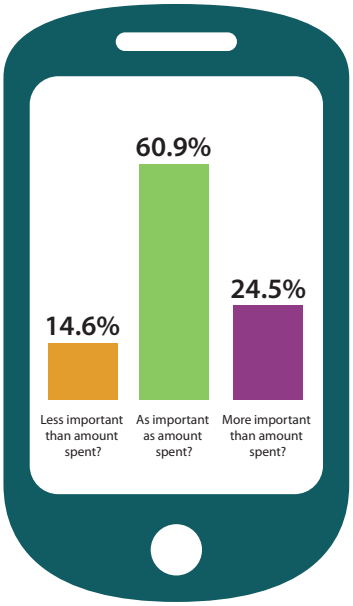
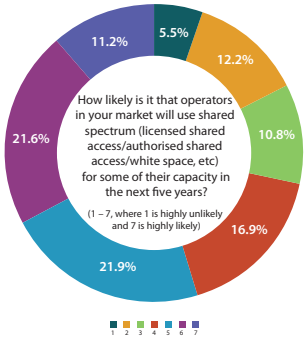
TELECOMS.COM INTELLIGENCE
INDUSTRY SURVEY 2014

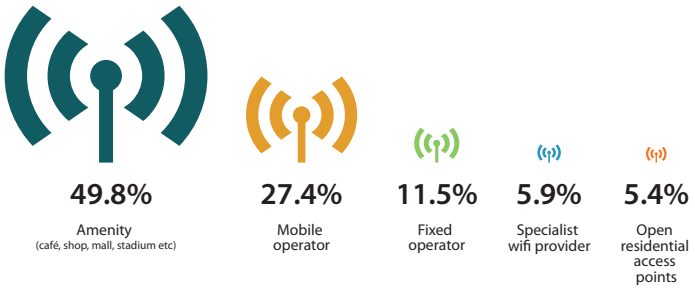
2,062 RESPONDENTS

DO YOU BELIEVE THAT, FOR CONSUMERS, VISIBILITY OF ROAMING SPEND IS:





FROM YOUR PERSPECTIVE AS A USER WHAT IS THE MOST READILY AVAILABLE SOURCE OF WIFI ACCESS OUTSIDE OF THE HOME OR OFFICE IN YOUR MARKET?

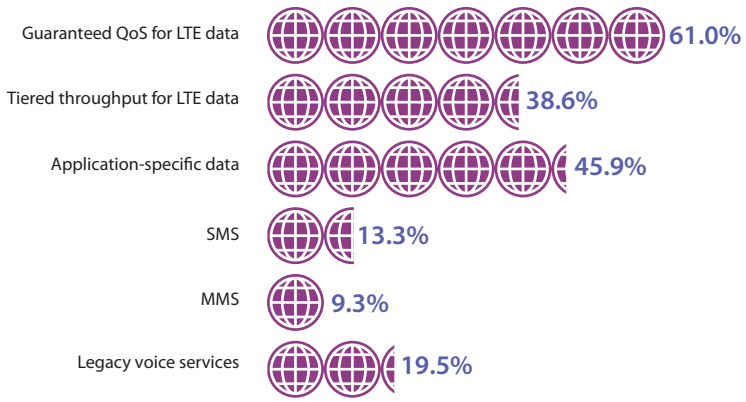


MORE THAN ONE FIFTH OF OPERATORS EXPECT TO INTRODUCE A BIG DATA INITIATIVE IN 2014

WHICH BUSINESS MODEL DO YOU THINK IS BEST FOR OPERATORS PARTNERING WITH OTTS AND OTHER PLAYERS IN THE DIGITAL ECOSYSTEM?

WHICH PLATFORM(S) SHOULD OPERATORS USE TO MAKE THESE CAPABILITIES AVAILABLE TO OTTS AND OTHER PARTNERS?

FOR WHICH ROAMING SERVICES (NOT WITHIN THE EU) WILL OPERATORS BE ABLE TO CHARGE A PREMIUM OVER THE NEXT FIVE YEARS?



RESPONDENTS HAVE A TOTAL OF 29,767.5 YEARS' EXPERIENCE IN THE INDUSTRY

300+ OPCOS REPRESENTED

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CONTENTS

Welcome to the Telecoms.com Intelligence Industry Survey 2014

If you wanted to communicate with someone who wasn't face to face with you 30,000 years ago, in the late Stone Age, your best bet was probably cave painting. In human terms, at least, 30,000 years is an awfully long time—so the fact that respondents to the second annual Telecoms.com Intelligence Global Industry Survey have, between them, 29,767 years' of experience in the industry is striking.

That's a lot of expertise; the average length of industry service among our respondents was 14 years.

With close on 2,100 responses, among which were almost 800 operator respondents representing more than 300 individual opcos, this year's survey, which was completed in December and January, drew an even greater level of response from the industry than last year's.

Surprises are what one tends to look for when examining the results of surveys such as this and there were several that stood out. Take regulation: in our CEO interview on page 12, Telekom Austria's Hannes Ametsreiter characterises regulation as the greatest challenge faced by operators in Europe. But the survey revealed a more even-handed assessment of the work of Neelie Kroes than we might have anticipated.

Almost one third of operators even expressed their belief that there should be increased regulation around the provision of indoor cellular coverage.

Nonetheless, regulatory pressure on pricing was clearly identified by operator respondents as the biggest challenge facing mobile network operators over the next five years, followed by competitive pressure from OTTs and spectrum availability. The industry as a whole saw operators' principal challenge as the OTT threat, however.

There remains a huge amount of enthusiasm for OTT/operator partnerships but the survey highlighted a number of challenges to their successful establishment. Business model, lack of commitment, lack of understanding and IT complexity must all be addressed, the survey suggested, if operators and OTTs are to strike deals that yield truly mutual benefits.

The survey was wide-ranging in scope. We asked the industry about operators' big data strategies, the evolution of LTE roaming, ongoing migration of BSS solutions into the cloud, operators use of wifi and multiplay strategies, among other issues. The benefits and challenges associated with each of these areas of operator focus emerged clearly, with customer retention and experience among the dominant concerns throughout.

I hope you'll find much of interest in the results from the survey. Over the coming weeks there will be a number of webinars on Telecoms.com that explore the results in more depth, so keep an eye out for the schedule. And, as always, please contact us should you have anything to add to the discussion.

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OPERATOR LANDSCAPE

European Commissioner Neelie Kroes has suggested that her telecoms reform package will create opportunities for both large, international operators and smaller, local or specialist players alike—but respondents to the Telecoms.com Intelligence Survey were not convinced.

We asked respondents for their opinions on a number of statements related to Kroes' proposals, some of which have been voiced by Kroes herself and some by her critics. A good proportion of those responses strongly suggested that Kroes' reforms will benefit the consumer but not the industry.

Key takeaways:

- 60 per cent of operators believe regulatory pressure on pricing to be a serious threat to business.
- 55 per cent of operators believe shared data tariffs will be important in the future.
- Network quality, service pricing and customer service are seen to be the three most dominant means of competitive differentiation among mobile operators.

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With over 80,000 unique monthly visitors and more than 70,000 registrations to our webinar platform, Telecoms.com has access to executive opinion of unrivalled breadth and depth. That opinion needs context and our editorial team excels at transforming raw data into insight and analysis. And with a variety of print and digital channels, including Mobile Communications International magazine, we can drive unbeatable awareness of our findings.

Operating issues

Innovation in pricing and charging, the re-emergence of the multiplay offering, the key competitive challenges facing mobile operators and looming sector regultion in Europe were among the topics on which we questioned respondents in a bid to understand the issues facing operators in 2014.

One of the dominant narratives in the European telecommunications sector in 2014, the influence of which will also be felt beyond the continent, will be European Commissioner Neelie Kroes' ongoing drive for greater regional harmonisation. Wider in scope than the populist assault on international roaming charges that has won Kroes so much attention, but stopping short of introducing the super-regulator that some had feared, the single telecoms market proposal is controversial.

We asked respondents to the survey for their opinions on a number of statements related to Kroes' proposals, some of which have been voiced by Kroes herself and some by her critics. Respondents were asked to rate the strength of their agreement or disagreement on a scale of one to seven, where one represented 'strongly disagree' and seven 'strongly agree'.

Kroes has suggested that her reform package will create opportunities for both large, international operators and smaller, local or specialist players alike—but respondents were not convinced. Almost half disagreed that the package will benefit smaller players, with only 18.6 per cent rating their agreement as six or seven on the scale—which we shall describe as the strongest rating. Compare this with the response to the statement that the package will benefit larger operators: 38 per cent of respondents gave this the strongest agreement rating.

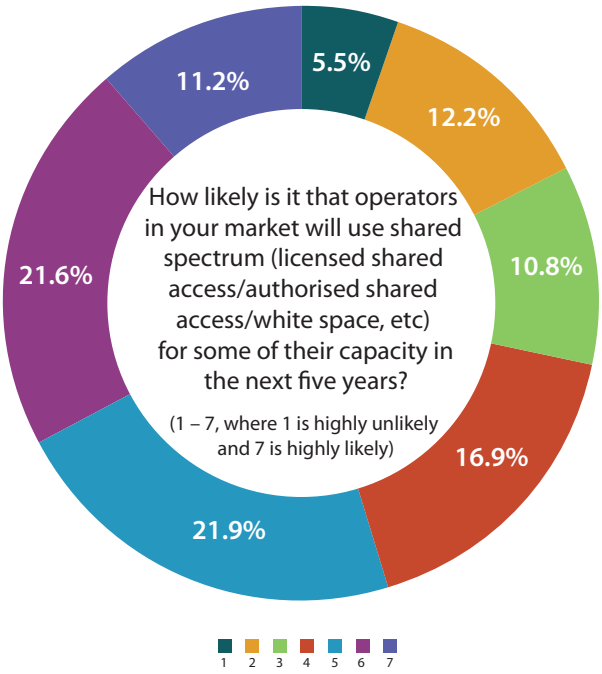
Indeed smaller players might find themselves the focus of renewed bids for consolidation. More than 45 per cent of respondents gave the strongest agreement rating to the suggestion that the package will drive more international consolidation. A smaller but nonetheless significant proportion, 37.9 per cent, gave the same rating to the suggestion that more in-market consolidation will follow in the wake of the package.

In a speech delivered last year Kroes said that the package will create "a predictable investment environment and incentives to shift to sustainable business models." Only 22.9 per cent of respondents voiced strong agreement with this, with more than half remaining neutral or disagreeing.

The results swayed in favour of the package, however, when it came to Kroes' assertion that it will enable greater investment in new networks. 30.8 per cent of respondents gave this a six or seven agreement rating. More than 35 per cent, meanwhile, were similarly convinced by Kroes' vision that her reforms will make the European telecoms sector more internationally competitive.

There was less conviction that external investment in the European sector will increase, while operators' objections to Kroes' intervention over international roaming charges clearly persist. More than one quarter of respondents (and 30 per cent of operator respondents) felt strongly that short term investment is threatened by the reduction of roaming revenue streams.

Related to this, and illustrating the challenge in devising a regulatory policy that both supports industry and protects consumers, 30.4 per cent of respondents (and 34.6 per cent of operator respondents) strongly agreed that Kroes' reforms will benefit the consumer but not the industry.



60% OF OPERATORS BELIEVE REGULATORY PRESSURE ON PRICING TO BE A SERIOUS THREAT TO THEIR BUSINESS

This section of the survey by no means illustrated a lack of support for the work of Neelie Kroes; if anything the industry is more open to her plans than we might have expected. It is not surprising that operators should feel more strongly about certain of her campaigns, however, particularly those that seek to have a direct impact on revenues.

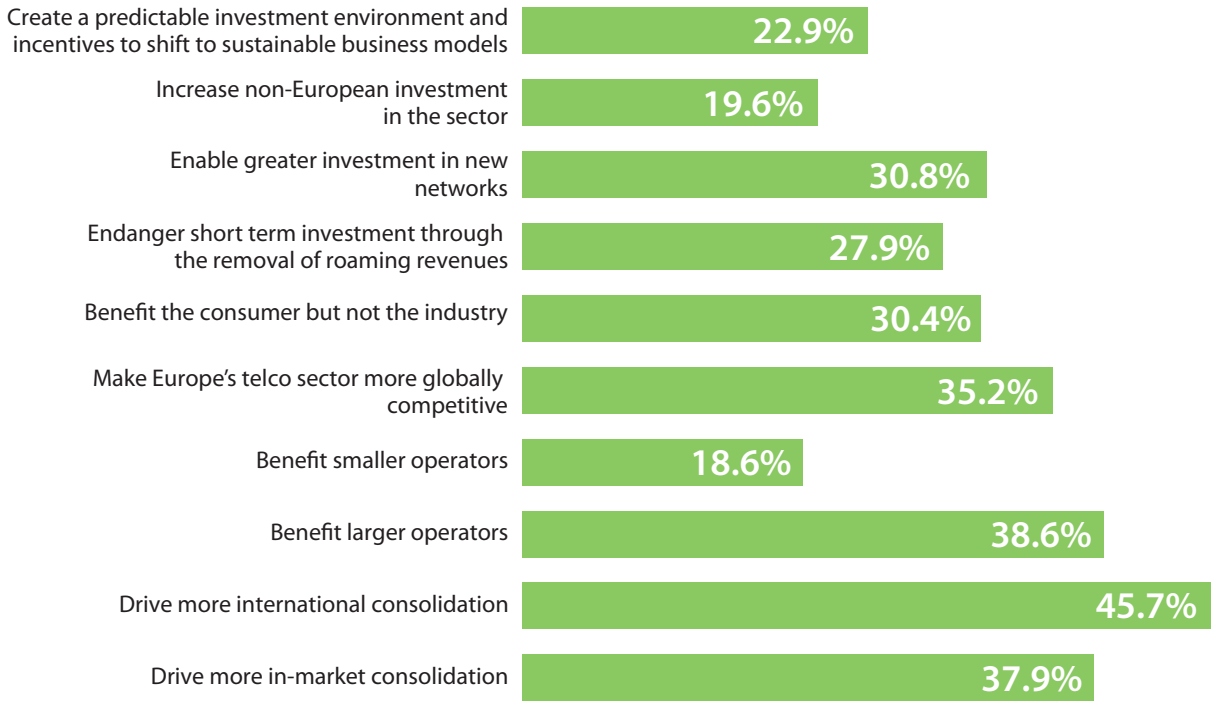
Indeed when we asked respondents to rate a number of challenges that moblie operators are likely to face over the next five years there was a marked difference between overall responses and operator responses taken in isolation.

The most serious challenge mobile operators face according to respondents overall is the competitive threat from OTT players, with 49.9 per cent of respondents rating rating this six or seven on a one-to-seven scale of severity. Operators themselves, however, judged regulatory pressure on pricing to be the biggest threat, with almost 60 per cent of operator respondents giving this a high rating for severity.

A greater number of operator respondents, 47.4 per cent, also gave the cost of infrastructure investment a high severity rating than respondents overall, 41.4 per cent of whom rated it as such. As illustrated in the table, the only challenge for which the two groups agreed a ranking was 'limitations of network technology', which was considered the least severe across the board.

To what extent do you agree with the following statements related to Neelie Kroes' plans for a single European telecoms market?

(Percentage of respondents that rated their agreement six or seven on a one-to-seven scale where seven represented 'Strongly agree'.)



