

DATA ON BLUETOOTH



by **Simon Duncan**

DATA ON BLUETOOTH

A GUIDE TO ITS DEPLOYMENT

A WHITE PAPER

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2. INTRODUCTION

1 AIMS AND INTENDED READERS

This white paper is a brief extract from consultancy report *Data on Bluetooth* published by Mobile Streams Ltd. It provides an introduction to the challenges facing those deploying and implementing Bluetooth and includes some of the results of the exclusive survey carried out for the report.

The aim of the report from which the white paper is taken is to act as guide and management briefing on the state of Bluetooth technology for those who are considering, or are in the process of, deploying it within their organisations. This could mean including it in the company's products and services for customers, employees, partners of suppliers.

Those responsible for such deployment will be managers and directors in product development, marketing and technology evaluation; they will want to know what Bluetooth can do for them and what the risks involved with it are. These people are who the report is intended for.

Wireless technology is very powerful and offers much in the way of supporting product and service innovation and the chance to establish a competitive advantage. But it can also be complex and expensive - when to invest, how much to commit and how best to exploit the technology are the key decisions. Reading the report will enable these decisions to be as informed as possible.

2 AUTHOR

The author of *Data on Bluetooth* is Simon Duncan, an independent analyst, researcher and journalist with 20 years experience of a broad range of hi-tech markets - mobile, IT, internet, telecommunications and media. This broad knowledge makes him ideally placed to interpret the impact and importance of new, data-centric local and personal area wireless technologies - such as Bluetooth.

He has previously written *Data on Wireless LANS and PANS*, published by Mobile Streams as well as the forthcoming *Hot Spot Access - Threat or Opportunity for Mobile?* Which looks at the threat short range wireless access to the fixed infrastructure poses to mobile operators

Most recently he was founding editor of *m-Business*, a sister newsletter to *New Media Age*, and authored Mintel International's current series of consumer e-commerce

consultancy reports. In 1999 he co-authored *Mobile Commerce; Strategies for the New e-Business Paradigm*, a Financial Times Business management report, and in 2000 authored *Mobile Commerce in Retail*, a strategic briefing published by Retail Intelligence.

He writes regularly on all aspects of business and technology. Through his work as a technology and business research consultant he lists Intel, Giga Information Group, Wentworth Research, Informa Group, Deutsche Bank, NOP and Business Intelligence amongst his clients.

He has a BSc in Chemistry and Management Economics from Nottingham University and an MSc in the Social and Economic aspects of Technology from Imperial College, University of London.

3 ABOUT THE PUBLISHERS

Mobile Streams was set up in January 1999 by Simon Buckingham as a wireless data research and consultancy company specializing in and focusing on nonvoice mobile services such as the Short Message Service (SMS), General Packet Radio Service (GPRS), Wireless Application Protocol (WAP), Unstructured Supplementary Services Data (USSD), Cell Broadcast and Universal Mobile Telephone System (UMTS). Mobile Streams runs an Internet site for each of these different services- each of these sites can be accessed through www.nonvoice.com. Mobile Streams now employs a team of more than a dozen people in the UK, China, Japan and Hong Kong.

Visit www.mobileStreams.com and click on "Publications Zone" for a complete list and full details of Mobile Streams other publications.

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5. BLUETOOTH - A TECHNOLOGY WHOSE TIME HAS COME

In simple, technical terms Bluetooth is a short range, low power radio technology which supports both voice and data applications interoperability. In its simplest of applications it is a wireless replacement for many of the cables we currently use to transmit voice and data signals.

Such a description suggests a rather humble technology about which there is little reason to get excited. The interest that Bluetooth has generated requires it to be viewed as part of a more visionary outlook by setting it within the overall context of our industrial evolution. In this regard Bluetooth, with its enabling of ad hoc, wireless interoperability for a whole range of consumer and business devices, promises to be a true stepping-stone technology, delivering a quantum leap in the way we lead our lives that few other technologies have achieved.

In this respect it is very much a technology whose time has come - and one, given the huge cross-vendor and multi-industry effort that has driven it so far - for which there is little alternative should it fail. As yet Bluetooth has only promised and the time is nigh to deliver - if it does not the whole vision of a world full of wireless, mobile, interoperable devices will have to be put on ice, indefinitely.

The technology is poised to leave the development stage and enter the deployment phase that will be so crucial to its success. So far it has been developed by vendors with a vested interest in making it work - silicon and software suppliers for whom Bluetooth has been judged to be a big opportunity. Now it is entering a phase in which it is highly dependent on a constituency which has less interest in it being a success for its own sake; those who will be responsible for deploying it - device product managers and technology managers who will be looking to Bluetooth to deliver added-value products and services to their staff, business partners and customers. Most of these people can see the potential of Bluetooth but it is still just another technology that has to prove that it works as advertised and can deliver on its promises. If it fails these people stand to be considerably embarrassed and will drop it quickly - there will be few second chances.

