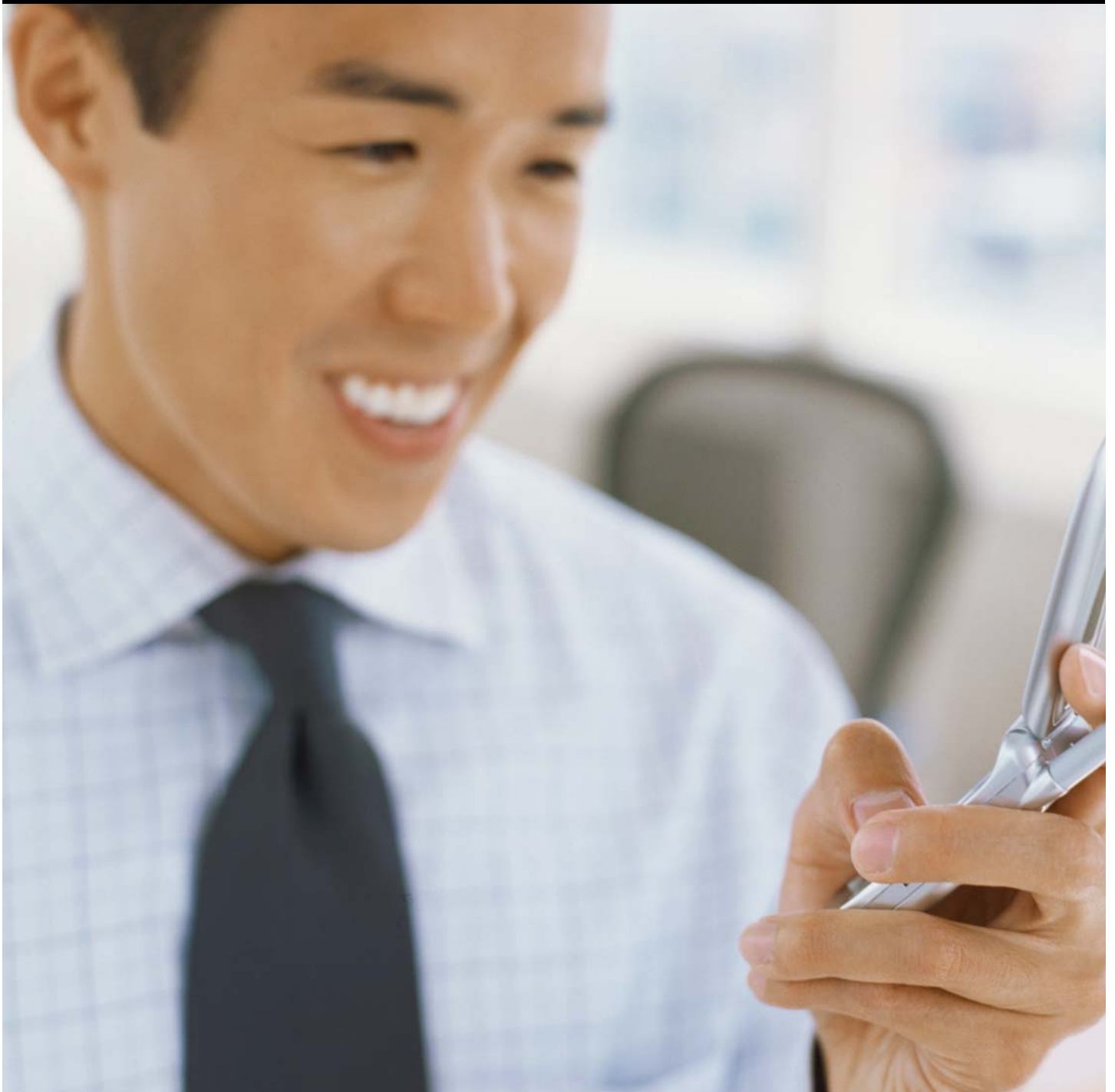




Where next for the mobile internet? Understanding the operator opportunity

A white paper for mobile operators



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Executive summary

The operator challenge

- The economic success of the PC-based internet, anchored in an open ecosystem, has so far failed to be replicated in the relatively closed mobile environment.
- The challenge for operators is deciding whether to open up to the mobile internet in the same way, and how to do so in a way that ensures the level of user experience is maintained and customer value increased.