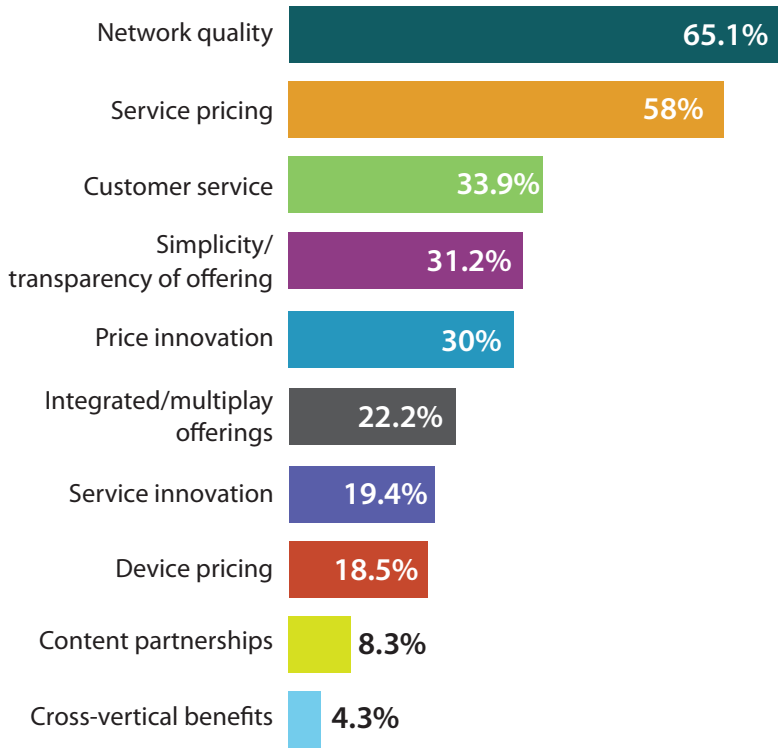
What will be the greatest challenges faced by mobile operators over the next five years? (Percentage of respondents who ranked the challenge 6 or 7 on a 1 – 7 scale where 7 = extremely challenging)

Rank	Overall respondents	% six and seven		Operator respondents
1	OTT competitive pressure	49.9	59.2	Regulatory pressure on pricing
2	Availability of spectrum	47.2	52.7	OTT competitive pressure
3	Regulatory pressure on pricing	45.3	48.2	Availability of spectrum
4	Inter-operator competitive pressure	41.7	47.4	Cost of infrastructure investment
5	Cost of infrastructure investment	41.4	44.8	Inter-operator competitive pressure
6	Limitations of network technology	17.0	16.7	Limitations of network technology

Availability of spectrum was widely viewed as a serious challenge and a majority of respondents indicated that shared spectrum strategies (licenced shared access/authorised shared access/white space, etc) would likely be used by operators in their markets to meet some of their capacity requirements within the next five years. More than half of respondents agreed with this, with 32.8 per cent indicating strong agreement. More than one quarter of respondents felt that this would not happen, however.

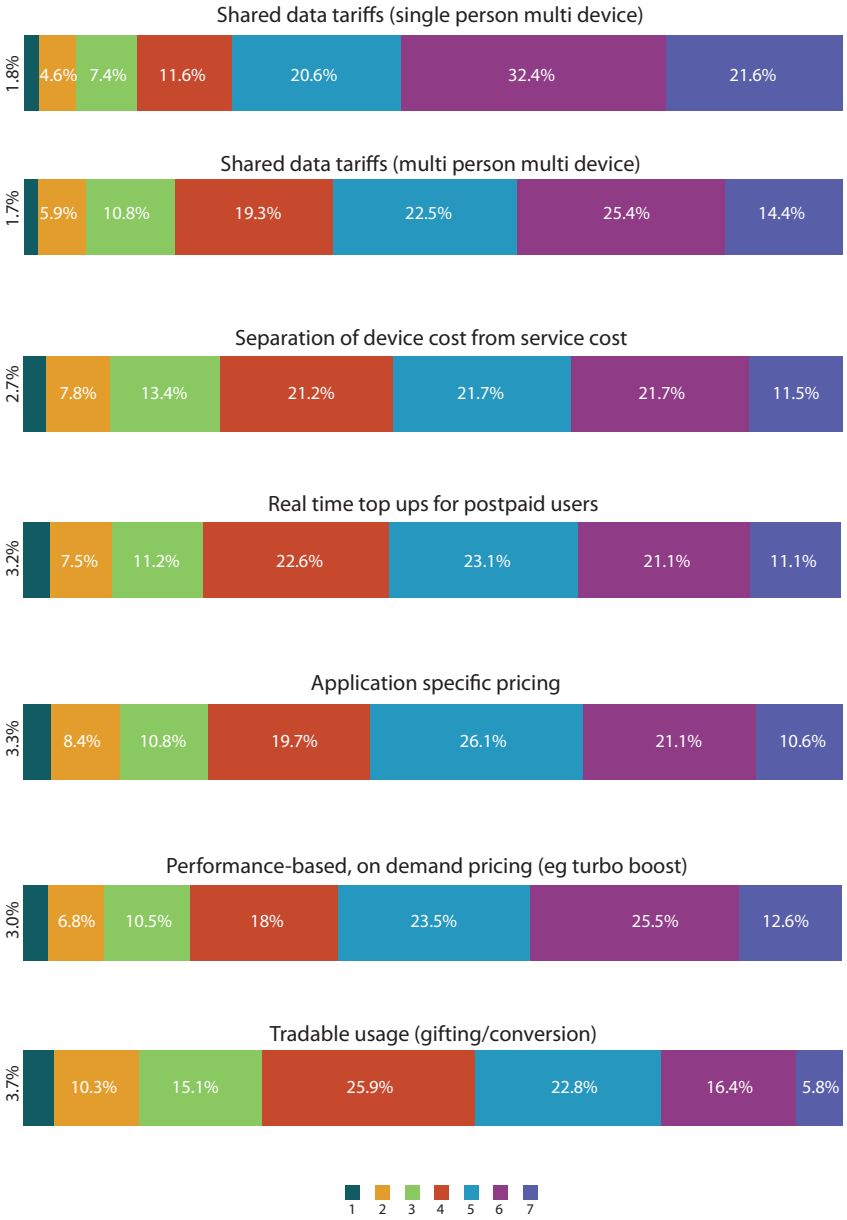
The importance of spectrum holdings was also made apparent in a question that asked respondents to identify the three dominant forms of competitive differentiation employed by mobile operators in the market where they live. Network quality emerged as the most popular, selected by 65.1

What are the three most dominant means of competitive differentiation among the mobile operators in your market?



55% OF OPERATORS BELIEVE SHARED DATA TARIFFS WILL BE IMPORTANT IN THE FUTURE

Rate the future importance of the following pricing/charging strategies. (1 – 7, where 1 is not at all important and 7 is extremely important)



per cent of respondents, followed by service pricing (58.0 per cent) and customer service/CRM (37.3 per cent).

Pricing innovation and simplicity/transparency of offering were selected by 30 and 31.2 per cent of respondents respectively while content or other vertical partnerships had a poor showing, each selected by less than ten per cent of respondents.

Pricing innovation and charging strategies have continued to gain in importance for operators, particularly mobile operators. We asked respondents to rate a number of charging models for their future importance.

As we might have expected given their current popularity, shared data tariffs were viewed as the most important. But tariffs that allow single users to split allowance over a range of devices were deemed as most important by a larger proportion of operator respondents–55.1 per cent–than tariffs that allow data to be shared between people (such as family plans)–44.0 per cent. The least important option, according to our respondents, was tradable usage or gifting, although it was still given a high importance rating by more than one quarter of operator respondents. ■

MULTIPLAY

Almost one quarter (23.1 per cent) of operator respondents to the survey said that an integrated or multiplay offering was one of the top three means of differentiation among mobile oprators in their market. In 2013 we noted a growing belief among some operators that being able to provide a full range of communications services—fixed and mobile, broadband and TV, personal cloud storage—might be a more compelling proposition in terms of customer acquisition and retention, than a single offering.

Respondents were asked to give their reaction to a number of statements relating to multiplay offerings, rating their agreement or disagreement on a one to seven scale where seven was strongly agree.

Almost 70 per cent of respondents agreed that multiplay operators will have achieved significant advantage over pure play operators within five years—with 44.2 per cent rating their agreement as six or seven on the scale. Among operator respondents this rose to 48.6 per cent while of those who identified their organisation as a multiplay operator already, 62.4 per cent voiced strong agreement.

As we saw earlier in this section, network quality is currently viewed as the most important competitive differentiator among mobile operators. But 23.6 per cent of respondents (and 25 per cent of operator respondents) voiced strong agreement that multiplay is a more powerful competitive differentiator than mobile network quality.

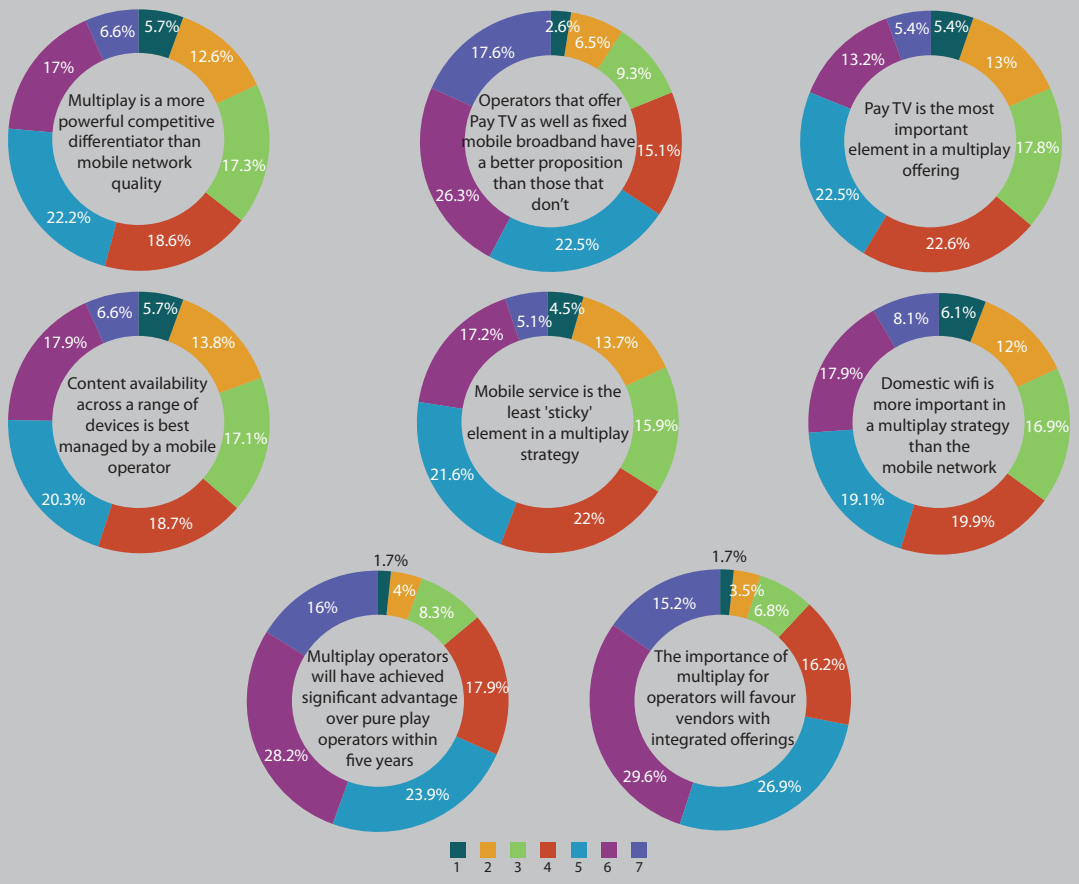
This question was one of a number that were intended to give us a sense of the relative importance of the different elements that comprise a multiplay offering. More operator respondents (21.3 per cent) than respondents overall (18.6 per cent) voiced strong agreement that Pay TV is the most important element in a multiplay offering.

In a similar vein, 23.7 per cent of operators and 19.3 per cent of respondents overall expressed strong agreement that mobile service is the least 'sticky' element of a multiplay strategy. What's more, among those who identified themselves as working for a mobile operator specifically the same rating was given by 23.9 per cent.

Indeed more than a quarter of respondents agreed strongly that, as part of a multiplay strategy, domestic wifi is more important than the mobile network.

Finally, the importance of multiplay is likely to have knock-on effects for equipment suppliers. More than 70 per cent of respondents agreed—and half of operators strongly agreed—that the importance of multiplay will favour vendors with integrated offerings.

Respondents were asked to give their reaction to a number of statements relating to multiplay offerings, rating their agreement or disagreement on a one to seven scale where seven was strongly agree.



BIG DATA

The majority of industry respondents believe it is more important for operators to harness the power of Big Data to drive new revenues streams externally than to drive efficiencies internally.

By 2016, almost every operator to which Big Data is relevant should have embarked upon their strategy with a view to bringing greater advantages in customer retention, segmentation and targeting as well as network planning and optimisation.

Key takeaways:

- 80 per cent of operators will have a Big Data strategy in place by 2016.
- 60 per cent of operators see customer retention as a key application for Big Data.
- The greatest challenge to bringing Big Data projects to fruition is poor inter-departmental communication.

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Big challenges for Big Data

Moving on from last year's questions about the Cloud, we were keen to learn how operators intend to make use of Big Data to boost their revenues and capabilities.

In last year's industry survey over 80 per cent of respondents said they expected operators to own their own cloud infrastructure by 2015, with over 90 per cent expecting operators to be selling cloud services within the same time frame. Over the past year there has been a great deal of activity in this area—and not a little hype—indicating that these expectations were on the money. This year we chose to make our cloud focus more granular and cast a searching eye over Big Data initiatives in the telecoms sector.

From the responses we found that around 60 per cent of operators—and a similar proportion of the industry at large—believe that it is more important for telcos to harness the power of Big Data to drive new revenue streams externally than it is to turn it to the advantage of their own internal operations. Yet when questioned in more depth about their Big Data strategy, the spread of responses suggested a real ambiguity in the purpose of such an initiative.

Almost a quarter of operators said that their organisation has Big Data initiatives in place for addressing both internal and external opportunities. Twelve per cent of respondents said there was an internally focused Big Data strategy in place and ten per cent an initiative focused on external revenue streams.

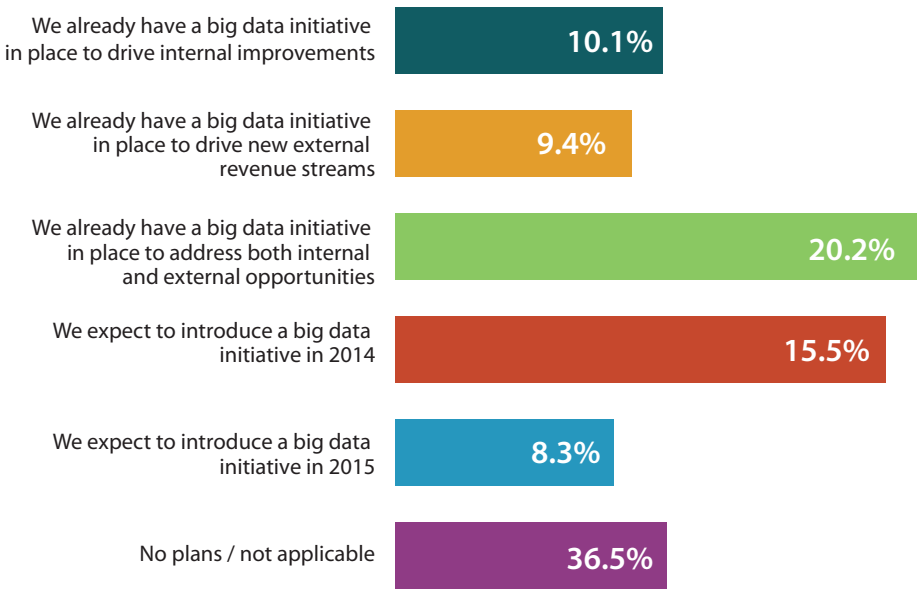
Among those operators that do not currently have Big Data strategies in place it is clearly on the agenda; 22.2 per cent of operators said introduction of such an initiative was planned for this year and ten per cent said one was planned for 2015. Just over nine per cent of operator respondents said there were no plans in place at all.

So by 2016, if our respondents are right, around 80 per cent of operators and two thirds of the industry will have a Big Data strategy in place. However, this means 20 per cent of operators either don't plan to introduce a Big Data initiative or don't see it as applicable to their business.

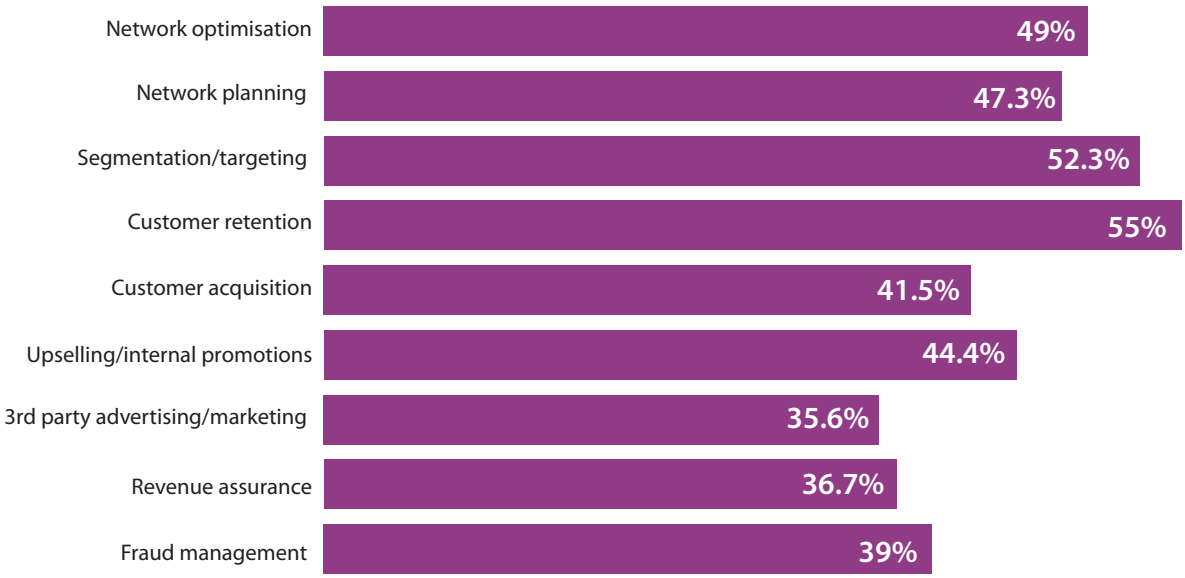
This figure dovetails nicely with the findings from the section of last year's survey focused on the cloud, so it might be that, with Big Data and cloud initiatives often going hand in hand, there is a ten to 20 per cent chunk of the operator sector to which these technologies are still not thought to be relevant.

