apple seem to pit it against mobile operators. But does the company really want a fight?

Operators realise that customers have a stronger tie to their handset than the carrier and Apple more than anyone else knows its customers are fiercely loyal to the brand.

Around 42 per cent of mobile browsing happens on Apple's Safari browsers, according to NetMarketShare. In addition, its more affluent customers are highly attractive to advertisers. Operators need Apple phones to attract customers to their networks.

But Apple needs carriers to sell its high end smartphones at a discount as part of bundles with data plans. It cannot afford to alienate too many operators. The relationship is clearly two-way, but is the balance of power shifting in favour of Apple?
Apple SIM

Apple SIM, which first appeared in iPads in 2014, means users do not require a physical SIM card from their mobile provider. Instead they can sign up directly for services from the device, switching between plans, carriers and countries at will.

Ian Fogg, Senior Director, Mobile & Telecoms at IHS, believes the Apple SIM could “fundamentally change the relationship between mobile operators and users”, by enabling Apple to insert itself between the operator and the customer.

It makes it easier for users to switch carriers and tariffs, therefore boosting competition and and increasing pressure on operator revenues and profitability. This is a particular consideration for carriers in the US, where most phones are still locked into a specific network.

“The software-managed Apple SIM model moves Apple into a mediation position because for operators to be present on the Apple SIM, operators must negotiate terms direct with Apple, rather than offering their own carrier iPad SIM direct to any end user,” he explained.

Apple SIM “depicts the leverage and unprecedented power it has over carriers” said Neil Shah, a mobile industry analyst with Counterpoint Research. Unwilling to miss out on the revenue stream generated by Apple customers, mobile operators are handing over control.

So far the Apple SIM has been limited to the iPad, but it’s only a matter of time before it is rolled out to iPhones. This would represent a far greater risk to mobile operators who have been able to base business models and revenue flows on signing up customers to big data plans for 24 months. Apple has to shift tens of millions of new iPhones each year and offering customers the flexibility of the Apple SIM would certainly help.

Of course there is a difference between a pure data SIM as per the iPad’s Apple SIM and the more complex handset SIM, particularly in how it’s managed across networks and so on. Nevertheless, the Apple SIM is seen as a major step towards embedded SIMs in smartphones¹.

Moreover, the premise that Apple requires operators to sell its iPhones is being eroded. Apple went over the heads of mobile operators in September 2015, when it announced that it would finance iPhone sales directly to customers in the US, without the requirement to be tied to a particular carrier.

If Apple can provide flexible access to operators’ networks via its Apple SIM, and offer devices on finance, where does it leave the carriers?

Google is looking at another way to loosen the operator-customer relationship; by creating its own virtual network.

Project Fi is so far only a pilot but it suggests Google has long-term plans to become a mobile virtual network operator (MVNO). Created in partnership with Sprint and T-Mobile, this means customers buy data packages directly from Google. It scans cellular and WiFi networks to find the best connection available, meaning fewer dropped calls and bad reception. Fi also offers customers better control over their data by giving rebates against unused allowance.

Does it matter whether T-Mobile and Sprint sells direct to consumers or to Google? The worry is that the carriers simply become infrastructure providers, with limited possibility to increase revenues or monetize content.

Apple could also create its own MVNO. The company filed a patent for an MVNO offering in 2006 - before the iPhone was launched - and extended the patent in 2011.

If it were to do so, it could expand this beyond Google’s two-network model to include all the big carriers.

Whether it’s Google’s MVNO approach or the new flexible SIM technology being pursued by Apple, or a combination of both, it would appear that these tech giants are calling the tune, while the operators play second fiddle.

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**What is an MVNO?**

From Techopedia: “A Mobile virtual network operator (MVNO) is a mobile operator that does not own spectrum or have its own network infrastructure. An MVNO has business arrangements with traditional mobile operators to buy network time, which it then sells to its own customers.

MVNOs work independently of mobile network operators (MNOs) and can set their own pricing structure subject to the rates they’ve agreed to pay MNOs.”

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**Nextgen CLEARING**
FireChat -
the end
for telcos?

A new risk has also appeared on the horizon which threatens to undermine operators’ status even as infrastructure providers: FireChat.