This paper compares the PC-based internet ecosystem to the mobile internet environment, identifies current gaps and proposes alternatives on how best to address them.

An ecosystem that works

- The PC-based internet ecosystem is an independent system based on open access, open standards, open choice and open economics; it is defined by a reliable user experience, a wide choice of content, user familiarity and the demand that results from those positive attributes.

Filling gaps in the mobile ecosystem

- While the technology to deliver a good user experience to mobile devices is readily available, in practice most sites don't work on mobile phones. .mobi provides a set of requirements and best practices – based on existing, open standards – that ensure a good mobile internet experience.
- For new content to flourish, publishers need low cost publishing tools and internet access. In the current fragmented mobile internet, the costs of marketing directly to consumers cannot be justified and mobile commerce (“m-commerce”) sites lose up to 50% of their revenue to third-party handling fees. Having all operators pursue an open internet strategy enables cost-effective marketing and allows m-commerce sites to use internet payment platforms that charge only 2-3%. This will motivate content providers to innovate in the mobile sphere.
- Search engines don't always inform the user whether a site will work on a mobile device – an uncertainty which discourages consumers from experimenting with the mobile internet. .mobi enables mobile search engines to prioritise .mobi sites, allowing for a pure “made for mobile” internet experience.



- Although consumers understand that the internet is a fundamental and valuable tool for business and leisure, this is not the case with the mobile internet. .mobi and its certification mark represent “the internet that works on a mobile device.” The .mobi mark will be used by the mobile industry value chain to signify that the system is widely available and easy to use; it will become an integral part of everyday internet use.

Assessing the operator opportunity

- The mobile internet can thrive if common standards are pursued for the sake of interoperability. With the pursuit of an open system, a level playing field is established and companies of all sizes are motivated to innovate.
- In this environment, there is a major opportunity for operators to increase data usage among the two billion – and growing – mobile users worldwide.

Moving forward together

- No operator individually needs .mobi. But collectively, .mobi is vital to the long-term health of the industry. The .mobi domain provides the bond which brings together key industry players such as publishers, search engines, handset manufacturers and operators to deliver a reliable and consistent user experience. That, in turn, will ensure the widespread adoption and growth of the mobile internet.

The operator challenge

The PC-based internet is an open system where infrastructure providers, content providers and consumers all have equal and open access to one another. As a result – through trial and error – the world of the internet is finding a balance where everyone who wants to make money can make money. Revenues across a range of areas – access, e-commerce, internet advertising – continue to rise year after year.

By contrast, the mobile internet is a relatively closed system for most users. Because of the difficulties in delivering a consistently good user experience, operators have generally promoted a portal model that effectively retains control of consumer access to content and – in turn – limits content providers' access to consumers. As a result, only a small number of consumers have bought into the existing mobile internet experience¹. The widely predicted take up of the mobile internet, in which billions of dollars have been invested since 2000 when operators spent US\$32 billion in the UK and US\$45 billion in Germany on 3G licences alone, has not happened.

For operators this is a dilemma.

If they open up access for consumers to a wide variety of content providers, operators fear that consumers may turn away if the user experience is not optimal. Worse, they fear they will simply become providers of a "dumb pipe".

On the other hand, operators suspect that if they do not open up the channel between consumers and content providers, they may be preventing the very growth of mobile data services that their business plans are relying on.

For the mobile industry, more is at stake than with the PC-based internet. Operators have existing customers and revenues to protect, and they already operate in a highly competitive environment. There are many good reasons to believe that because of the size and usability limitations of a small device like a mobile phone that the mobile internet will always remain small, both in economics and usage.