In terms of the benefits Big Data could bring to operators, respondents identified customer retention and segmentation/targeting as the clear leaders. Respondents were asked to rank a number of potential benefits on a scale of one to seven where seven represented very high potential benefit. Almost 60 per cent of operators and 55 per cent of respondents overall ranked customer retention as six or seven on this scale, with segmentation/targeting draw-

Which of the following statements reflects your company's big data strategy? (operators only)



Proportion of respondents who rated the following applications of Big Data six or seven out of seven for potential benefit to operators



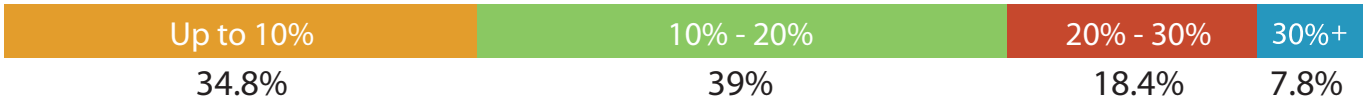
ing the same response from 52.3 per cent of respondents. Upselling and internal promotions were seen as the third most beneficial application of Big Data by operator respondents, with 47.3 per cent giving this a high rating.

third party advertising and marketing were seen as having the least potential out of all the options in this section. Just 31.2 per cent of operator respondents gave this a high rating for potential. This is perhaps a reflection on the more

cent of operators. This echoes discussions that we had with industry pundits over 2013, in which some players suggested that network complexity rather than bandwidth might fast be becoming the barrier to network growth.

wider industry, was software development, which as can be seen from the chart overleaf was broken out into three sub-categories. The areas where they were most highly rated were data warehousing, data collection and IT project management/integration.

What percentage of an operator's IT budget should be dictated by big data in 2014?



By using big data to optimise their own processes and improve quality of service, operators will already be building a platform that could enable them to explore new business opportunities. But it was interesting to note that, despite more interest in Big Data as a driver of external revenues than internal improvements,

cautious attitude of the business world at large in the wake of several privacy scandals during 2013 and the effects of the NSA PRISM revelations.

The application of Big Data for network planning and optimisation was also seen as a key initiative, given a high ranking by 49 per cent of respondents overall and 46.9 per

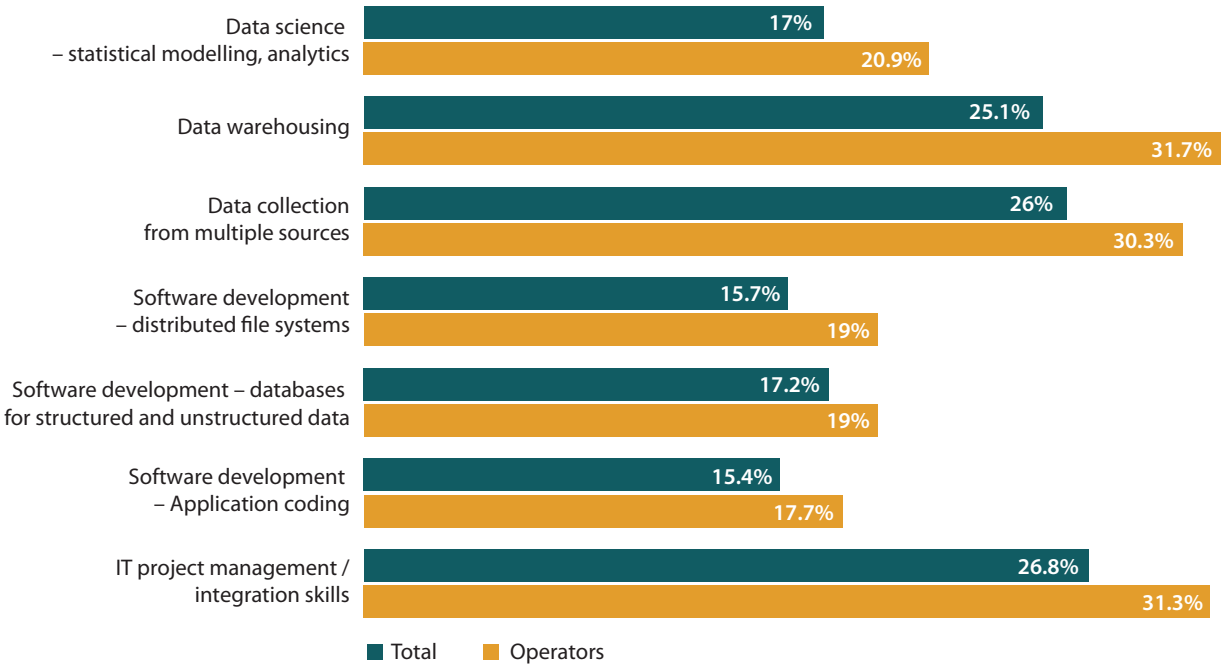
Respondents were then asked to rate operators one to seven for their expertise in certain areas of Big Data project management and operators rated themselves more favourably than the wider industry in every category.

The area in which operators were seen as least skilled, by themselves as well as by the

Clearly, operators have greater faith in their capabilities than the wider industry, particularly when we bear in mind that the overall responses contain the higher than average operator responses.

There was an almost even split between operator respondents with regards to the percentage of IT budget that should be dictated by Big Data activities in 2014. 36

Proportion of respondents who rated the following areas of Big Data operator expertise six or seven



per cent would allocate up to ten per cent and 37 per cent up to 20 per cent. Again the numbers fairly closely matched the wider industry responses.

There was a significant drop in users expecting to spend more than 20 per cent of the year's IT budget, with only half as many again looking to spend between 20 and 30 per cent of budget on Big Data and less than ten per cent looking to spend more than 30 per cent.

Yet there are still many challenges standing in the way of operators bringing Big Data projects to fruition and there was a small but telling difference in what is considered to be the most awkward of those challenges.

Whereas the greatest challenge as viewed by the wider industry was poor Interdepartmental communication–which 41 per cent rated six or seven on a one to seven scale of severity–among operators the biggest obstacle was felt to be fragmentation in data sources, with 42.5 per cent of operator respondents giving it a high rating.

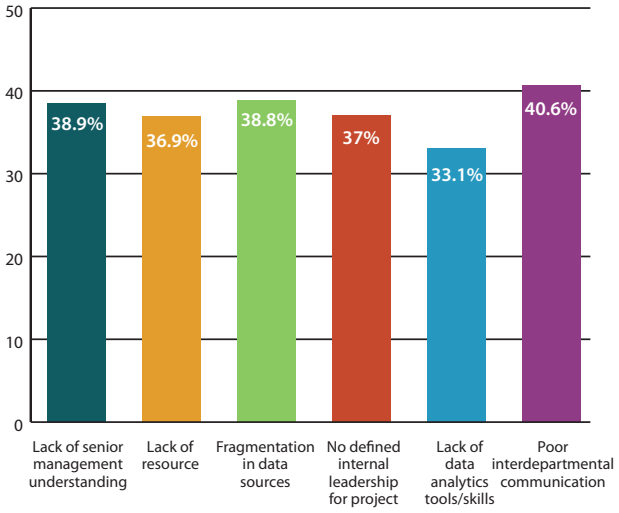
Lack of resource was seen as the next biggest challenge by the operator community, with almost 40 per cent of operators and the wider industry viewing it as extremely challenging, followed by a lack of senior management understanding.

In this section however, the key takeaway is that all questions received a high rating from more than 35 per cent of operators with many nudging the 40 per cent mark. Viewed from the other side, less than ten per cent of respondents in both the operator and wider industry camps saw any of these challenges as "Not at all challenging".

Clearly Big Data is high on the agenda, with almost half of operators already operating a Big Data initiative and a further 30 per cent looking to roll one out by 2016.

A multitude of key benefits have been identified but we have yet to see any killer applications for the technology. While it's roundly acknowledged that there are a lot of challenges to be overcome if Big Data is to deliver on its promises, both the carriers and the industry at large are painfully aware of the sticking points. ■

Proportion of respondents who rated the following challenges in bringing Big Data projects to fruition six or seven out of seven



OTT PARTNERSHIPS

This year's survey reaffirmed the 2013 finding that there is value for operators in partnering with OTT players and others in the digital ecosystem. In total, 92 per cent of respondents (and 93 per cent of operator respondents) said they believed that this was the case.

Yet operators expressed cautious optimism about the revenue potential of such partnerships and the survey revealed some of the challenges that they might face.

Key takeaways:

- 41 per cent think quality of service is the greatest value an operator can add to an OTT service.
- The most serious challenge to OTT/ operator partnerships is confusion or uncertainty over the benefits available to both parties.
- 50 per cent of respondents felt that a revenue share would be the best option for operators striking a partnership with OTT players.

AsiaInfo Linkage

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Partnering for success

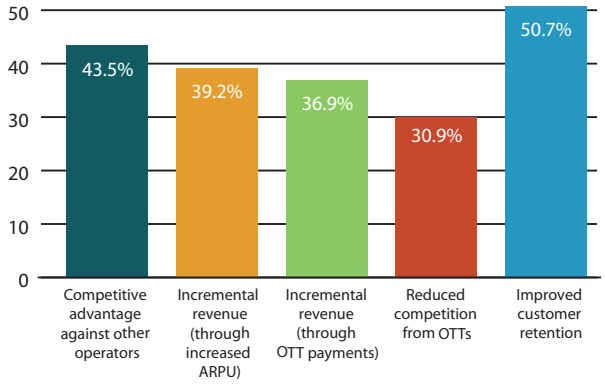
It is extremely difficult for operators to compete with OTT service providers and attention has now turned to how these two groups might more effectively collaborate. The survey revealed true belief in the benefits of partnership but also highlighted some potential causes of disruption.

One of the most emphatic statistics from last year's Telecoms.com survey was that 83 per cent of respondents believed mobile operators could and should partner with OTT players to their mutual benefit. This perhaps represented a consciously positive approach to the thorny problem of operator/OTT competition. Less than half of respondents to the 2013 survey felt that mobile operators were capable of competing with OTT players in service innovation and the survey revealed a general sense within the industry of OTTs having established the upper hand over operators in a number of areas.

For the 2014 survey we decided to look at how operators might go about partnering with OTT players, what they could offer to them in doing so and the benefits they might be able to derive in return. Respondents expressed confidence in the potential upsides for operators and OTTs alike but revealed concerns about what we might interpret as a level of inertia on both sides, perhaps exacerbated by the technical and relational complexity inherent in structuring such partnerships.

In opening this section of the survey we needed to reaffirm the previous year's enthusiasm for the idea of partnership, which was not difficult: 92 per cent of respondents (and 93 per cent of operator respondents) said they believed that there is value for operators in partnering with OTT players and others in the digital ecosystem.

Proportion of respondents who rated the following benefits of OTT partnerships for operators six or seven out of seven



Respondents were asked to rate a number of benefits available to operators from such partnerships according to their perceived value on a scale of one to seven, where seven is extremely valuable. The benefits to which the highest values were attached were improved customer retention—more than half of respondents rated this six or seven on the scale—and an improved competitive advantage over other operators, which was given the same rating by 43.5 per cent of respondents and 45.3 per cent of operator respondents.

There was substantially less belief in the possibility that such partnerships might somehow mitigate the competitive threat that OTTs represent to mobile operators, which is consistent with the previous year's findings. Just under 31 per cent of respondents (and an identical proportion of operator respondents) ranked this benefit six or seven.

Operators expressed cautious optimism about the revenue potential of such partnerships. Both incremental revenue through increased ARPU and incremental revenue through payments from OTT players were ranked six or seven as benefits by 39.4 per cent of operator respondents.

Which business model do you think is best for operators partnering with OTTs and other players in the digital ecosystem?

Which platform(s) should operators use to make these capabilities available to OTTs and other partners?

"In the past, operators have sometimes over-priced access to their value-adds (for example location APIs) so OTT players have found workarounds," says Andy Tiller, VP for corporate product marketing at BSS solutions provider AsiaInfo-Linkage. "But the survey shows that the business case for OTT partnerships is built on many factors, and offering cheaper, easier access to their value-adds could be very beneficial to operators."

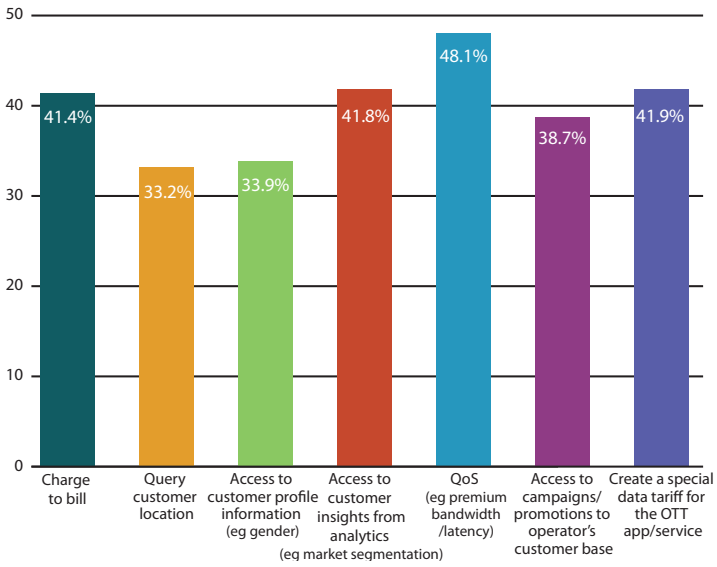
For all the conviction that respondents displayed about the concept of operator-OTT partnerships, the most serious challenge to their successful execution was felt to be confusion or uncertainty over the benefits available to both parties. While this could be seen as contradictory, it perhaps reflects the level of education, discussion and work that needs to be done in order to deliver the kind of benefits that the industry thinks may be yielded through such partnerships.

This challenge was ranked as six or seven out of seven by 47 per cent of respondents overall and 48.5 per cent of operator respondents. Less serious but by no means insignficant is the issue of commitment on both sides. Lack of commitment from OTTs was given the highest rating as a challenge by 35.5 per cent of respondents and an almost identical share of operator respondents.

Operators were judged to be slightly more game, perhaps because they have more to gain, with 29.4 per cent of respondents (and 27.4 per cent of operator respondents) identifying a lack of commitment, expertise or resource from operators as serious challenge.

Meanwhile one third of operator respondents rated the complexity of the IT processes required to enable operator value add to OTT offerings as very challenging. Andy Tiller offers some insight into why this might be: "Many operators work with a handful of OTT partners today. But creating an attractive overall package which combines

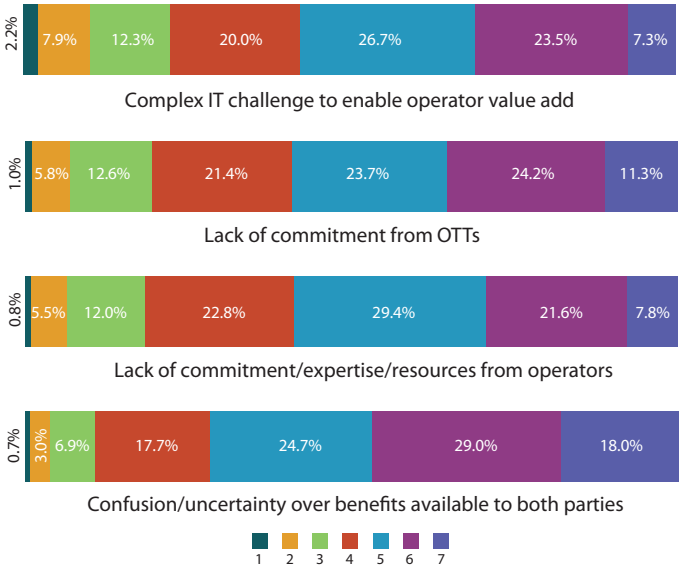
Proportion of respondents who rated the following operator capabilities six or seven out of seven for value to OTT services



AsiaInfo Linkage

41% THINK QUALITY OF SERVICE IS THE GREATEST VALUE AN OPERATOR CAN ADD TO AN OTT SERVICE

Rate the following challenges to operators' collaboration with OTTs. Please rate each on a scale of 1 – 7, where 1 is not in the least challenging and 7 is extremely challenging



the partner's service with operator value adds—such as a special tariff, QoS and charge-to-bill—generally involves manual customisation of the BSS systems, which is expensive and not scalable to a large number of partnerships," he says.