This report is aimed at these people who are looking to deploy Bluetooth and without whose support Bluetooth will never even reach the hands of the consumers, business users and vertical markets for which it is intended. For these people this report aims to help them with their Bluetooth-related investment decisions by providing a clearer picture of the extent to which Bluetooth is in a position to deliver on its promise of forming one of the cornerstones of our immediate technological progress.

6. REPORT SUMMARY

The report outlines the state of the art of Bluetooth technology from the perspective of a product or technology manager contemplating some degree of investment in Bluetooth. It sheds a considerable amount of light on Bluetooth and enables a more informed decision to be made.

In summary;

- Bluetooth has been seen to have great potential but as yet that is all it is - potential. The early challenges of cost and interoperability are being tackled and all the signs are that they are being met. Bluetooth is poised to deliver on its core promise.
- With these basics under control the major challenge to focus on now is ease of use or radical simplicity as 3Com has termed it. This largely involves those with experience of consumer markets and their requirements developing the applications and not engineers from the wireless industry.
- The delays that Bluetooth is considered to have suffered are more a matter of perceptions and expectations than any thing real. Compared with other RF and/or bus technologies such as DECT, GSM, 802.11b, USB and 1394 it is making rapid progress - especially given the size of the task taken on and the number of interested parties involved.
- Forecasts suggest the value of the market for Bluetooth silicon technology by 2005/6 to be between \$4-5bn and accounting for some 2bn units. These forecasts have recently been reviewed outwards by 12 months to account for the unexpected delays to Bluetooth and the slow down in the mobile phone market. However, they do not take any account of the possibly major demand for Bluetooth that vertical markets could come to represent.
- Bluetooth supports a wide range of applications, some more likely to see success than others. The benefits of simply becoming wireless are likely to be seen to be considerable whilst Bluetooth's support for voice applications is likely to be a major advantage that is often overlooked.
- Bluetooth is set to be well integrated with WAN (3G, GSM) and LAN (802.11b, 802.11a, HiperLan/2) technologies with many of the providers of both seeing Bluetooth as highly complementary. It also has widespread support at application platform level (operating systems, Java and Wap) with the high profile exception of native support within Windows XP from Microsoft. But Microsoft's stated commitment to provide this in the future, the availability of third part alternatives and the relative lack of importance of XP for mobile devices suggest this problem is surmountable.

- Bluetooth has some intriguing prospects for various value chains. For example, is it a threat or opportunity for mobile networks, will it lead to the deconstruction of personal area devices to their core functionality, will it support the removal of interfaces from public access points such as ATMs and is it the best thing to hit manufacturers of printer consumables since the printer itself?
- Some of the problems in using and managing Bluetooth have been outlined. These are presented not because Bluetooth is an especially difficult technology (although being wireless may present some new challenges to product and IT managers) but because, as with any technology, efficient deployment involves being aware of these issues and not getting caught out.

Considerable effort is being put into future Bluetooth developments to improve its performance and application. These will be necessary at some point in the future this will only be once the current version of the technology has proven it self. Lack of functionality or performance is not going to be what determines Bluetooth's success in the next 18 months. Should Bluetooth emerge unscathed from this proving phase then expanded functionality will be useful in helping its wider deployment. But already there is the suggestion that some of what is being developed is being driven by engineering prowess rather than any real practical market demand.

7. WHO NEEDS IT?

Does anyone actually need such a technology to succeed? Well, yes - in fact many different communities do, some more urgently than others.

4 VENDORS AND INVESTORS

Those who have the most obvious need for Bluetooth to succeed are the vendors and investors who need to see the market develop in order to generate revenues and so release the further funds that will be needed before the market fully matures. To date a lot of money has been invested in the development of Bluetooth and in the aftermath of the dot com crash and a low level of faith in technology stocks in general the investment climate is not likely to be as understanding as it was 18 months ago.

5 THE WIRELESS INDUSTRY

Just as Bluetooth's time has come, so has the need for the wireless industry to deliver as far as data applications are concerned. GSM has been a huge success and in the area of simple data applications so has SMS (although this success was as much by accident as by design) - both have been commercially successful applications of wireless technology.

But since then, and in particular over the last three years, we have had a succession of very clever technologies, doing things that represent considerable feats of engineering but which so far have failed to make any impression on the market either because they are hopelessly ambitious or because the necessary value chains are too fragmented or too concentrated. Thus mobile Internet, location-based services, advertising, wireless portals, Wap, mobile commerce and GPRS have all so far failed to do anything other than generate an increasingly poor name for the wireless industry, increasing levels of cynicism in the press and investment communities and weariness amongst consumers and business users.