Described as a ‘daisy chain’ of smartphones, this radical new messaging app doesn’t need a network signal or internet connection. Instead, it relies on peer-to-peer mesh networking to connect smartphones directly to each other.

Each device - and it doesn’t have to be just phones - becomes a ‘node’ in the network communicating with the next device and so on to relay encrypted messages and photos. It relies on Bluetooth, WiFi and Apple’s Multipeer Connectivity Framework.

Open Garden, the startup behind the app, now plans to enable voice calls to be carried across its network - critically without the need for any 2/3/4/5G infrastructure required.

Creator Micha Benoliel told Wired: “Our vision has always been to create a network out of smartphones. Once you have a network with no capital expenditure, you have great value -- we become a carrier, a mobile operator but with no infrastructure. You can offer wholesale access to that network at very low cost to businesses. You can sell it to internet-of-things manufacturers.

You can sell access to other app developers who want additional connectivity. We become a big telco, a full mobile operator, but 100 per cent built on software.”

This technology could prove of value in emerging markets where smartphones are appearing in greater numbers but coverage is poor and people are not paying for data as much as in developed nations.

FireChat is still new and not perfect - with 5% of phones in a city all hooked up it can still only guarantee message delivery to anyone on the network within 20 minutes. Further afield it could take longer for the nodes to deliver the messages.

Nevertheless, the technology poses fundamental questions for the role of mobile operators. If devices can communicate directly, where does it leave the carriers?

"The challenge for the operators is how fast they can shift from the old business model of owning everything to a new era of partnering/sharing the business with whomever has a value to the consumer." - (A mobile network operator)
Evolution in SIM technology - as previously touched on with the Apple SIM - will pose unique new challenges for operators. Again this could disrupt the relationship between customers and the mobile operators who provide connectivity.

The GSMA - the mobile industry association - is currently working on a single industry standard that will work across the whole industry, in particular so that it works in the machine-to-machine (M2M) space as well as in the mainstream consumer market.

M2M cellular connectivity is vital for enabling the Internet of Things, which will see billions of new connected devices in operation globally over the coming years. Key areas will include the healthcare and automotive sectors, as well as so-called Smart City applications.

If Remote Provisioning and/or Embedded SIMs move into the mainstream handset market, it could have a significant effect on the operator market. It could further weaken the bond between customers and carriers, and make agreements with OTT providers much more complex.

Remote provisioning will initially factor primarily in devices used with prepaid accounts that are not locked to a single operator, or SIM-only deals where the consumer has an unlocked device which has been purchased separately to the SIM.

Three Types of SIM Approach

**Traditional SIM card approach**
A piece of hardware that can be removed from the device. It stores an operator defined profile programmed during manufacture.

**Embedded SIM**
The SIM is physically integrated into the device. This is seen as vital for the machine-to-machine market.

**Remote Provisioning**
The ability to change a SIM profile remotely - whether it is a removable SIM or embedded.
What about a Soft SIM?

One of the alternatives being talked about is Soft SIM technology. However, there are strong doubts about Soft SIM technology at present as the absence of the secure hardware element could make it subject to “continual attack” by hackers. The GSMA has been keen to stress that its work on specifications around Embedded SIMs and Remote Provisioning has nothing to do with pure Soft SIM technology.

According to the GSMA, there are three key areas where operators could see an impact:

- **Cost**
  
  There would be a “clearer separation of device and service purchase”, which may result in an increased proportion of handsets being sold through the open market, rather than through carrier packages.

  There would be less requirement on operators to separately purchase and distribute SIM cards, potentially lowering retail and distribution costs.

- **Customer Churn**
  
  It will become much easier to switch providers, while customers could select an operator package completely separately from the purchase of the device. This would result in more focus on price competition as the main differentiator between operators.

  “Coverage, alone, may not be a differentiating factor as a consumer could keep multiple operator packages for use in different locations within a country (e.g. a cheaper package for use when network coverage is available and a secondary package from an operator with wider geographic coverage for use when needed),” notes the GSMA.

- **Roaming**
  
  Remote Provisioning would enable consumers to purchase prepaid services directly from a local operator when travelling internationally.
What it means

New SIM technology makes it cheaper for consumers upfront, easier to switch and more convenient to select the best roaming package. It won’t matter to the consumer who provides the coverage; indeed they may not even know who does.