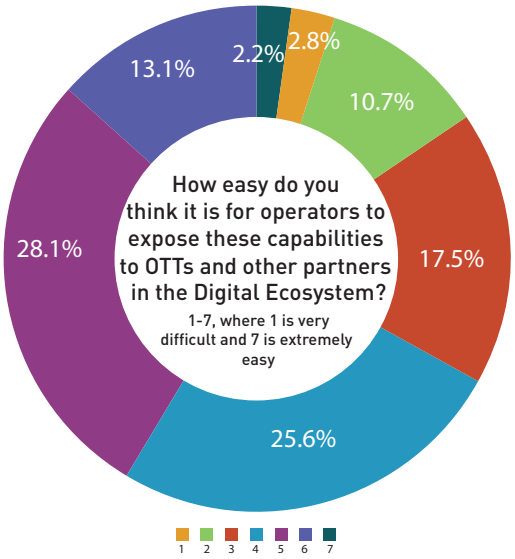
The financial elements of partnerships are often the most difficult to thrash out. Half of respondents felt that a revenue share with OTT players would be the best option for operators striking partnerships with them. The other half were split evenly, 24.6 per cent favouring a wholesale arrangement through which the OTT pays the operator for whatever capabilities it uses and 25.4 per cent opting for a retail scenario in which the operator collects a fee from the end user as part of their subscription. Among operator respondents there was slightly higher enthusiasm for the retail model (27.3 per cent) and slightly less for revenue share (48.1 per cent).

A number of respondents expressed their own opinions on this question, however, with these responses emphasising flexibility and combination. Different models will likely suit different cases, these respondents said, with each of the three options likely to be deployed by operators.

Operators and their industry groupings have long promoted the depth and breadth of network features and APIs that can be exposed to third parties as a means of enhancing services and applications that run over the networks. We asked respondents to rank a number of operator capabilities in terms of the value they could add to OTT services, where one represented very little value and seven extremely high value.

It is perhaps not surprising that Quality of Service was identified as having the highest potential value, ranked six or seven by 48.1 per cent of respondents and more than half of operator respondents.

The least valuable capability for respondents overall, given the highest ranking by 33.2 per cent of respondents was location, while for operator respondents the least valuable was felt to be access to customer profile information. This perhaps reflects the ready availability of other sources of information (GPS and OTT's own customer data) as well as operators' concerns around making their customers' personal data available to third parties.



There were some discrepancies between overall and operator responses for this question. For example, 43.6 per cent of operator respondents gave a high value rating (six or seven) to opening up the operator customer base to OTT promotional campaigns compared to 38.7 per cent of overall respondents. Meanwhile 45.7 per cent of operator respondents felt that the creation of a special data tariff for specific OTT applications or services deserved a high value rating, compared to 41.9 per cent of respondents overall.

Such network assets can only have value if they are exposed, however, and on this issue respondents reverted to a cautious outlook. Asked how easy exposure of these assets is for operators to achieve, respondents stuck to the middle ground, with operator respondents proving more reserved than the overall base. The largest share of operator respondents, 28.5 per cent, rated this neutrally, as four on a scale of one to seven where seven was 'extremely easy', while one quarter were prepared to go a stage further, rating it five out of seven. Among respondents overall this was reversed, with 28.1 per cent giving a rating of five and 25.6 per cent a rating of four, as we can see from the chart on the facing page.

Fewer respondents, 15.3 per cent overall and 16.3 per cent of operator respondents rated this six or seven while 13.5 per cent overall and 11.6 per cent of operators were overtly negative, ranking it one or two.

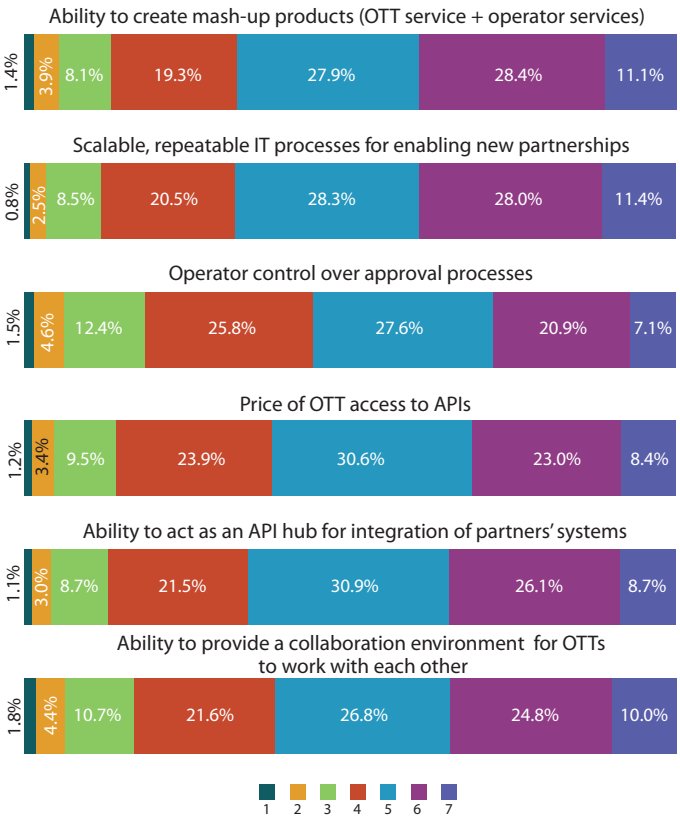
Given the emphasis that respondents placed on the advantages OTT partnerships could give operators over one another we were interested to see how they felt about the manner in which these kind of capabilities could and should be exposed. There has been some suggestion that industry-wide operator initiatives such as the GSMA's OneAPI programme make it very difficult for operators to compete with one another, for example.

Asked whether collaborations such as OneAPI or individual deployments, or a combination of the two, offered the best opportunities for operators, the majority bet safe. Two thirds of respondents opted for both, 17.7 per cent for operator-deployed collaboration platforms and 16.2 per cent for collaborative initiatives. Operator respondents were very slightly more divided, with 18.1 per cent choosing collaboration, 19 per cent choosing operator deployment and 62.9 per cent seeking the best of both worlds.

"It's clear that operators want to support standardization and industry-wide initiatives, but they also need to create competitive advantage from their OTT partnerships," says AsiaInfo's Andy Tiller. "We are beginning to see operators opening up access to their IT systems in a controlled way to OTT partners using B2B collaboration platforms. This not only directly adds value to the partnership, but also makes the process of creating a combined offering with a partner much more straightforward and automated."

In the 2014 Telecoms.com Intelligence Global Industry Survey the overwhelming majority of respondents backed partnerships between operators and OTTs. But the survey made it just as apparent that the journey from concept to reality in this area is not straightforward. There are fundamental questions over the exact destination, the most effective route for navigating the obstacles to be found on the way and even debate as to how much some key players want to make the journey at all. Nonetheless it seems clear that operators have a good deal to offer potential OTT partners, providing they can expose their assets effectively. ■

Rate the importance of the following attributes to the success of the operator's OTT collaboration platform. (1 – 7, where 1 is not in the least important and 7 is extremely important)



AsiaInfo Linkage

CARRIER WIFI

For mobile operators managing huge data demand there are clear advantages to the shift of traffic away from the cellular network onto wifi. But, as we discovered, straightforward offload is no longer perceived as chief among them.

Indeed the results suggested that operators might be able to derive a range of benefits from some level of involvement in the provision of wifi, so long as challenges to that provision are overcome. And in doing so they might be able to improve—and extend their involvement in—the customer experience.

Key takeaways:

- 57 per cent of respondents believe the most significant benefit of wifi is the ability to ensure the best level of connectivity at all times.
- 53 per cent of respondents believe monetising the wifi network is the biggest challenge operators face.
- 17 per cent of respondents believe users should control the wifi access policy entirely.

device scape™

About devicescape:

Devicescape operates the world's largest Wi-Fi service platform delivering access, engagement, and insight services for telecom operators. Using crowd-powered machine learning software to build the world's largest Curated Virtual Network of high-quality hotspots, Devicescape has created a new kind of global Wi-Fi service platform that is orders of magnitude less expensive to deploy and manage over conventional telecom networks. Named the Devicescape Service Platform, it enables a range of carrier-class services for operators to enable "always best connected" subscriber Access, compelling consumer and business Engagement, and powerful Insight into consumer behavior.

For more information visit **www.devicescape.com.**

Wifi: The smart approach

Wifi is the dominant means of data connection for smartphone and tablet users and its existence is essential to operators looking to manage continuing growth in demand for wireless data. This section of our report looks at the ways in which operators can best exploit this essential connection and the challenges they might face in doing so.

Cellular networks are complex and wonderful things and the most advanced of them deliver remarkable performance across a number of metrics. But the fact remains that smartphone and tablet users consume the majority of their data over far simpler wifi connections. Curated wifi specialist Devicescape has published research showing that smartphone users typically consume 60 to 80 per cent of their data over wifi and that this usage stays constant whether in a 3G or 4G LTE environment.

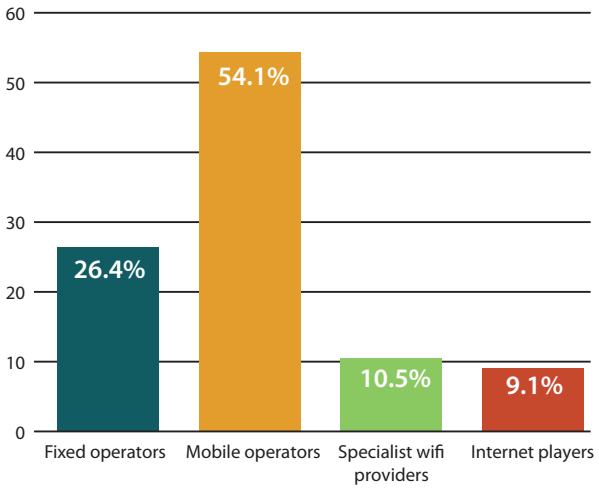
While most of this usage comes from private and office wifi networks, a growing percentage of this usage runs across wifi connections owned and operated by enterprises or commercial premises–collectively known as 'amenity wifi'. From 20-seat cafés to 90,000-seater stadiums, amenity wifi tends to be offered by premises owners as a value-add for customers, and quality or availability of service are not necessarily priorities. Users make do with the access that they're given, trading variable performance against the fact that, much of the time, that access is free.

For mobile operators managing huge data demand there are clear advantages to the shift of traffic away from the cellular network. But, as we shall see, our survey showed that straightforward offload is no longer perceived as chief among them. Indeed the results suggested that operators might be able to derive a range of benefits from some level of involvement in the provision of wifi, so long as challenges to that provision are overcome. And in doing so they might be able to improve–and extend their involvement in–the customer experience.

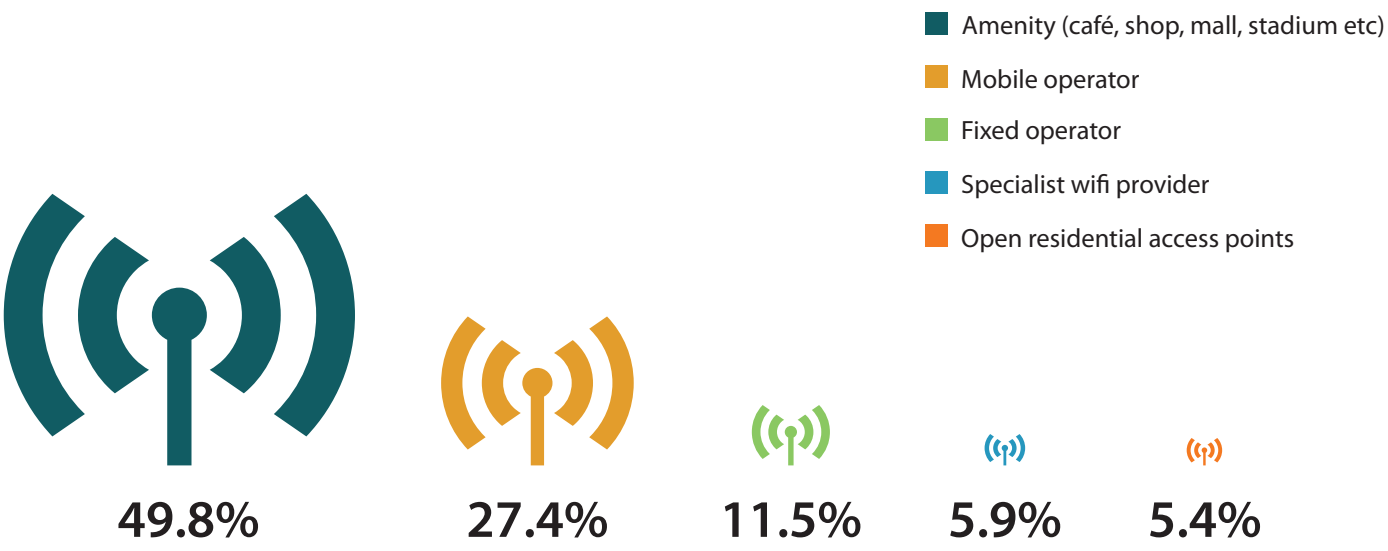
"Operator views on wifi have undergone a dramatic shift in recent years, propelled by the sheer challenge of managing spiraling demand for mobile data," says Dave Fraser, CEO of Devicescape. "Dismissal and even outright hostility towards wifi is being replaced by a creative urge to explore how this ubiquitous but fragmented technology can be harnessed as a complement to existing network architectures."

Some mobile and fixed operators have deployed their own wifi networks but telcos are not seen by the industry as the best source of public wifi today. Half of our survey respondents identified amenity wifi as the most readily available source of public

Which of the following company types do you think have the best brand and market positions to offer a national branded wifi service



From your perspective as a user what is the most readily available source of wifi access outside of the home or office in your market?



wifi (not in the home or office) in their markets, although 27.4 per cent of respondents cited mobile operators as the best source.

While operator respondents backed themselves more strongly–30.7 per cent said mobile operators were the best source–45.8 per cent nevertheless cited amenity wifi. (Interestingly only respondents from fixed operators ranked mobile operators as a better source than amenity wifi).

But amenity wifi is not without its problems. Asked to judge a number of statements relating to amenity wifi, 65.2 per cent of respondents agreed (41.1 per cent strongly) that the process of accessing it–manual login, temporary passwords, payment, etc–can be offputting for users. Meanwhile 37.2 per cent of respondents strongly agreed that amenity wifi is inconsistent in terms of quality.

Security was felt to be less problematic than access and quality, with 30.4 per cent of respondents strongly agreeing that security concerns discourage usage. While this indicates a relative lack of concern, it remains a significant swell of opinion, and operator responses taken in isolation indicated that security is a more serious worry among that segment of the industry: 36.1 per cent of operators voiced strong agreement that such concerns discourage usage.

The variable quality of amenity wifi is well understood but our survey also suggested that users' tolerance of it may be on the wane. In a subsequent question, 52 per cent of respondents (and 53 per cent of operator respondents) strongly agreed that quality of experience on amenity and public wifi will become increasingly important to end users.

Another characteristic of amenity wifi is that, by nature, it is extremely fragmented. Providers of amenity wifi, even large coffee shop chains with multiple outlets in many cities, are never going to be able to offer true wide-area availability. Indeed more than 80 per cent of respondents to the survey felt that the organisations with the best brands and market positions to offer a coherent, nationwide wifi service are telcos.

More than half–54.1 per cent–rated mobile operators as the best fit in this regard, while a further 26.4 per cent preferred fixed operators. Specialist wifi providers scored poorly, with only 10.5 per cent of the votes, with internet players a little further off the pace, with 9.1 per cent.

Among operators themselves the scores were unsurprisingly weighted even more in their favour. 61.2 per cent of mobile operators and 56.3 per cent of fixed operators rated themselves as the most natural providers of such a wifi service.