For these reasons, the question for operators is not simply whether or not to open up fully to the mobile internet. The question is:

How do operators open the mobile internet in a way which allows them to continue offering the good user experience delivered by portals while simultaneously creating an opportunity for business and industry growth?

The answer can be found by exploring the market ecosystem and understanding how complementary factors combine to create the right conditions for growth. Compared to the PC-based internet, certain elements are clearly missing from the mobile internet to allow it to become a thriving ecosystem. By identifying these gaps and showing how they can be addressed, specific opportunities can be recognised for individual operators.



¹ Estimates vary. Forrester Research: *The State of the North American Mobile Web* (April 2006) found only 4% of North American households report using the mobile Web today. Ipsos Insight: *The Face of the Web 2005* (April 2006) found globally, 28% of mobile phone owners have browsed the internet on a wireless handset.

An ecosystem that works

The PC-based internet has evolved through a process of trial and error. While some aspects work more efficiently than others, these inefficient aspects will undoubtedly be improved upon over time. In the interim, the overall market continues to thrive. The key to understanding the ecosystem is to look at its constituent parts as well as the relationships between them to see how different players are motivated to innovate and improve.

The components

Technology and infrastructure first enabled content providers to deliver – and users to enjoy – a good experience. Key elements included a stable but limited choice of browsers for navigation, universal programming languages like HTML, well known and pervasive computer operating systems, high RAM and high capacity hard drives, reliable high-speed internet access, security software, payment platforms and easy-to-use hosting.

Making use of the available technology, content providers have been able to develop content and applications wherever they see a customer need, or a potential business opportunity. This has meant the growth of:

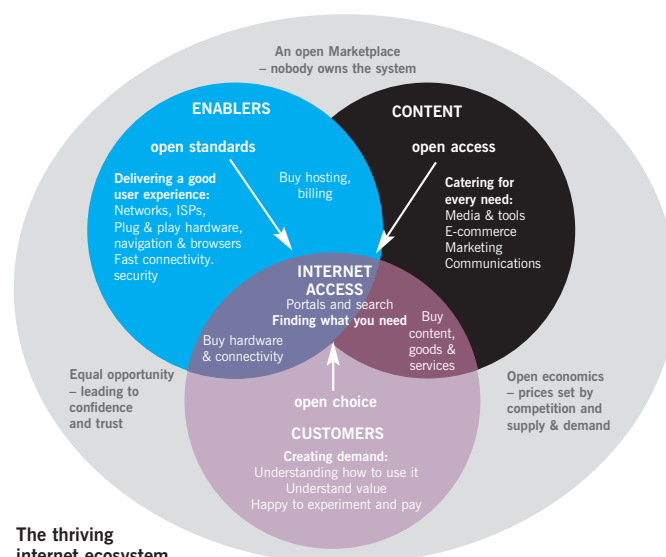
- Gateways such as portals, directories and search engines – all of which have been crucial in adding to the good user experience.
- Nearly 47 million active websites worldwide², incorporating consumer and business goods, services and applications and both profit and non-profit oriented content.
- A thriving online advertising and direct marketing market which was valued at \$3.9 billion for the first quarter of 2006³.
- Communications like email and internet telephony (VoIP).

Customers, whether business or consumer, have easily understood what the internet is, how to use it, and why it is of value to them. The resulting demand has enabled the market to flourish while the breadth and sophistication of content, and the technology behind it, has continually developed.

The relationships

The evolution of the internet – rooted initially in government and academia, and ultimately given a jump start by entrepreneurs and speculators alike – has given it a uniquely open character. This is because:

- No single entity owned the key technology patents, licenses or infrastructure; it has been built on open standards that allow the participants to improve collectively how it works.



The thriving internet ecosystem

- Correspondingly no one “owns” the Internet, despite some well established content and applications companies such as Microsoft and Google, no one company can single-handedly decide the course. Hence access is completely open for any kind of publisher and developer.
- Customers enjoy freedom of choice.