With the Apple SIM indicating that Remote Provisioning could be rolled out in the mainstream handset market before long, operators need to pay attention.

Operators will find they are less likely to be solely responsible for supplying all of a customer’s data and calls on a fixed-term contract, as the customer will be able to switch between mobile operators at will.

However it may be pertinent to ask if they would choose to do this. It may still be far easier and more convenient for customers to sign up to a 24-month data and calls plan with a single operator if the carrier is able to offer the right devices at a discount. In the case of Apple, it would seem likely that operators will compete to be part of the embedded SIM offering.

M2M/The Internet of Things will herald a different world for carriers and these will require different roaming pricing models and clearing.

McKinsey’s report on the subject notes that new pricing schemes are in the offing, describing how “new players may further increase margin pressure by including refunds of unused, prepaid minutes in their pricing models”.

Meanwhile, the technology could lead to more transparently priced global roaming services that will allow users to choose a local network with a few clicks on the device. “Current global roaming offers based on reprogrammable SIMs are priced near the upper end of the market, but providers in emerging markets may soon offer similar services and more competitive global tariff schemes,” notes McKinsey authors Markus Meukel, Markus Schwarz, and Matthias Winter.

Putting the potentially 50 billion connected devices of the IoT and the mesh concept of FireChat together creates a scenario in which operators could no longer be needed at all.
M2M - the IoT Opportunity

Although Remote Provisioning will disrupt carriers' relationships with consumers in the handset space, it presents operators with a fabulous opportunity in the M2M market.

The GSMA is working on specifications for the M2M market that it says will increase opportunities for operators.

In the M2M space, being able to embed SIMs and carry out Remote Provisioning will be essential to consistency, reliability and flexibility for consumers as in a great many cases it's simply not possible to remove the SIM.

Cellular connectivity in M2M will be essential so machines can talk to each other. For example, in healthcare, a connected device such as a sensor will capture an event (such as heart rate) and send the information to another device, eg a hospital database.

As the organisation notes, by 2020 handsets will constitute only 72% of cellular connections, down from a current level of 88.4%. Growth will come from connected M2M devices, estimated to be 14.7 billion by 2020.
At the same time as new technology and models threaten the traditional operator-customer relationship, the challenge of over-the-top (OTT) services remains. OTT services are squeezing margins within the core revenue areas of SMS and calls. But it could be very different with data.

Most operators rightly wonder why the likes of Google, Apple and Facebook should get a free ride while their companies have invested heavily in building up the 4G LTE networks.
Challenges

Revenue loss, particularly in the messaging space is keenly felt. Mobilesquared\(^5\) found 80% of MNOs said this is their most pressing concern, where one in three operators have seen up to a 10% decline in revenue.

In the US alone, operators will have spent $90 billion to build out 4G networks by 2017, only for the likes of WhatsApp, iMessage, Skype and others to essentially get a free ride over the top. Operators will lose $3 billion in mobile messaging revenues between 2012 and 2017 as consumers are attracted to use over-the-top messaging services, according to research firm Strategy Analytics\(^6\).

\(^{5}\) http://www.mobilesquared.co.uk/media/56827/OTT-White-Paper-2014.pdf
But it’s not an easy ride for OTT providers either. All OTT messaging apps share a common problem - how to monetize the service. They get a free ride but at present it’s harder to get revenues - except where advertising is in play. This is where mobile operators can help.

Analysts at Juniper Research say that despite a threefold increase in traffic for OTT offerings by 2019, mobile messaging apps will need to find new ways to survive and monetize their service. One way to do this will be through partnering with mobile operators.

Just as in the case of Apple and Google, OTT providers and mobile operators can be said to be ‘frenemies’ who need each other just as much as they need to seek out customers and ways to monetize services.

Nick Lane, Chief Analyst at mobilesquared, says: “Mobile operators are under increasing pressure to ensure they too can maximise the OTT opportunity as best they can. Blocking or ignoring the OTT challenge is a dangerous and short-term strategy that will only alienate customers. The solution is to either evolve and innovate existing voice and messaging services, or to partner with OTT service providers.”

A report from mobilesquared argued that it is “incumbent on the mobile operators to reinvent themselves, and reinvigorate the communications marketplace by grappling communications control back from the start-ups and upstarts”. It added: “After all, users pay the bulk of their communication fees to their mobile operators.”