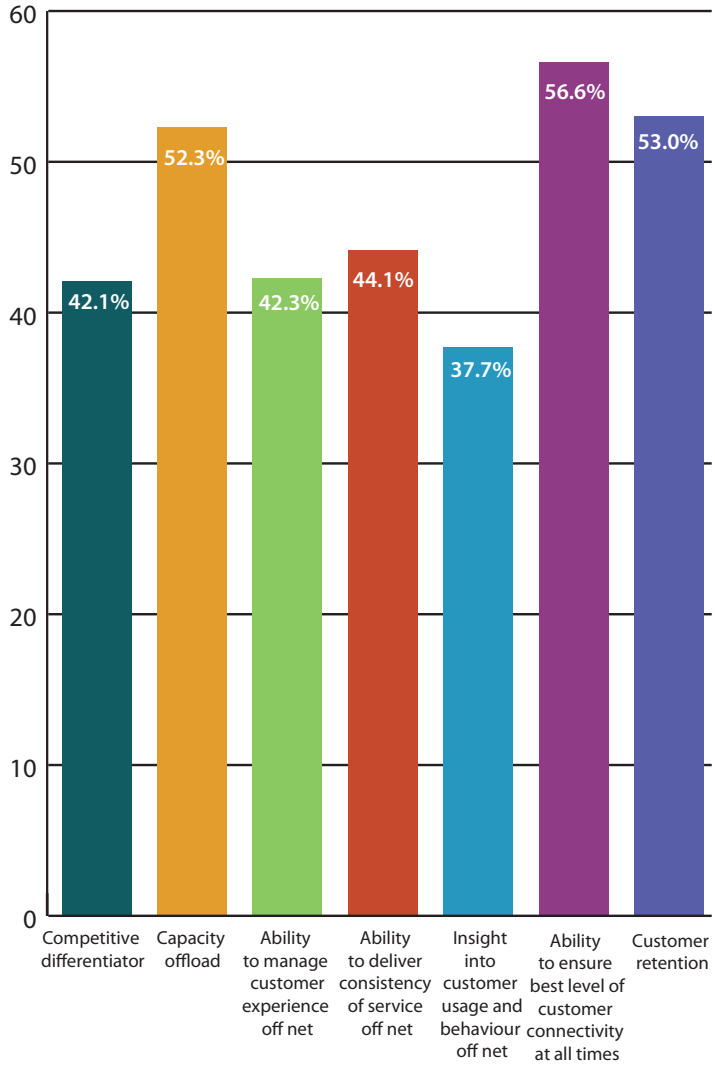
What is perhaps more interesting, however, is that almost one fifth (19.4 per cent) of mobile operators selected fixed operators and one quarter of fixed operator respondents selected mobile operators. There is evidently mixed opinion among operators as to where the wifi proposition should most logically sit.

Respondents were also asked to rank the benefits that mobile operators might derive from providing a service for which, as became clear, they are widely felt to be a natural fit. Since the beginning of the mobile data boom wifi has either been ignored or positioned predominantly as an offload solution; a

57% OF RESPONDENTS BELIEVE THE MOST SIGNIFICANT BENEFIT OF WIFI IS THE ABILITY TO ENSURE THE BEST LEVEL OF CONNECTIVITY AT ALL TIMES

How do you rate the following benefits to mobile operators in being able to offer a controlled/branded wifi experience?

(figures are percentage of respondents who rated each benefit 6 or 7 on a 1 – 7 scale where 7 = extremely beneficial)



valve that enables the release of pressure on the cellular network. But of the benefits that mobile operators might derive from offering a branded or controlled wifi experience, capacity offload was not ranked highest by our respondents.

The ability to ensure the best level of customer connectivity at all times was ranked as the most significant benefit, rated six or seven out of seven by 56.6 per cent of respondents. In second place, given the same score by 53 per cent of respondents, was customer retention while capacity offload was in third place, scored in the same way by 52.3 per cent.

Among operators, customer connectivity was also the highest ranked benefit, although capacity offload was in second place and customer retention in third. In both instances the top ranked options were separated by slender margins but it is nonethless significant that the carrier wifi narrative is shifting away from offload—in which it is seen as a means of addressing an operator problem—towards a scenario in which it enables an enhanced customer connectivity experience.

Despite the buzz status of customer behaviour data analytics, the lowest ranked benefit that mobile operators could get from providing a branded wifi service, according to the survey, was insight into customer usage and behaviour while off the cellular network. 37.7 per cent of respondents (matched almost exactly by operator responses) gave this the highest ranking.

"Given the tremendous fragmentation of wifi, it is likely difficult to envisage a single wifi CDR service to be as complete and useful as the CDR is today on the mobile side," says Fraser. "This will change as telecom operators realise the benefits of managing the entire customer's experience with their smartphone, not only the times they are on the mobile network."

As with the views on security mentioned above, we need to bear in mind that a low relative ranking does not necessarily mean that there is a lack of belief in this benefit. Instead it was, for respondents, the least convincing of the options.

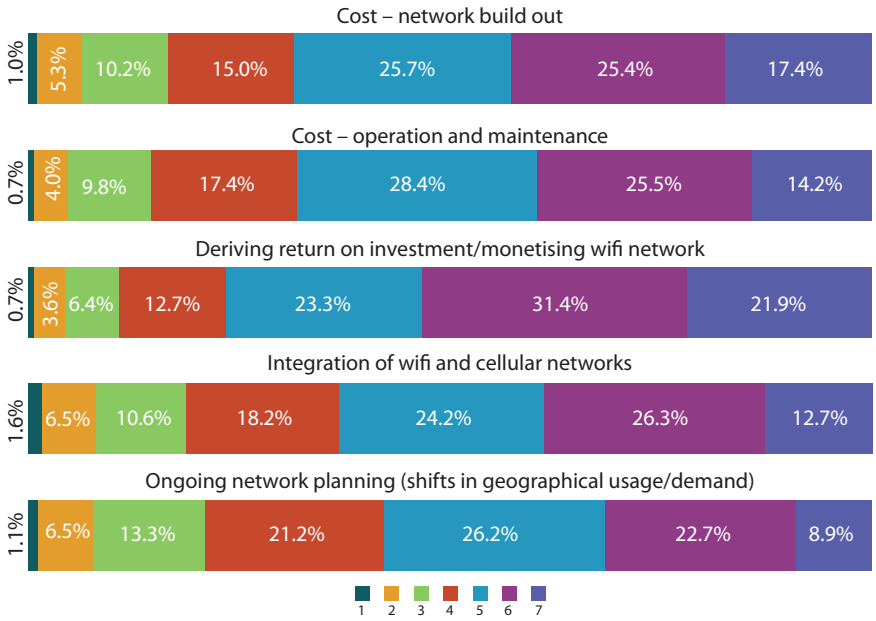
Indeed, 51.7 per cent of operator respondents strongly agreed that mobile operators need to extend their involvement with the user beyond the cellular network in order to remain relevant in the user's entire smartphone experience.

Related to this, 35.1 per cent of operator respondents, compared with 28.9 per cent of respondents overall, agreed strongly that operator-provided OTT communications apps such as O2UK's TuGo—which replicates the mobile service, includ-

53% OF RESPONDENTS BELIEVE MONETISING THE WIFI NETWORK IS THE BIGGEST CHALLENGE

Rate the following challenges faced by operators in deploying their own wifi offerings

(Please rate each on a scale of 1 – 7, where 1 is not at all challenging and 7 is extremely challenging)



ing mobile phone number, over any IP connection–are going to become essential elements of the mobile operator offering.

There are clearly concerns, however, that despite the range of benefits available to mobile operators from wifi provision, the economics might not stack up. Asked to rank challenges that operators might face in deploying their own wifi networks, respondents cited return on investment as by far the most serious. 53.3 per cent of respondents ranked RoI six or seven out of seven in terms of seriousness, with that number rising to almost 57 per cent among operators.

The cost of deployment was some way further back, given the same ranking by 42.8 per cent of respondents (although 49 per cent of operators were similarly concerned) while operational cost was judged the third most serious challenge. 39.7 per cent of respondents and 44.5 per cent of operator respondents gave Opex the highest ranking.

While operator respondents ranked customer retention lower as a benefit than respondents overall, 57.2 per cent of them strongly agreed that an operator-managed wifi experience, in which the user is moved between networks transparently but always to their benefit, would be attractive to consumers.

But the policy surrounding the movement of customers between cellular and wifi connections–when they are moved and at whose behest–is clearly a matter for some debate. Just shy of 40 per cent of respondents felt that smartphone users are best served by being on wifi networks whenever possible, while 30 per cent preferred the caveat that users should move only when the wifi connection is superior to the cellular connection.

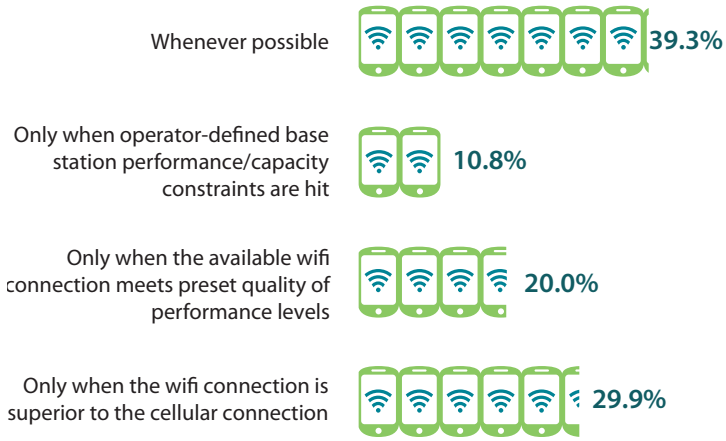
Among operator respondents these two options were more evenly selected, with 35.8 per cent choosing the former and 32.1 per cent the latter.

One third of operator respondents felt that operators should control the process of movement entirely, so long as the guiding principle was provision of the best customer experience at any given time. Overall, 27.5 per cent of respondents agreed with this suggestion. The more popular option for respondents as a whole (46.4 per cent) and operators (43.4 per cent) alike was that the customer could set simple preferences that are thereafter applied automatically.

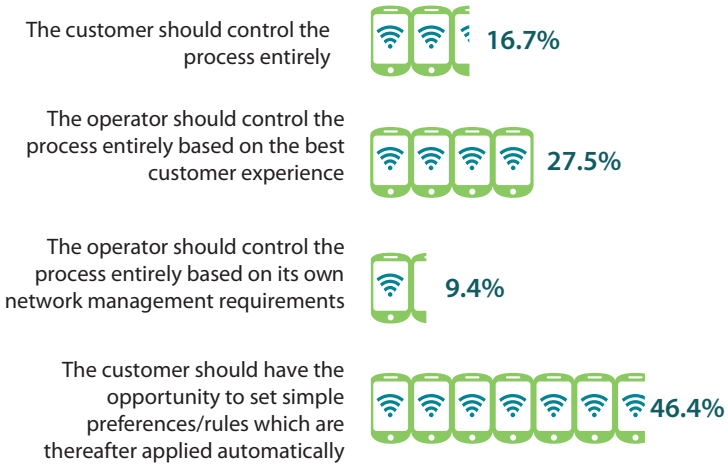
"The elevated, always best connected experience is a balancing act between customer choice and simplicity. The smartphone and network should work together to make it as simple to connect to wifi as it is to connect to cellular. However, wifi has a long history as 'the users network' and subsequently many customers will expect some control–for example a preference

17% OF RESPONDENTS BELIEVE USERS SHOULD CONTROL THE WIFI ACCESS POLICY ENTIRELY

Under what circumstances are smartphone users best served by being on wifi networks?



How should user movement between cellular and wifi networks be managed?



for more performance or reduced cost," says Devicescape's Fraser.

Nonetheless it was interesting that 16.7 per cent of respondents felt that customers should control the experience entirely, while 9.5 per cent of operators felt that mobile operators should control the process based on their own network management requirements.

As we have seen, this section of the survey suggested that mobile operators are the natural providers of wide area wifi offerings but highlighted the obstacles (mostly financial) that operators might face in trying to deliver them. It also identified a substantial existing entity–amenity wifi–as an excellent wifi resource. So what opportunities exist to bring these two elements of connectivity together?

There have been a number of moves within the industry to marry pre-installed public or private wifi hotspots to telco offerings, with varying degrees of success. One third of respondents to the survey agreed strongly that mobile operators could benefit from partnering with amenity wifi providers but such partnerships are not necessarily simple to devise given the significant fragmentation with millions or potentially tens of millions of providers.

QoS is, as discussed above, very important to telcos, although maybe less so to providers of amenity wifi. And in line with 37.2 per cent of respondents emphasising inconsistencies in the quality of amenity wifi connecitons, 38.1 per cent (and 38.7 per cent of operators) agreed strongly that it would be more suitable for operator partnership if it was quality controlled.

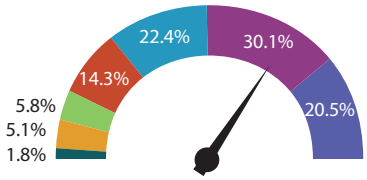
Neither can the problem of fragmentation be overlooked–31.9 per cent of operators strongly agreed that amenity wifi is too fragmented for operators to exploit its ubiquity through partnership.

The industry clearly believes that the integration of wifi into the wider telco offering could offer some significant benefits. But the dream of mining customers' wifi usage for actionable insights seems to be, for now, just that. Less than three per cent of respondents judged this the most likely benefit. Network capacity relief is important but perhaps not as important as it used to be, with less than one quarter of respondents identifying this as the most likely upside.

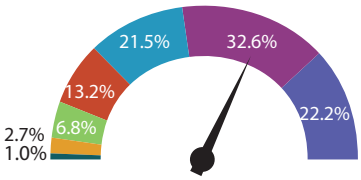
The most likely benefit to be derived–according to 40 per cent of respondents–is keeping users connected as often and as simply as possible. Like so much else in the industry, it's all about the customer experience. ■

To what extent do you agree with the following statements concerning mobile operators and wifi?

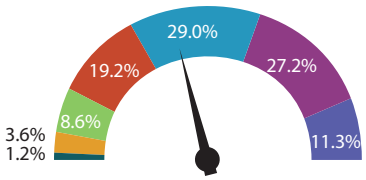
(Please rate each on a scale of 1 – 7, where 1 is strongly disagree and 7 is strongly agree)



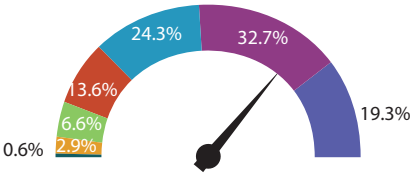
Mobile operators need to extend their involvement with the user beyond the cellular network in order to remain relevant in the user's entire smartphone experience



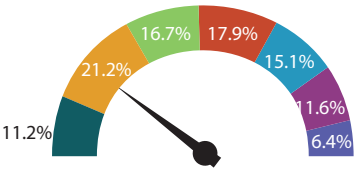
An operator-managed wifi experience, in which the user is moved on and off wifi networks transparently and always to their benefit, would be attractive to consumers.



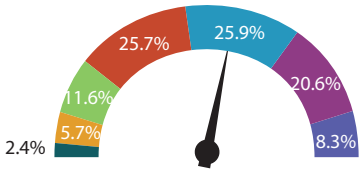
Operators that capture data on user behaviour on amenity/public wifi networks stand to build a competitive advantage



Quality of experience on amenity/public wifi will become increasingly important to smartphone users

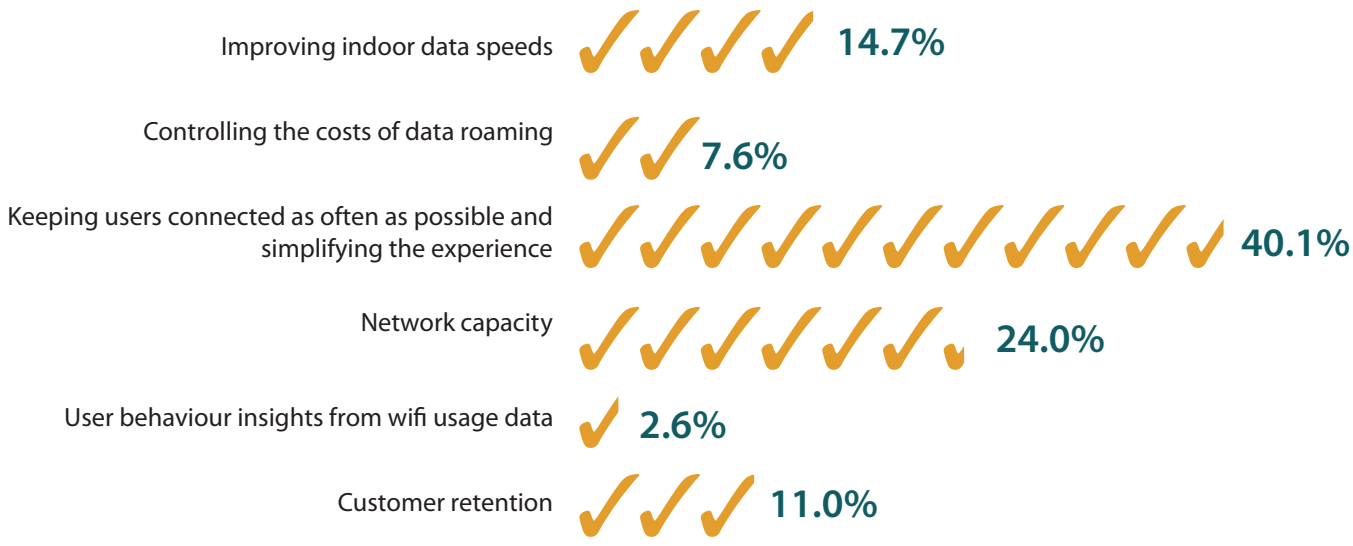


Mobile operators should leave wifi provision to specialists or premises owners. They should focus only on improving the cellular network experience



Operator-provided OTT communications apps (eg O2 TuGo in the UK) are going to become essential elements of the operator offering

Which benefit are mobile operators most likely to receive from integrating wifi into their offer?