As a result, the internet ecosystem has an open economy where competition, supply and customer demand define the cost of everything, and no single party has overall control. Where revenue is a priority, organisations and businesses are free to persuade customers to subscribe.

The effect

The overall outcome is one of a chaotic yet democratic, and opportunistic environment. As such, the majority of people continue to use and rely on the internet because it is independent of any dominant business or government concern.

Equally important, consumers – having seen that an open system works – are now more aware of the limitations of “closed” systems and are less tolerant of organisations that try to control too much of any given market.

Of course it’s not perfect. Its openness leads to negative issues such as spam, viruses and difficulty in controlling access to certain types of content; its advantages are also open to the criminal community.

We shall use this analysis as a framework for studying the mobile internet ecosystem.

² Netcraft, August 2006

³ PwC/IAB Internet Advertising Revenue Report (www.iab.net), May 2006

Finding the gaps in the mobile ecosystem

The user experience

As with the PC-based internet, most of the technology and infrastructure requirements to deliver a good mobile internet experience are already in place and are widely available:

- High speed connectivity over 3G networks are available on 112 networks in 49 countries worldwide⁴.
- Penetration of data enabled phones with high resolution screens is estimated at 53% worldwide, rising to 83% in Japan⁵.
- Positive consumer experience of operators' portal sites.

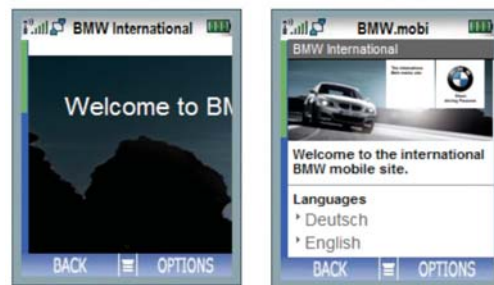
In theory users should already be able to get a good user experience. In practice, however, this isn't always the case:

- Phone features making it easy to access sites directly are often buried in the phone's menu structure⁶.
- It is often difficult to remember the format of mobile URLs as well known sites use different formats for identifying their mobile content; examples include: bbc.co.uk/mobile, guardian.co.uk/pda, or wap.nytimes.com.
- Lengthy URLs are difficult to enter into a phone browser, especially for phones with a limited keypad.
- If the well known PC-based address is used, there is user uncertainty as to whether a particular site is mobile optimised or not.

The bottom line is still that most sites today are simply not configured for viewing on a mobile device. Research from Hostway has found that 73% of people hate using the internet on the move. According to the survey, despite being able to access many internet services from their telephones and PDAs, just under three quarters of people are not taking advantage of this. Among the reasons for not using mobile internet were being frustrated by slow-loading pages (38%), problems with navigating websites from a phone or PDA (27%) and some websites being completely unavailable on mobile phones (25%)⁷.

A possible way of avoiding this is for operators to limit consumer experience to their portals. Phones are provisioned to make them easy to find, URLs are not required and everything is guaranteed to be purpose-built for mobile. Although that makes sense to ensure a good experience, it's not what most consumers want because it often means a limited choice of content.

Security issues – real or perceived – are also a prime concern with the mobile internet. However, this remains the case with the PC-based internet and has not stopped its ongoing success. Through continually improving security technology and the adoption of secure encryption protocols, this issue is becoming less of a concern.



How a normal web site (left) and .mobi web site (right) compare on a mobile screen

The way forward?

So what changes are required to help ensure that users get a good experience, regardless of the content being viewed?

There are two possible approaches:

1. Make the existing world of internet content work on a mobile device, or
2. Recognise that mobile is different, both in terms of the size of screen available and users' expectations of content and context – and create a set of content specifically tailored to work on a mobile device.