This is a pity as many of the efforts have been based on the very laudable principle of open, industry co-operation in stark contrast to the IT industry's favouring of proprietary standards. The success of GSM and SMS probably led many in the industry to feel they were invincible and that as engineers they had plenty more technological trickery up their sleeves. But GSM and SMS have been silver clouds with dark linings, obscuring the fact well-established in many other industries that we don't buy technology - we buy applications and solutions. Whilst the wireless industry has delivered a shed load of technology the commercial applications it has found have been minimal. Perhaps engineers should restrict themselves to solving problems the market suggests rather than building technology and then looking for a problem to solve.

The warning signs are already there for Bluetooth as engineers begin to suggest applications based on their undoubtedly fantastic technology. One suggestion is that a combination of Bluetooth and location-positioning technology will enable the user to find out where they are to within 10m in a shopping mall . . . this will be of great use to the vast hordes of lost shoppers wandering the nation's shopping malls wondering just where the hell they are. Another sure-fire winner.

It is the IT industry which has the track record in delivering data applications and which will be only too keen to bring its expertise to bear on this new platform and relegate the wireless sector to the role of carrier should it fail with its own application initiatives.

6 THE 3G INDUSTRY

The recent turmoil in the Internet and e-commerce sectors has not helped matters but as yet the case for wireless data via mobile or cellular phones, aside from messaging and email applications, must be considered as unproven. Even more so is the wireless and communications industries ability to provide the applications should demand materialise.

This has to be seen as just a slight bit alarming given the hopes being pinned on 3G, the revenues it needs to generate in countries such as the UK and Germany to pay for itself and the fact that a vast proportion of these revenues are expected to come from data applications and services. Those planning the 3G future could really do with a technology that begins to stimulate the case for wireless data services and applications.

This is where Bluetooth comes in. Not only is it ideally positioned to carve a huge future for itself but it is ideally suited to the role of 3G trail blazer. Ironically this role is largely due to the fact that it supports not only data but voice as well. Voice is the leading wireless application, and will continue to be so for some time; supporting voice will enable Bluetooth to gain the mass acceptance through which the introduction and use of data applications can be leveraged.

Many cellular carriers view Bluetooth with suspicion but it is the more progressive and open-minded, such as Orange, who see the great degree to which the two are complementary - Bluetooth will distribute through the personal area services provided via 3G (and even 2G and 2.5G) wide area technology.

7 DEVICE MANUFACTURERS

Device manufacturers need Bluetooth to be a success for the added value it will give their products in the short term and the incentive it will give consumers to trade up to newer models featuring this extra Bluetooth functionality. Nowhere is this more true than in the mobile phone sector which desperately needs to focus on persuading existing users to

change handsets now that high penetration rates mean that the growth of new users has dried up.

But not only does Bluetooth have the potential to sell more devices it also promises to lead to greater use of them and so increase service-related revenue. For example, increased ability to print on an ad hoc basis from a wider range of devices will lead to more printing being done and more consumables being purchased. Likewise, increased ease of Internet access when mobile may lead to more downloading of MP3 files.

The fact that Bluetooth offers these facilities as a single technology applicable world-wide is even more enticing as a considerably reduced level of product localisation is called for and hence lower cost. PDAs are a case in point; assuming PDA vendors want to wireless enable their devices, rather than produce a different version for every 2G and 3G air interface, Bluetooth offers PDA vendors the opportunity to add one technology which can be used world-wide to Internet-enable a PDA via a mobile phone.

These people are currently waiting for Bluetooth to prove itself.

8 BUSINESSES

For businesses Bluetooth promises to be a disruptive technology - perhaps the only one on corporate radars right now - whose many applications will enable a new level of innovation and the ability to introduce new and enhanced products and services to upset existing value chains and market shares.

For those looking to deploy innovative applications - the people this report is aimed at - Bluetooth represents a great opportunity though not one that many will take a big risk on if they suspect that it will not deliver as promised.

9 END USERS

For users - both consumers and business professionals - the idea of low cost, ad hoc, easy to use wireless interoperability with its support for mobility, convenience and a whole new way of using technology is undoubtedly compelling. They do not have quite the same need for Bluetooth in the way those further up the supply chain do but it is something that offers the prospect of a quantum leap in the way lives are led - not unlike the arrival of the Internet.

But if Bluetooth drops the ball and fails to deliver what other prospects are there for delivering such a vision, given the huge cross-industry co-operation required? The answer is none.