LTE ROAMING

We asked respondents whether they agreed that mobile operators are justified in charging more for LTE roaming than for other roaming services and less than half agreed that they are. One third of respondents disagreed and a further 23.1 per cent remained neutral.

Operators may have to look to more advanced services if they want to command a premium, rather than simply charging more for LTE as a basic connection. Asked which kind of roaming services might justify a premium in future, respondents backed guaranteed QoS for LTE data strongly.

Key takeaways:

- 61 per cent of respondents believe QoS for LTE data roaming will justify a premium in the future.
- 63 per cent of respondents believe the EU's proposed removal of roaming premiums will result in a significant increase in traffic.
- 60 per cent of respondents believe visibility of spend is just as important as spend itself.

iBasis | kpn

About iBasis:

For more than a decade IP has been at the core of iBasis' business of providing smart international connectivity to carriers, mobile operators and OTT players.

iBasis can help you benefit from the cost and service advantages of IP technology, smoothly evolve towards a genuine multiservice IPX, and lead the way to revenue assurance from innovative services such as HD Voice, LTE Roaming and VoLTE.

A fully-owned KPN company, iBasis offers a comprehensive portfolio of international mobility solutions: high-quality voice and SMS termination, global mobile signaling, GRX, fraud detection, traffic management, HD Voice and a full LTE Roaming solution and footprint.

LTE sans frontières

LTE roaming is key to the progress of the latest cellular network standard. But price premiums for the service are not guaranteed. Operators need to devise a range of services and charging models to ensure they can derive real benefit from making LTE available across borders

With 263 LTE networks in commercial service in 97 countries by January 15th this year, according to data from the Global Mobile Suppliers Association's latest Evolution to LTE report, the technology is clearly well established. Many LTE operators are now looking to the next phases of deployment, including LTE-Advanced, Voice over LTE and the provision of roaming, the last of which has been a cornerstone of mobile service since the introduction of GSM.

2013 saw a handful of LTE roaming announcements from operators and we can expect the volume of agreements to ramp up significantly during 2014. But the emergence of LTE roaming comes at a time when roaming more generally is proving challenging for operators that have historically turned it very much to their advantage. In Europe roaming prices remain under sustained pressure from the European Commission, while elsewhere users' tendency to disable data roaming and rely on wifi is making it difficult for operators to exploit the next wave of roaming services.

Operators within Europe are conceding ground on pricing in a bid to stay ahead of regulation while this year will see the arrival of specialist roaming providers that will intensify competition on price.

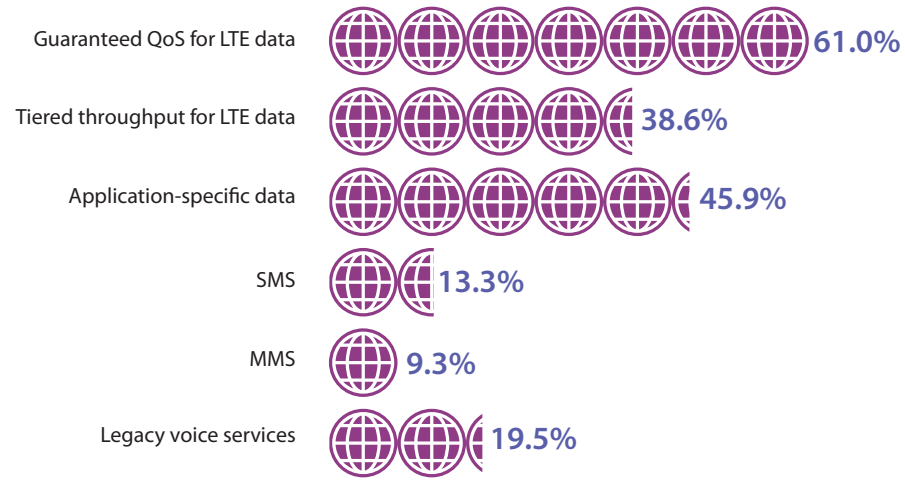
In this section of the survey we set out to discover how the industry feels roaming will evolve in terms of pricing and structure, how operators might be affected as they look to deliver LTE roaming services and how they might differentiate themselves from one another and from any specialist players that emerge.

LTE came to market with a price premium but during 2013 we saw instances of that premium beginning to erode under competitive pressure. In the rush of 12-month predictions published at the end of last year, a number of industry players suggested that LTE premiums could disappear altogether in some markets.

So it was interesting to see how the industry feels about price premiums that are likely to be attached to LTE roaming. We asked respondents whether they agreed that mobile operators are justified in charging more for LTE roaming than for other roaming services and less than half (43.1 per cent)

For which roaming services (not within the EU) will operators be able to charge a premium over the next five years?

(Tick all that apply)



61% OF RESPONDENTS BELIEVE QoS FOR LTE WILL JUSTIFY A PREMIUM IN THE FUTURE

agreed that they are. One third of respondents disagreed and a further 23.1 per cent remained neutral.

Respondents were asked to express their strength of feeling by rating their response on a scale of one to seven, where seven was "strongly agree" and one "strongly disagree". 21.4 per cent of respondents rated their agreement as six or seven on this scale, with only 5.3 per cent voicing the strongest agreement.

Among mobile operators, however, a six or seven rating was given by 27.8 per cent of respondents, indicating fairly robust resistance to the idea that LTE roaming should come at no extra cost to the user. Nonetheless, almost a quarter of mobile operator respondents felt that no premium is justified and 24.7 per cent remained neutral.

Operators may have to look to more advanced services if they want to command a premium, rather than simply charging more for LTE as a basic connection. Asked which kind of roaming services might justify a premium in future (outside of the EU, in which regulatory pressure is intense) respondents backed guaranteed QoS for LTE data strongly. This option drew the highest level of support, selected by 61 per cent of respondents, followed by application-specific data (selected by 45.9 per cent) and tiered throughput for LTE data (selected by 38.6 per cent).

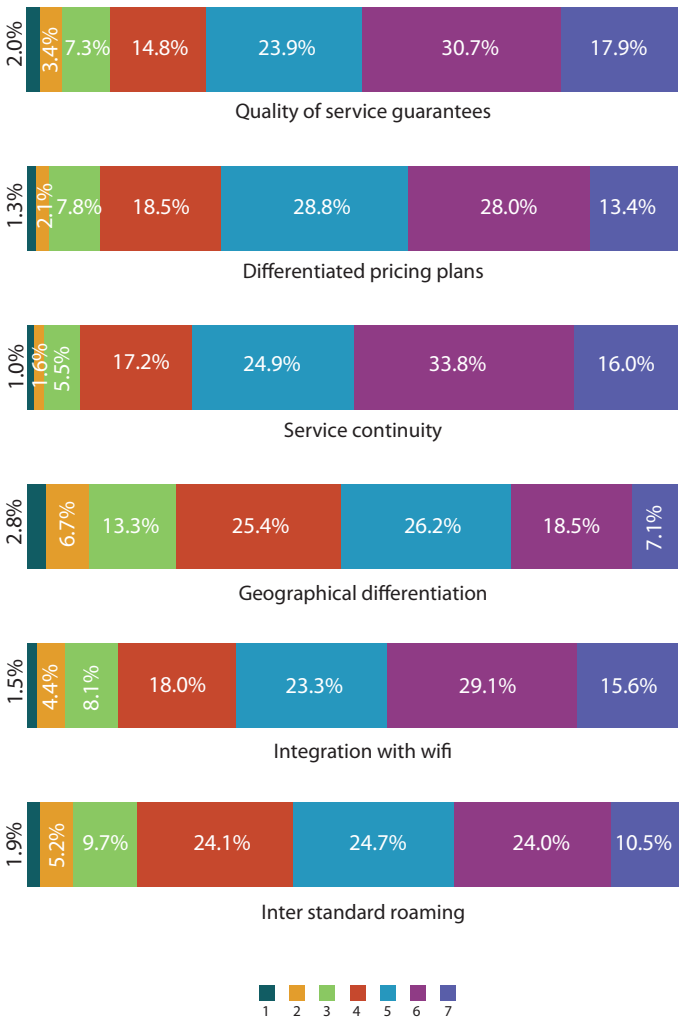
There was acceptance that legacy services like SMS and MMS will struggle to continue to command roaming premiums, with just 13.3 per cent and 9.3 per cent of respondents selecting these options respectively. Indeed there was widespread agreement that legacy voice and SMS roaming traffic will decline as users become increasingly reliant on IP communications apps while roaming, which offers a potential threat to operator revenues. 47 per cent of respondents and 49.4 per cent of operator respondents ranked their agreement with this statement six or seven.

Respondents demonstrated less conviction that specialist roaming providers will come to dominate the retail roaming market. Overall 17.8 per cent of respondents agreed strongly with this, although operator respondents were slightly more pessimistic, with 21.9 per cent scoring this a six or seven.

This tendency was visible once more when respondents were asked about the outcomes they expect from the removal of roaming premiums within the EU. While expectation of an increase in traffic was high across the board (anticipated by 63.6 per

How effective do you believe the following differentiators are for operators providing LTE roaming services?

(where 1 is not in the least effective and 7 is extremely effective)



60% OF RESPONDENTS BELIEVE VISIBILITY OF SPEND IS JUST AS IMPORTANT AS SPEND ITSELF

Rate the following LTE charging models in terms of benefit to the operator. (1 - 7 where 7 = highly beneficial)

Overall respondents	% 6 or 7		Operator respondents
Subsidised application specific offerings	33	35.9	Subsidised application specific offerings
Fixed day rate	29.8	35	Application specific offerings
Application specific offerings	29.6	31.2	Fixed day rate
Monthly-add on charged over life of contract	29.5	31	Tiered service offerings
Charging by volume (per MB)	27.4	30	Monthly-add on charged over life of contract
Tiered service offerings	26.6	26.6	Drawn from standard bundles with accelerated depletion
Drawn from standard bundles with accelerated depletion	22.5	25	Charging by volume (per MB)
Drawn from bundles with no premium	21.2	22.6	Drawn from bundles with no premium

cent of respondents overall), 30 per cent of operators compared to 24.8 per cent of respondents overall expect total roaming revenues to decrease as a result.

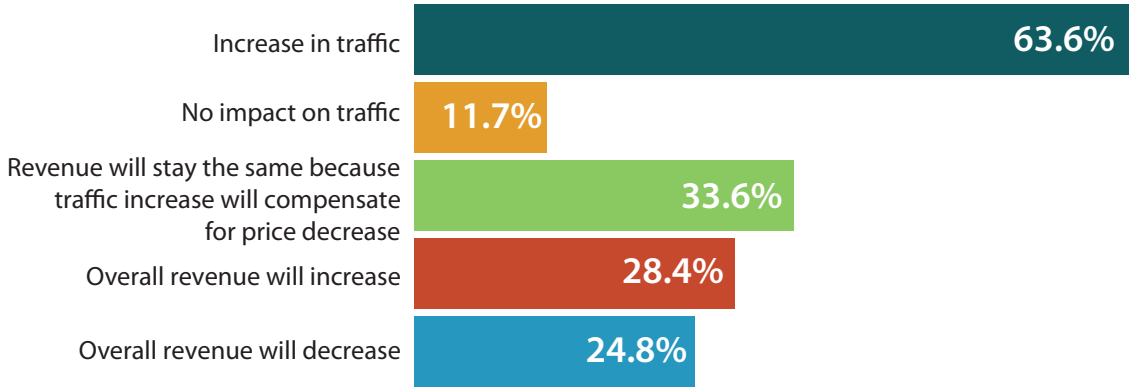
Charging models can be as influential as the services to which they are applied and the prices that are attached to those services; cost is not necessarily the most important factor for consumers. Indeed the survey showed that more than 60 per cent of respondents believe that visibility of spend is just as important to end users as spend itself. Almost one quarter of respondents believe that visibility is actually more important than level of spend, with just 14.6 per cent believing it to be less important.

We asked respondents to rate eight potential charging models for LTE roaming services in terms of their benefit to the mobile operator. Each model was rated on a scale of one to seven where seven was "extremely beneficial". If we rank the responses according to which models were given the highest number of high ratings (six or seven) the results, for overall respondents and operator respondents, are shown in the table on this page.

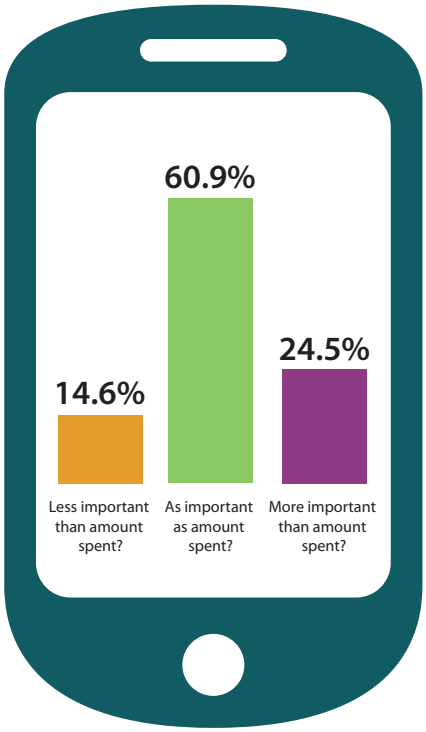
The highest rated option overall sees application providers, such as Facebook or Twitter, subsidising the roaming traffic related to their service. This may

What do you believe will be the revenue and traffic impact of the European Commission's proposed removal of roaming premiums within the EU?

(Tick all that apply)



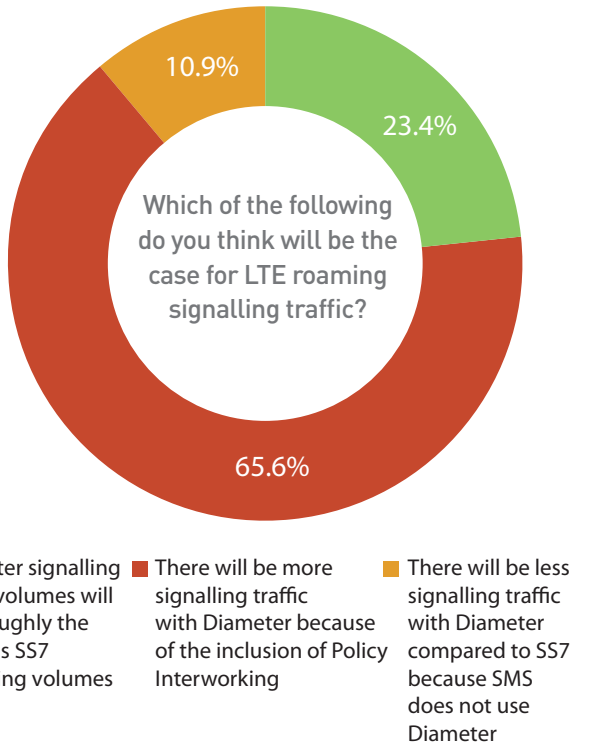
Do you believe that, for consumers, visibility of roaming spend is:

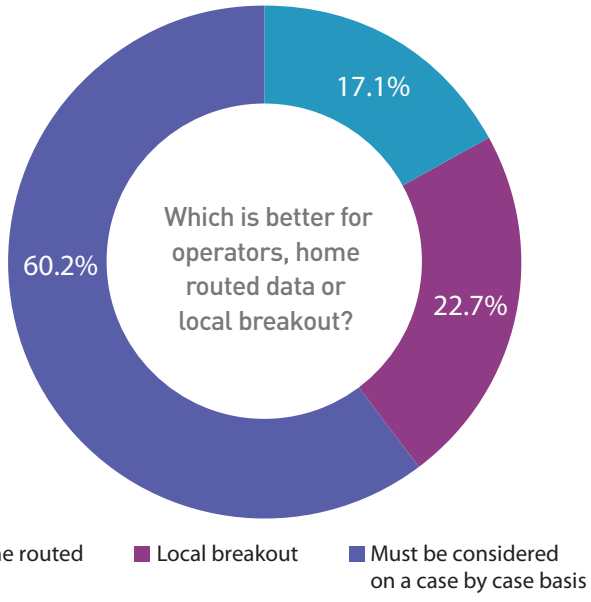


well be beneficial to operators but it is not clear that OTT players are prepared to engage in these kind of business models (see p13 for an in- depth analysis of the section of our survey devoted to OTT and operator partnerships).