⁴Global Mobile Suppliers Association (GSA), May 2006

⁵AT Kearney/University of Cambridge, Mobinet 2005: Raising the Stakes, October 2005

⁶Forrester Research: The State of the North American Mobile Web, April 2006

⁷Hostway: Accessing the Internet on the Move, August 2006

This second approach is the one now being advocated by a group of leading mobile and internet players, supported by all the relevant bodies of both industries. Called .mobi, it's a domain that signifies "this site is designed for use on a mobile device." But unlike any other internet domain, it is also a set of enforceable standards, developed and agreed by key industry bodies and based on existing best practices, to ensure a good mobile user experience.

For the address, a .mobi site URL is as easy to remember as a .com address. For example, Nokia.com becomes Nokia.mobi. And as .mobi is a top level domain, it does not require the prefix "www," which simplifies typing on a mobile keypad.

The standards, which are machine enforced, are published in dotMobi Switch On!™ Guides, and cover the key areas of:

- Web content development
- Search
- Messaging
- Handsets

These guides are based on the work of the Worldwide Web Consortium's Mobile Web Initiative and its "Mobile Web Best Practices" documentation, intended to encourage best-practice site architecture so that content most relevant to mobile users is easily accessible.

With .mobi, the optimal user experience currently available through operator portals can also be guaranteed for sites on the wider internet, therefore overcoming one of the key uncertainties that consumers currently face.

Making content pay

The genius of the PC-based internet ecosystem is that it is constructed in such a way as to motivate as many people as possible to create content. This is a result of the openness of the internet; the level playing field that allows anyone to publish a site, based on any chosen revenue model, with virtually no barrier to entry. The same kind of motivation, however, has not been a feature of the mobile internet.

The dotMobi Switch On! Web Developer Guide is now available at dotmobi.mobi.

Key points include:

- XHTML mobile profile
- Second level domain site
- No frames, no pop-ups, no auto-refresh
- Clean navigation, appropriate graphics, minimal scrolling
- No embedded objects, no tables
- Minimal keystrokes

Portal economics

As a result of the portal model, content providers cannot easily reach consumers directly and instead are required to collaborate with individual operators. However, relying on operators in this way shuts out many smaller publishers, and even the bigger companies find that they can only target a limited number of mobile consumers in their chosen markets.

In this environment, inclusion on an operator portal is effectively the marketing strategy and achieving return on investment from marketing directly to consumers becomes virtually impossible:

- Generic advertising is wasted on consumers not subscribed to a particular mobile network.
- If they have arrangements with more than one network, multiple response mechanisms reduce the impact of communications and the level of conversion.
- There is no opportunity for retention marketing beyond delivering a good experience and hoping customers will return.

Bypassing operator-hosted portals is an option but means that publishers have to deal with the user experience issues already mentioned. Mobile commerce ("m-commerce") content providers also lose the advantage of using the operator's billing platform, which they rely on as a means of revenue collection.

Using the UK gaming industry as an example, a game with a £5 price, paid for using premium SMS, will incur a number of costs including operators (typically 35-40%) and billing platforms (approximately 10%). After tax, the publisher has generated only £2.10 in actual revenue. Typically the operator share in Europe is at least 30%, in the USA, it's often 50%, and in Latin America up to 70% is not uncommon⁸.

If such a high share of revenue goes to third parties, most content providers will find it impossible to create a sustainable business model, discouraging them from investing in the mobile internet.

Off-Net portals

Recognising the limitations, some operators such as Teliasonera, KPN and Vodafone are experimenting with Off-Net portals, with a view to augmenting their own editorially controlled and operator-hosted content. This is based on the success of iMode in Japan, which is a classic Off-Net portal model (see inset).

In this instance, revenues are split more favourably towards the content providers. For many, it's the first step outside of operator-hosted portals and allows them to retain some of the benefits, such as use of the operator billing platform and easy-to-find content.

This model is certainly expected by many in the industry to drive revenue for the next few years⁹. Overall, it should encourage more content providers to experiment with mobile. However, it's still a halfway house and not the open internet that consumers want.

The open internet

Some mobile operators such as T-Mobile are actively promoting the open internet, providing full access through search engines. But will the participation of one or two operators be enough to motivate content providers? Initially, the challenges of targeting marketing campaigns at potential customers on the right networks and finding a new way of receiving payments still apply.