8. SURVEY RESULTS

As part of the research for this report Mobile Streams carried out its own survey into the prospects for Bluetooth. Rather than attempting to estimate the market size - there are plenty of people doing that already - this looked at the attitudes towards Bluetooth, with particular focus on those people who will be responsible for deploying it. These people include technology managers and device product marketing managers. If they are not convinced by Bluetooth it will never reach the consumer.

In total 300 respondents were quizzed on their views on Bluetooth of which 75% were what might be classed as 'users' - those who may use Bluetooth in their products and services for staff, customers, business partners or suppliers. The remainder can be classed as vendors of some level of Bluetooth component, be it silicon, software, modules, testing equipment or qualification services.

10 USAGE OF BLUETOOTH

The table below acts as a profile of the respondents to the survey and shows that the greatest level of activity is around the planning stages - planning trials or planning development. No one has yet evaluated Bluetooth and rejected it but a fifth of all respondents and almost a quarter of users have yet to give Bluetooth any serious consideration suggesting that there is still a lot of evangelising about the technology to be done by the likes of the SIG.

Plans for usage of Bluetooth are marginally more progressed amongst all respondents than users reflecting the presence of vendors in the former sample, a group that one would expect to have more developed plans if the technology is to succeed.

WHAT STAGE IS YOUR USAGE OF BLUETOOTH AT?		
	All (%)	Users (%)
We currently use/sell Bluetooth products	6	5
We are piloting/trialing products	10	9
We are developing products	16	11
We are planning to use/pilot/trial products	24	28
We are planning to develop products	19	21
We have looked at Bluetooth and rejected it	0	0
we have not yet given Bluetooth any serious consideration	21	23
What is Bluetooth?	3	2

From the table below, for the majority of respondents Bluetooth is clearly one of a range of technologies that they will be selling/using on a tactical basis. This is something that is to be expected; few technology vendors can afford to risk putting all their eggs in one development basket whilst most users - device product managers and corporate technology managers - will require the use of a range of technologies to deliver the best product or service.

Having said that, over a fifth of respondents are viewing Bluetooth as strategic to their plans; vendors who are specialising in Bluetooth components and services and users who see Bluetooth as offering a real chance for competitive advantage.

HOW STRATEGIC IS THIS USE OF BLUETOOTH?		
	All (%)	Users (%)
Strategic - it is key to our product plans/technology platform	23	21
Tactical - it is just one of a number of important technologies we will deploy when the need arises	53	59
Ad hoc - it will be deployed on a personal basis by individuals within the organisation	11	11
Not relevant	0	-

11 OUTLOOK FOR BLUETOOTH

The good news for Bluetooth, amongst respondents to this survey at least, is that Bluetooth is seen to have great potential with few people seeing it as being in danger of running out of time. Over half of all respondents see it as only a matter of time before Bluetooth is used in all devices or is commonly used. On a more sobering note 25% still feel that despite its potential Bluetooth has a long way to go to prove itself.

WHAT ARE YOUR VIEWS ON THE OUTLOOK FOR WIDESPREAD ADOPTION OF BLUETOOTH?		
	All (%)	Users (%)
Its possibilities are endless and it is just a matter of time before it is used in all devices	14	14
Its possibilities are great and it will probably become quite commonly used	38	38
Its possibilities are great but it is in danger of missing the boat due to delays	14	14
It has potential but also has a long way to go to prove itself	25	25
It is yet to prove that there is much need for such a technology	4	5
It has been unjustifiably over-hyped and has very little prospect of success	0	0

12 VALUE OF BLUETOOTH

In the table below, Bluetooth is again being seen in a very positive light with a quarter of all respondents seeing it as a highly disruptive technology, which will upset existing value chains in their particular line of business. Given the many varied applications of Bluetooth this disruption promises to be felt quite widely.

A further third of respondents, whilst not seeing Bluetooth as quite upsetting the existing economic order, do see it as a source of real competitive advantage.

For a technology that is pitched as essentially a form of cable replacement this represents a considerable achievement and is testament to the power of wireless interoperability to change our lives.

A further point of significance from this table is the fact that a fifth of users are already highlighting the support and maintenance issues that they expect will be associated with Bluetooth. A constant theme of this report is that Bluetooth has to deliver almost transparent ease of use and convenience - here is early evidence of the need for this.

WHAT ADDED VALUE DO YOU SEE BLUETOOTH BRINGING TO YOUR ORGANISATION?		
	All (%)	Users (%)
Strategic - it will help disrupt existing value chains and create major new opportunities for us	25	22
Tactical - it will deliver real advantage over our competitors in our existing operations	32	35
Defensive - everyone will use it so we have to just to remain competitive	16	18
Mixed - those using it will get some benefits but the support and maintenance costs will negate these benefits	17	19
None - its only going to replace a few bits of wire	5	4
Negative - it is a novelty that will add no serious benefit but will cost a lot to support	0	0