The comparative importance of price in the LTE roaming mix was also illustrated by the results from a question (see p26) in which we asked respondents to rate a number of competitive differentiators for roaming services on the same one to seven scale (where seven was extremely effective). Of the six options provided, price differentiation was ranked fourth by respondents in total and third by operator respondents.

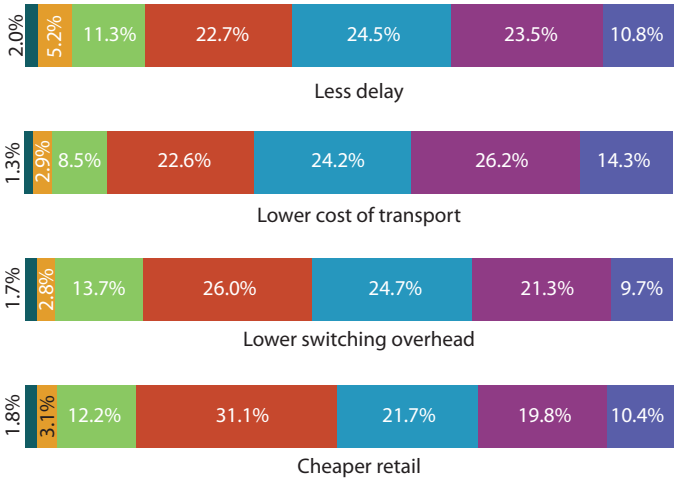
It was nonetheless rated highly, with 41.4 per cent of respondents (and 44.4 per cent of operator respondents) scoring it six or seven. Judged most effective, and given a six or seven rating by half of respondents, was service continuity. Close behind, and reflecting responses to an earlier question, was guaranteed QoS (48.6 per cent), followed by integration with wifi (44.7 per cent; this was ranked fourth by operator respondents, given a high rating by 39.7 per cent). Judged least effective, with a high rating from 25.6 per cent of respondents, was geographical differentiation.





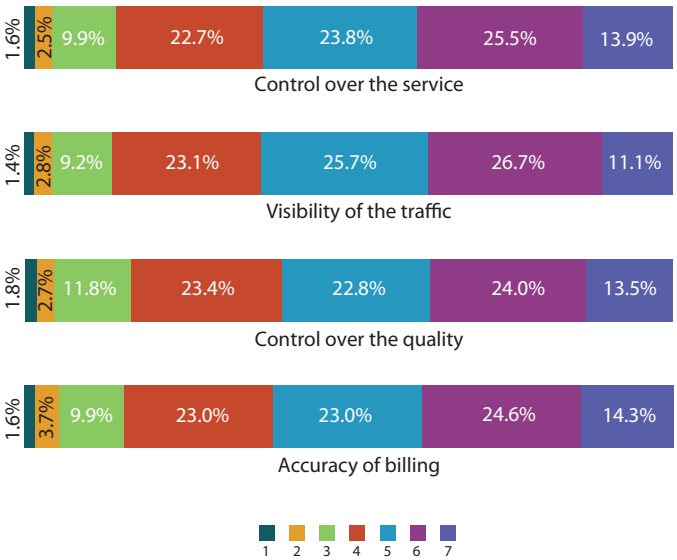
Rate the benefits of local breakout for roaming traffic?

(1 – 7, where 1 is not at all beneficial and 7 is extremely beneficial)



Rate the benefits of home routing for roaming traffic?

(1 – 7, where 1 is not at all beneficial and 7 is extremely beneficial)



Chris Lennartz, head of mobile services at KPN-owned IPX provider iBasis suggests these results highlight the importance of the IPX model. "LTE Roaming will be limited initially to data roaming but, soon afterwards, delay- and error-critical services like VoLTE, RCS, video, M2M will follow, in order to provide Multi-Service Continuity in the transition to all-IP," he says. "IPX has been designed to assign differentiated quality levels to specific services over one integrated pipe, using virtual links that can be managed separately. As this model works end-to-end, operators can start introducing a variety of services assigning the QoS they require."

LTE roaming will not differ from roaming in previous technology generations simply in terms of service and business models. With a new signalling paradigm and the opportunity to address the inelegance of earlier approaches to routing there will be some key technological changes as well.

We asked respondents what they expect to be the impact of LTE roaming on signalling traffic. Almost one quarter, 23.4 per cent (21.7 per cent for operator respondents), said they believe that signalling volumes for Diameter will stay roughly the same as SS7 volumes. But a great majority of respondents, 65.6 per cent, said they expect more signalling traffic because of the inclusion of Policy Interworking.

We also polled them for views on home routing and local breakout for LTE roaming. Opinion was evenly split as to which is better for operators, with 17.1 per cent favouring home routing and 22.7 per cent local breakout. A clear majority, 60.2 per cent, believe that the choice needs to be considered on a case by case basis.

The principal benefit of local breakout, according to respondents, is a lower cost of transport (rated six or seven on our scale by 40.5 per cent of respondents). The least popular, scored the same way by 30.2 per cent, was the ability to offer cheaper retail prices.

The benefits of home routing were very closely ranked by respondents. The most beneficial by a small margin was deemed to be control over the service, with second place for overall respondents being accuracy of billing and for operator respondents being visibility of traffic. All options were given six or seven ratings by close to 40 per cent of respondents.

Roaming is central to the proposition of mobile telephony and it is becoming increasingly clear that end users want and need access to the same services while overseas that they depend upon while at home. It is equally apparent that they do not necessarily feel that location alone justifies premium pricing. Nonetheless there are opportunities for operators to devise and deliver more sophisticated and appealing services for roaming users, while improving visibility of spend and flexibility of charging model. They now have to demonstrate they are capable of leading this innovation. ■

BSS

Questions in this section were put to operators exclusively as we sought to establish which elements of the BSS environment are being addressed with the most urgency.

Cloud already enjoys significant penetration within telcos, with respondents using a Software as a Service (SaaS) solution for a number of business functions. More than 40 per cent of respondents reported that their organisation currently runs its Customer Relationship Management (CRM) activity on a SaaS solution.

But in addressing their BSS environments as a whole operators clearly have a good deal more thinking to do.

Key takeaways:

- 18 per cent of respondents are planning to move to a Cloud-based BSS solution within 12 months.
- 43 per cent of respondents are planning to deploy or upgrade their customer management application within 12 months.
- Cost efficiency and scalability are the two top concerns related to the move to a Cloud-based BSS solution.

amdocs

embrace challenge eXperience success

About Amdocs:

For 30 years, Amdocs has ensured service providers' success and embraced their biggest challenges. To win in the connected world, CSPs, MVNEs, and MVNOs, rely on Amdocs to simplify the customer experience, harness the data explosion, stay ahead with new services and improve operational efficiency. Amdocs' offering for MVNOs and MVNEs provide real time BSS and service delivery capabilities, which are successfully operational at over 50 MVNE/Os worldwide. The global company uniquely combines a market-leading BSS, OSS and network control product portfolio with value-driven professional services and managed services operations. With revenue of over $3.2 billion in fiscal 2012, Amdocs and its approximately 20,000 employees serve customers in more than 60 countries.

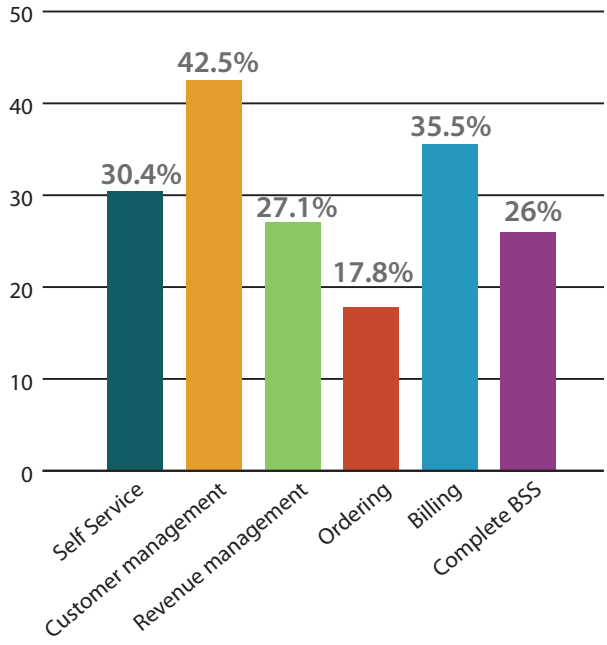
BSS: Into the cloud

As operators look to win and retain customers through innovation in key areas of their customer interface like charging, customer service and CEM, their BSS portfolio and investments are becoming ever more important to success. Meanwhile the mass migration of enterprise IT into the cloud is expanding the range of options open to operators as they look to refine and redefine their BSS environments

In this section of the survey we sought to establish which elements of the BSS environment are being addressed with the most urgency along with how and where operators are looking to the cloud to enhance their performance. We were also keen to understand what might be motivating operators or holding them back in terms of the cloud. With this in mind, questions in this section were put to operators exclusively.

Clearly there is significant ongoing investment in this area. We asked operator respondents to tell us which BSS applications their organisations are planning to deploy or upgrade in the next 12 months. The top three areas for investment during 2014 are Customer Management, selected by 42.5 per cent of respondents, Billing, selected by 35.5 per cent of respondents and Self Service, selected by 30.4 per cent of respondents.

Which of the following BSS applications are you planning to deploy/upgrade in the next 12 months?



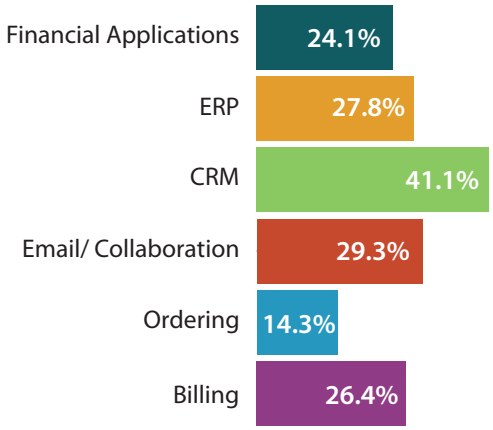
For all the investment underway a surprisingly high proportion of respondents–17.8 per cent–revealed that their organisations will be investing in none of the BSS applications listed. A small number, meanwhile, said that the information on their invesmtents was too commercially sensitive to share.

More than one quarter of operator respondents reported that their companies would be investing in the entire BSS environment, with Revenue Management selected by 27.1 per cent of respondents and Ordering attracting invesmtent this year from only 17.8 per cent of operators represented.

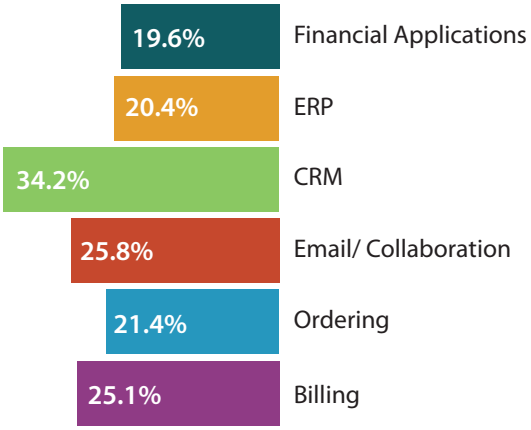
Cloud already enjoys significant penetration within telcos, with respondents using a Software as a Service (SaaS) solution for a number of business functions. 41.1 per cent of respondents reported that their organisation currently runs its Customer Relationship Management (CRM) activity on a SaaS solution, which was the highest score among business functions by some distance.

Email/Collaboration (29.3 per cent), Enterprise Resource Management (27.8 per cent) and Billing (26.4 per cent) also had a strong showing in this regard, along with Financial Applications (24.1 per cent). Ordering is

For what business functions, if any, are you currently using a SaaS solution?



For what business functions, if any, are you planning to introduce a SaaS solution?



currently managed with a SaaS solution at just 14.3 per cent of respondents' organisations.

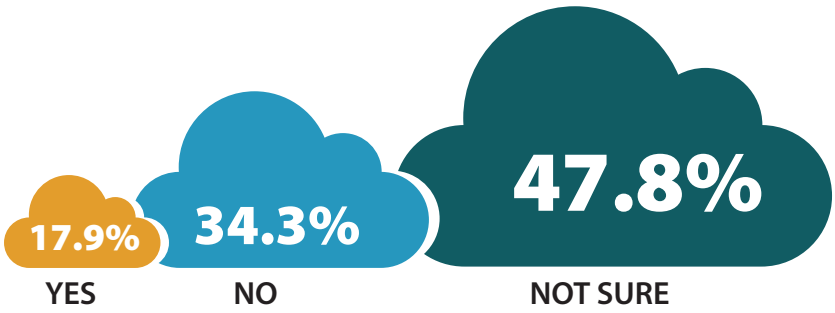
These ranking were reflected in operators' plans for future use of the SaaS model, although there are more operators planning investment in Billing SaaS solutions than ERP SaaS solutions. Ordering, meanwhile, is also targeted for SaaS investment, with more respondents (21.4 per cent) reporting plans for this function than for ERP (20.4 per cent) and Financial Applications (19.6 per cent).

If we combine the responses for existing and planned SaaS solutions we see that CRM once again tops the list by some distance, with more than three quarters of respondents (75.3 per cent) employing or planning to employ a SaaS approach. Email/Collaboration (55.1 per cent) and Billing (51.5 per cent) are in second and third place, with ERP fourth (48.2 per cent) ahead of Financial Applications (43.7 per cent and Ordering (35.7 per cent).

In addressing their BSS environments as a whole operators clearly have a good deal more thinking to do. Almost half of respondents said they were not sure whether their organisation was planning a move to a cloud-based BSS solution inside the next 12 months, suggesting that for many operators decisions on this question have not been taken. More than one third reported that there are no such plans in place, while 17.9 per cent of respondents said that their businesses are planning a cloud BSS deployment this year.

It is important to understand why more than 80 per cent of represented operators are currently not committing to a cloud-based BSS solution and it is perhaps not surprising that security is chief among their concerns. Respondents were asked to rank a range of concerns for severity on a scale of one to seven, where seven represented a "very serious concern". Security issues was scored as six or seven by 39.7 per cent or respondents.

Are you planning to move to a Cloud based BSS solution in the next 12 months?



How important to your operation are the following benefits of a SaaS BSS solution compared to premise solutions.

(Please rate each on a scale of 1 – 7 where 1 is not at all important and 7 is extremely important)

"Security was and still is a concern for operators when choosing a cloud based solution but it is possible to achieve the full range of cloud benefits, like cost savings and agility, without compromising on security," says Yuval Mayron, general manager, Amdocs Product Group. "The key for operators or MVNOS is choosing a well-established and recognised industry partner that they can rely on and grow with. This peace of mind can be achieved when operators and MVNOs select a complete solution, both on the platform and on the service side, to guarantee service availability, customer satisfaction and that all solution components are certified and meet the highest standards in the industry."

Interestingly the number of operators concerned with sweating existing assets–something that has often been cited as a drag on the evolution of operator BSS–was relatively low. Only 21 per cent of respondents ranked the need to sweat assets as six or seven on the scale.

Almost one fifth of respondents (18.2 per cent) felt similarly strongly that the cloud-based BSS solutions currently on the market do not represent a good fit for their businesses. Related to this 28.8 per cent of respondents gave the highest ranking to concerns that their need for advanced customisation within BSS might not be met by a move to the cloud.

These results suggest that there is a need for providers of these solutions to do more to address these concerns through market education. Indeed 32.5 per cent of respondents gave a six or seven ranking to the statement: "I need to learn more about available cloud-based BSS in the market".

Potential benefits, meanwhile, seem relatively well understood and scalability/elasticity and cost efficiency are the most important to operators, the survey suggested. Asked to rank the importance of a number of benefits on the one to seven scale where seven represented "extremely important" 45.3 per cent of respondents ranked scalability/elasticity as six or seven while 45 per cent gave the same ranking to cost efficiency.