It is also dependent on operators offering data packages that encourage experimenting, and don't penalise incorrect or invaluable internet usage. For example, 51% of UK mobile phone users who used a mobile data service for the first time during the

iMode – a halfway house

- One exception to the dire mobile internet experience is iMode, which currently has more than 50 million subscribers in Japan and a growing base in Europe.
- Content providers get 86-91% of revenue.
- The system is open in the sense that anyone can create sites on the open internet.
- However, it's a portal model where the entries in each category get promoted to a category portal and are then ranked according to popularity.
- iMode phones are also required.

It clearly works. Thousands of content providers have viable businesses in Japan, and DoCoMo has the highest average revenue per user (ARPU) of any mobile operator in the world.

2006 football World Cup found it too expensive and as a result 44% suggested they will not use it again¹⁰.

As long as only a handful of operators actively promote the open internet, the overall ecosystem is still a closed one.

An open system?

For companies to invest in mobile sites, they need to be persuaded that there is an open system; open access to all mobile consumers, and open economics which are not handicapped by anything other than market forces.

As with the PC-based internet, .mobi enables content providers to promote a website to any consumer with internet access. As a universal platform, there is no limit to the customer base a mobile brand can target; promotional activity independent of operators no longer has inherent waste.

⁸Posts from "Immobilite" – a blog site for mobile industry executives

⁹Informa Telecoms and Media, Mobile Content Industry Survey, 1Q 06

¹⁰NOP/Olista, July 2006

For m-commerce sites, .mobi can also support the same kinds of payment platforms as the internet, whether they are merchant services paid by credit card or consumer services like PayPal®. These are available to everyone, and typically charge sellers 2-3% rather than the 35-40% rates charged for premium SMS.

If content providers are confident that they are dealing with an open market to which everyone has access, they will invest and develop their own business models without feeling that their hands are tied:

- Established brands will create .mobi sites and find new ways of building relationships with their customers.
- Marketing campaigns will start to use the mobile internet as the cheapest and most immediate response channel.
- Small and mobile-only brands will identify what is unique about using the internet in a mobile-specific and geographically specific context.

What is needed is for influential industry leaders – and operators in particular – to take a lead that will give others the confidence to apply their imagination and budgets. This will also create a balanced ecosystem for the mobile internet.

Finding content

On the PC-based internet, we are accustomed to highly developed search engines finding even the most obscure material in an instant. However, this is not yet the case with the mobile internet. This is because:

- Search engines are comparatively slow.
- Users are uncertain as to whether the results serve up sites that are in fact optimised for mobile devices.
- Downloading from sites not designed for mobile use can be frustrating and expensive.

Given this experience, it's not surprising that most operators don't actively promote mobile search as the gateway to the mobile internet. And as they need assurance that their sites can be found, potential content providers are often deterred from creating new sites.

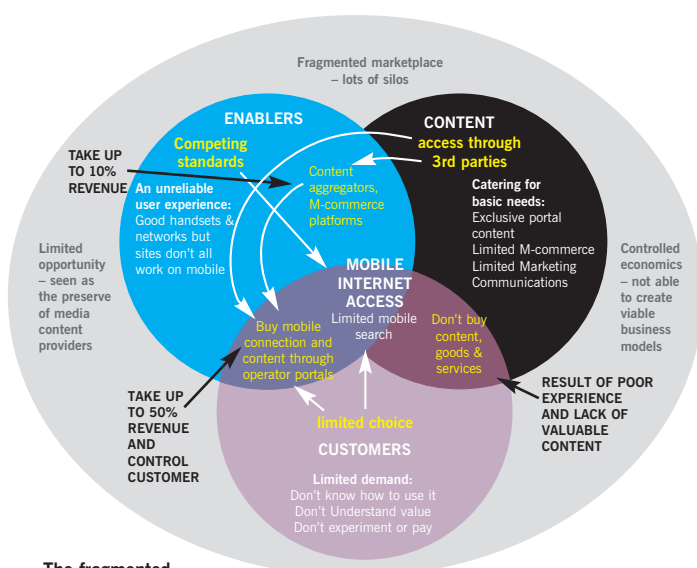
However, solutions are emerging that will change this.