The opportunity is there for the taking. Mobilesquared’s data indicates the global mobile operator opportunity for OTT communication will rise tenfold in just five years - rising to $42.9 billion in 2018 from $4.2 billion in 2014.

And it shows 80% of mobile operators believe they can generate revenue from OTT communication services. One in five (22%) said this would be additional revenue on top of their existing income. Some 56% have already reported an increase in billable data usage from OTT activity. Partnering with a specific OTT provider to charge for data, or terminating IP traffic onto a mobile network are the most popular monetization models seen.

So far, initiatives like Joyn and RCS are not delivering enough for operators, who prefer the simplicity and nimbleness of WhatsApp.

From the report: “Increased data usage is, perhaps obviously, the key driver for mobile operators when it comes to OTT services, and subsequently having an increase on messaging and voice.”

Moreover, operators actually possess a number of advantages in this space. They can pre-load preferred partner apps on the devices they sell, offer technical support and network connectivity preferences, and use their infrastructure and scale to provide services to both in-network and out-of-network users.”
Net Neutrality - the trouble with content monetization

A new plan from T-Mobile USA allows unlimited streaming of some video services - regardless of the customer's data plan limits - from select providers. Called Binge On, the service enables free streaming as long as the videos meet certain technical requirements. It can be turned off by users.

The move raises a number of questions around the USA's Net Neutrality legislation, adopted in February 2015, which is meant to prevent one content provider being favoured over another.

YouTube (owned by Google parent Alphabet) has accused this plan of effectively throttling its video traffic. But the FCC has praised it.

In Europe, the European Parliament voted against Net Neutrality, with only Slovenia and the Netherlands formally applying the principle.

From a customer perspective, operators need to beware that neutrality is there for a reason. They risk alienating consumers if, for example, they pre-load one search engine browser app and make it hard to find that of a rival.

Net Neutrality raises important questions about partnering with particular OTT providers and not others. The success or failure of T-Mobile’s initiative will provide some clues.

Rather than the threat they once posed, OTT providers are now essential for mobile operators as they seek to deliver a better customer experience at lower cost. OTT providers are beginning to deliver an exciting new revenue stream for operators.

Of course it’s worth remembering that Apple, through services like iMessage and Safari, and Google, through its search engine and Gmail, are among the most important OTT providers.

Indeed, not all OTT providers are the same.
While OTT messaging apps may struggle to monetize, it’s different for web browsers and many other services. Operators are desperate to get a slice of the advertising revenues that flow through their networks.

Blocking technology like that of Shine is being rolled out by several of the big operators. Some, according to a report from the Financial Times\(^\text{10}\), are even looking at specifically targeting Google in order to force it to share some of its revenues, which amount to about $60 billion from its multiple advertising channels.

But ad blocking manoeuvres may not be the most fruitful for operators. Blocking data from one source runs into net neutrality problems, and therefore also risks alienating customers. Just as in the messaging space, it may be better to strike partnership agreements.
Conclusions
• Apple and Google are inserting themselves between operators and consumers, threatening relationships

• But operators will continue to need these tech giants as they dominate smartphone preferences among consumers

• New SIM technology presents operators with significant challenges around ownership of data, consumer loyalty and pricing models

• But new SIM technology creates a chance for operators to drive new revenues from the M2M market and Internet of Things

• ‘Mesh’ technology seen in FireChat could enable IoT devices to distribute connectivity and interface directly, with potentially billions of ‘nodes’ in constant communication, generating an infrastructure-free network for calls and data.

• OTT providers continue to eat into call and SMS revenue

• But OTT providers present operators with a new income stream through higher consumer data usage, as long as partnerships are pursued

In this environment, with the assorted challenges and opportunities, it is more important than ever for operators to take an intelligent and forward-looking approach to partnerships. The mobile industry is a web of partnerships and different companies working together and against each other at the same time. Whether it’s the rise of tech giants, the ongoing trouble with OTT or the looming battle over the Internet of Things, businesses will need partners to ride it out.

Finally, FireChat poses a unique challenge to the way communications are delivered. Telecoms industry players will have to act fast if they want to retain their position in what is still a $1 trillion industry.
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