The first is a platform-agnostic approach. Search engines such as Google and browsers such as Nokia's S60 and Opera Mobile™ with rendering technology can transcode normal web sites for a mobile device. In theory, this means that any web site can be viewed, and all information accessed, on a mobile device.

The second is a mobile-specific approach. While being able to access any web content on your phone is desirable, the best mobile content has a different approach to site architecture. That approach takes into account the specific needs of mobile users as well as the differences in terms of screen information and presentation, bandwidth and device navigation.

For this reason, it is important that such mobile sites can be distinguished from normal web sites; this allows people to choose, and search engines to find, web sites optimised for mobile use.

.mobi enables search engines to prioritise mobile-specific content, and in so doing, will revolutionise the off-portal experience, and increase the likelihood of consumers exploring the "made for mobile" internet.



The fragmented mobile internet ecosystem

Customer understanding

The evolution of user technology and widespread use of the PC-based internet has made more and more people "internet savvy".

This is not the case with the mobile internet.

Many people are aware of the mobile internet but have trouble when it comes to setting it up and using it. A recent survey by NOP of 1000 adults found 64% of those who had tried to use a mobile data service gave up trying after one or two attempts¹¹. They are also suspicious of whether the mobile internet can offer the same quality and quantity as the PC-based internet and are unsure what they would use the mobile internet for. The result is that most people, even those who are highly informed and would usually be enthusiastic technology adopters, are now highly sceptical that they either need or want the mobile internet¹².

Clearly there is work to be done in engaging consumers and convincing them that there is an experience on the mobile internet worth having.

This is not a task that can be undertaken by a single operator, handset manufacturer or content provider. Any single entity claiming that they are solely responsible for delivering "the mobile internet" will be treated with scepticism.

Engaging the customer

For the mobile internet to succeed, it requires the co-operation of individual mobile and internet companies. While marketing their own services, they must also be persuaded to engage in a



common, cohesive theme. This needs to be simple to understand and independent of any particular commercial interest. This is where .mobi can play the biggest part of all.

.mobi is perfectly placed to engage all the different players involved in creating the mobile internet.

As a domain, it's an essential catalyst of the internet. But it's also a banner under which all players can re-launch and promote a mobile internet – a mobile internet that is effective, open to everyone and, above all, builds consumer understanding and trust. This banner already exists in the form of a .mobi trustmark which .mobi-compliant sites and handsets can display.



Left:
The .mobi trustmark – customer assurance of a made-for-mobile experience

Right:
Examples of how the .mobi trustmark can be used (ringed in red)



¹¹NOP / Olista, November 2005

¹²NOP / Olista, July 2006

Assessing the operator opportunity

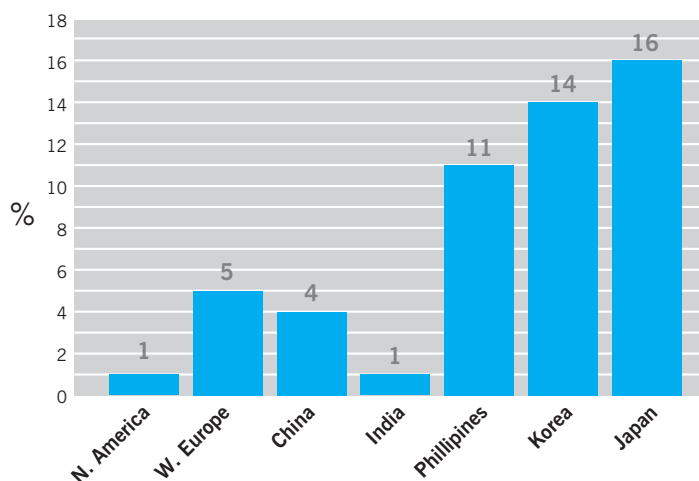
The potential opportunity in mobile internet is enormous. There are four mobiles to every PC in the world, and researchers expect 1.3 billion people to be connected to the internet through mobile devices by 2008¹³. Most people's first computing experience will be via a cell phone¹⁴, and in parts of the world where access to computers is likely to remain limited, mobile will be the default platform for the internet.

However this widespread uptake of the mobile internet will rely on a series of conditions that create an ecosystem in which everyone cooperates for the greater good. Operators must be persuaded that they will benefit from embracing a unified mobile internet. Content providers and publishers must be given the opportunity to create economically viable businesses. Consumers must be persuaded that the mobile internet is easy, useful and cost-effective.

To take full advantage, operators will also need to review their data pricing strategies so they are not a barrier to increased usage. The uncertain cost of mobile data services should be compared to flat-rate internet access that was crucial for the growth of the wired internet.

At that point begins the opportunity for operators to increase revenues significantly from data usage and achieve acceptable

return on investment. The operator with the highest average ARPU in the world is DoCoMo which has a data usage from mobile internet at least five times higher than the industry average. This is a target that should be achieved by all operators worldwide.



Data as percent of mobile revenues 2005 – excluding messaging
Source: Yankee



¹³GSM Association, 2006

¹⁴Eric Rudder, SVP, Technical Strategy, Microsoft

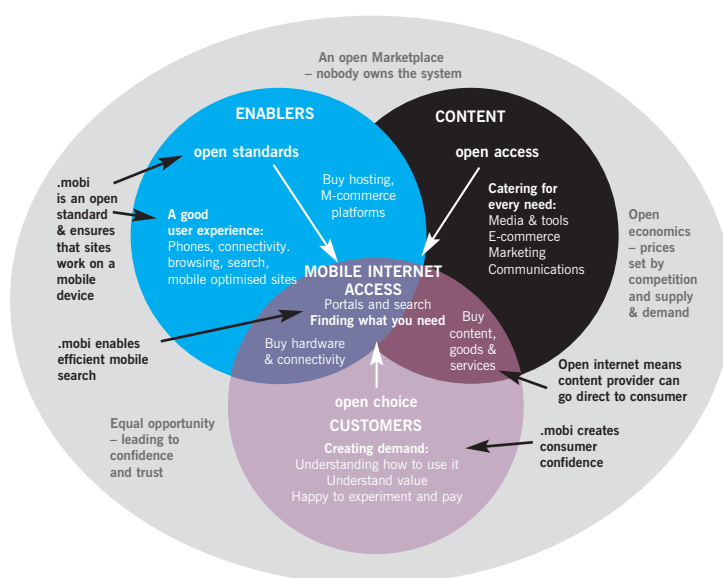
Next steps

.mobi was created by mobile and internet companies who recognised that the mobile ecosystem was incomplete. It provides the cohesion needed to bring it all together, both in terms of the standards to deliver a good user experience and in terms of the different players who can create a new marketplace where everyone stands to gain, provider and user alike.

Things are starting to move but everybody needs to move at the same time:

- Publishers, brands, marketers and businesses of any kind need to create mobile-friendly content under the .mobi address.
- Search engines need to offer an experience tailored to finding this content.
- Handset makers need to indicate that their devices are .mobi compliant.
- Operators need to ensure that the customer journey - from provisioning of handsets, through to accessing search pages and attractive data pricing – is geared towards supporting the mobile internet.
- And everybody needs to promote it together, so that customers can see that the mobile internet is an open and democratic system, just like the PC-based internet they already know.

Nobody needs .mobi on their own, but the industry collectively needs .mobi. And together the industry can create the right conditions for the mobile internet to deliver the growth everybody wants to see, consumers included.



The .mobi vision:
A thriving mobile internet ecosystem

INVESTORS



ASSOCIATIONS