The ability to deploy new services quickly and the need for low risk were ranked six or seven by 41.6 and 41.4 per cent of respondents respectively, while 26.2 per cent gave the same ranking to the opportunity to consolidate the BSS environment.

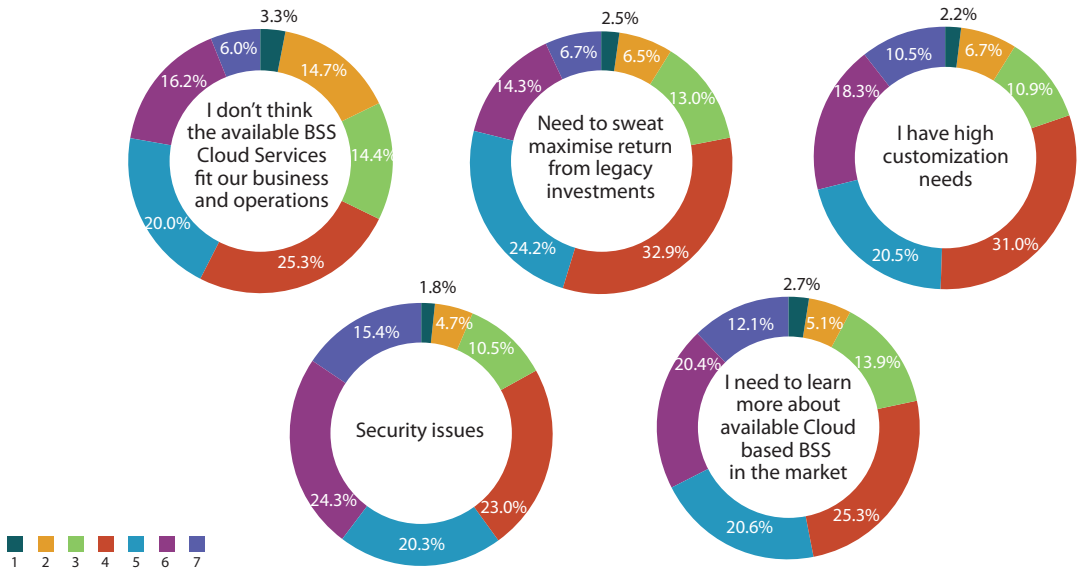
Meanwhile in a subsequent question respondents were asked about the extent to which they agreed that a cloud-based BSS provided by an external supplier on a 24/7 support model would be a significant advantage to their business. On a scale of one to seven where seven represented "strongly agree", 45.4 per cent of respondents chose six or seven.

Of course cost is always a crucial factor and while cloud solutions provided on a SaaS basis may be less Capex intensive than on premises solutions, total cost of ownership is clearly still front of mind–although not universally a stumbling block.

Just over 40 per cent of operator respondents agreed that a converged, real-time BSS solution was too expensive for their company, for example. On the other hand, 41.3 per cent of respondents agreed that their company needed a highly flexible SaaS solution even if it proved to be

Rate the following concerns related to the move to a Cloud based BSS solution?

(Please rate each on a scale of 1 – 7, where 1 is not a serious concern and 7 is a very serious concern)



more costly. Almost half, 48.6 per cent, said they would consider a converged solution if it were deemed more affordable.

"By working closely with operators and MVNOs for many years, we learned that they are looking for a holistic and flexible solution that provides all their BSS needs. Some of them are actively approaching to cloud based solutions for that flexibility" says Amdocs' Mayron. "Flexibility should be built-in on the product and technology side, enabling a fast time-to-market for launching innovative services and bundles and making sure changes to business processes can be made on-the-fly without additional investment."

One of the most notable elements of the emergence of cloud IT in the telecoms sector is the opportunities it has created for non-specialist providers. Telecoms BSS has historically been delivered by organisations that have telecoms in their DNA but their dominance in the sector is no longer guaranteed.

Respondents were asked whether their organisation prefers solutions provided by telecom specialist players and 51 per cent of them said that they did. This was a far larger proportion than those who took the opposite stance (18.8 per cent) and those who were neutral (30.2 per cent). Nonetheless it still means that 49 per cent of operator respondents do not believe that telecoms specialisation is necessary.

That said, 42.7 per cent of respondents reported that existing supplier relationship was or would be an influence in decision making when selecting a SaaS-based BSS solution, suggesting that incumbents are able to exploit their position. A larger proportion, 53.8 per cent, said that industry research was an influence, while peer recommendations were cited by 36.1 per cent of respondents.

There is little doubt that cloud models for key telco IT systems are gaining traction in the industry. As the survey revealed a substantial number of operators have already deployed, are in the process of deploying or are planning to deploy SaaS solutions for a range of key business functions.

But there are still concerns among operators looking at moving BSS to the cloud, particularly around security and cost. There is also clearly a need for a greater level of education: operators need to know that their concerns can be addressed and they need to be convinced that there are solutions available that can meet their needs. ■

INDOOR LTE COVERAGE

In these early phases of LTE deployment and operation operators are focused on meeting a number of targets, depending on business plans and licence conditions. Nonetheless it was interesting to note that a large number of respondents felt that indoor LTE coverage is an important competitive differentiator for operators today.

Key takeaways:

- 25 per cent of respondents said widespread availability of wifi means there is no urgent need for indoor LTE coverage.
- 75 per cent of operator respondents believe they should own indoor LTE infrastructure.
- 49 per cent of respondents believe operators are focused primarily on meeting geographical rather than indoor coverage requirements.

MCCI

About MCCI:

MCCI is a leading provider of Full Turnkey Projects Implementations in Infrastructure and Telecom Industries.

It covers all MENA region with heavy presence and operations in GCC region that include Saudi Arabia, Kuwait, United Arab Emirates, Qatar, Bahrain & Oman. Algeria office is the Hub for serving North Africa countries.

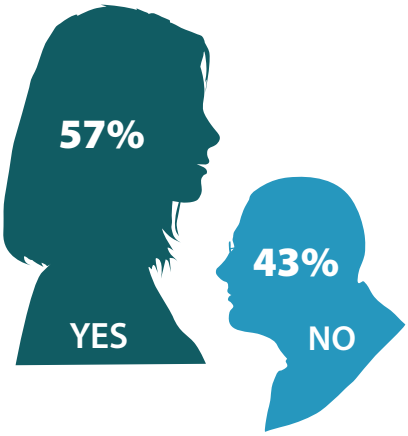
LTE Design and implementation is one of the Strong Capabilities of MCCI.

MCCI deployed many Successful In Building Solutions (IBS) Design & Implementation projects for multi operators & multi mode in many Advance Markets like Saudi Arabia.

Inside Job

To contrast with the section of the survey that looked at LTE across borders we also asked our respondents some questions about LTE on a much smaller scale; specifically its deployment and performance for indoor coverage. Some of the results were surprising.

Do you believe there is a market for specialist indoor LTE operators?



In-building coverage has long been an issue with cellular systems and many solutions have been devised to try and help improve the indoor penetration and performance of mobile networks. We hear much about the densification of the network that LTE is intended to bring thanks to an increased volume of small cells and in-building service is an important part of that story.

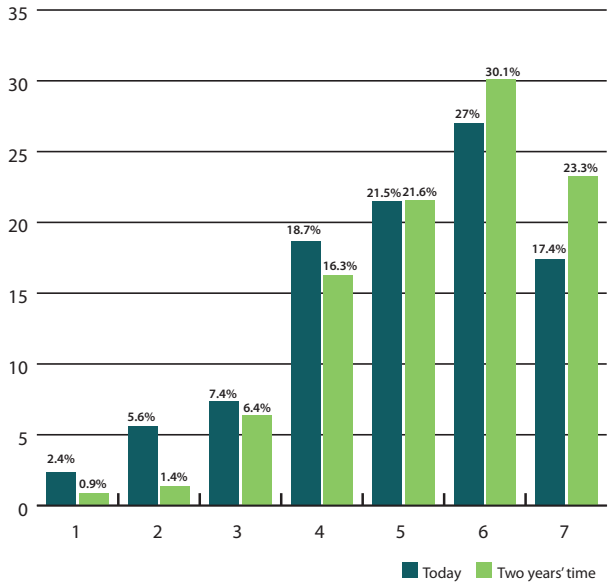
In these early phases of LTE deployment and operation operators are focused on meeting a number of targets, depending on business plans and licence conditions. Nonetheless it was interesting to note that a large number of respondents felt that indoor LTE coverage is an important competitive differentiator for operators today. On a scale of one to seven where seven represented "extremely important", 44.4 per cent of respondents and 48 per cent of operator respondents scored indoor LTE coverage six or seven for importance as a differentiator.

Looking two years out they expect its importance to grow. 53.4 per cent of respondents and 56 per cent of operator respondents scored it six or seven for importance in two years' time.

Indeed 30 per cent of respondents–and 32.3 per cent of operator respondents–expressed strongly the belief that driving high quality indoor LTE coverage is more important than ensuring rural coverage based on geographical targets.

Rate the importance of indoor LTE coverage as a competitive differentiator today and in two years' time

(1 – 7 where 7 is extremely important)



Despite this, respondents reported that, in their market, operator activities are currently geared towards wide area coverage. Asked to characterise operator approaches to indoor coverage, almost half–48.7 per cent–said that in their market operators are today focused primarily on geographical rather than indoor coverage. Meanwhile 22.7 per cent said that operators are focused on providing good indoor coverage in public buildings, 16.5 per cent that they are focused on providing good indoor LTE coverage for all users and 12 per cent that they are concerned with providing superior coverage to enterprise customers.

A larger share of operator respondents than overall respondents (21 per cent) claimed that there was a focus on providing good indoor coverage for all.

In early rollout phases operators can easily become stretched, however, and it was interesting

to note that more than half of operator respondents—55.9 per cent—said they believe that a market exists to support specialist indoor LTE service providers. This number was even higher, at 57 per cent, for the overall base of respondents.

That said, responsibility should remain with some form of network operator, according to 65 per cent of respondents (see following page). Meanwhile 17.5 per cent felt that it was appropriate for building owners to own indoor LTE infrastructure, 6.5 per cent the building occupant and 11 per cent the provider of fibre to the building. While we might expect a majority to support the traditional supply model it is worth noting that, taken together, 35 per cent of respondents feel that the mobile operator might not be the natural owner of indoor LTE infrastructure.

Operator respondents were unsurprisingly more defensive of tradition, with 75.1 per cent saying network operators should own indoor infrastructure. Again, though, the remainder is significant. One quarter of operator respondents are thinking along different lines.

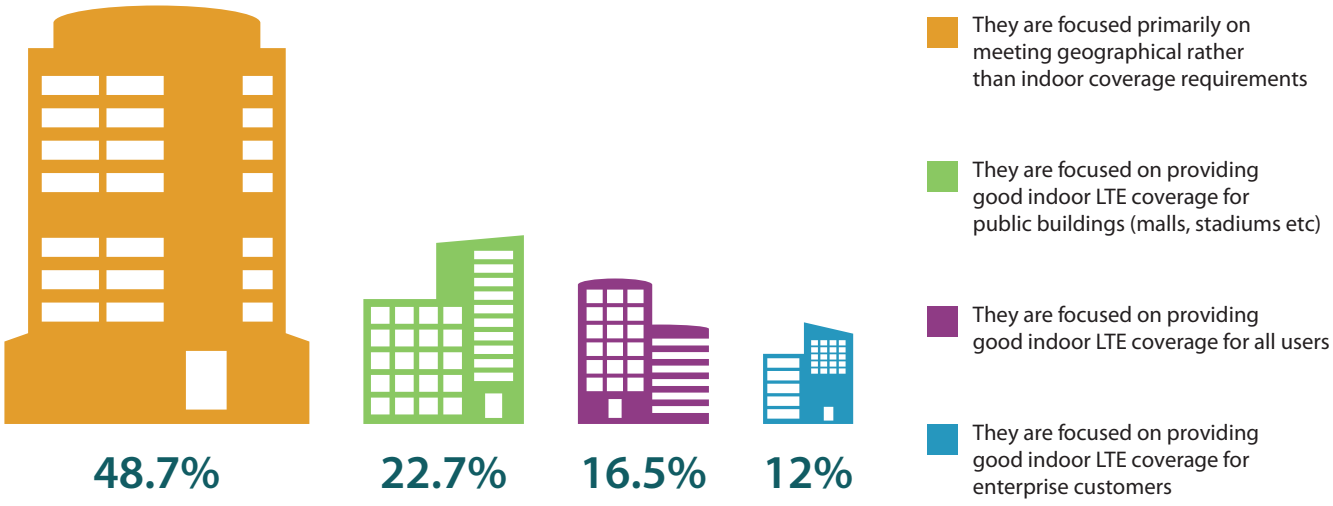
This was further reinforced when we asked respondents to rate a number of factors acting as inhibitors on indoor LTE coverage deployment. Here it is worth looking at the operator responses in isolation (they are close to the overall responses in any case). On our one to seven scale, where seven represented "extremely challenging", 24.3 per cent of operator respondents gave a score of six or seven to the statement: "It is unclear who is the most appropriate owner of indoor infrastructure".

Perhaps even more surprisingly, 20.4 per cent of operator respondents felt similarly strongly that operators don't understand enough about indoor network design. Meanwhile 23.2 per cent gave the same weighting to the fact that ready availability of wifi means there is no urgent need for Indoor LTE coverage.

Respondents were also asked to what extent they agreed with a number of statements related to indoor LTE, indicating their strength of feeling on a one to seven scale where seven represented strongly agree. In one of the survey's most surprising results, more than 30 per cent of operator respondents gave a six or seven rating to the assertion that regulators need to do more to force operators to improve indoor network performance.

If regulators don't force change then perhaps technology will. Almost 40 per cent of operator respondents (and 36.4 per

Which of the following best describes operators' approach to indoor LTE coverage in your market?



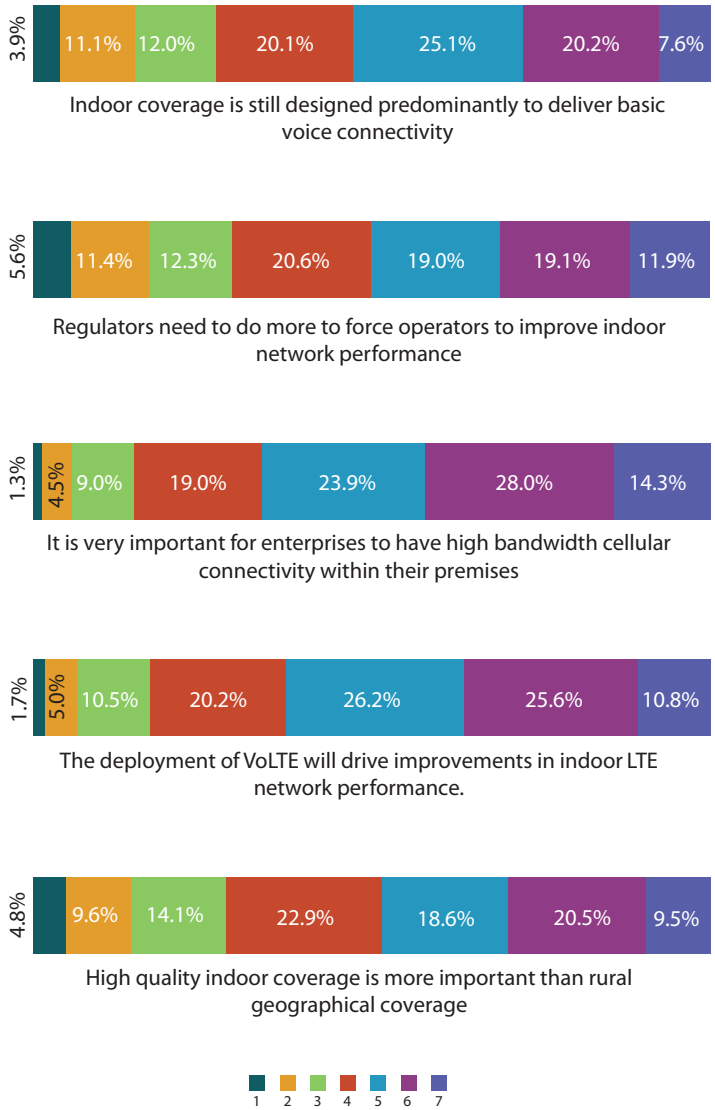
INDOOR LTE COVERAGE

cent of respondents overall) gave a six or seven rating to the expectation that the deployment of VoLTE will drive improvement in indoor LTE coverage. Unsurprisingly there was also a consensus that enterprises require high quality indoor LTE coverage.

This section of the survey showed that there is considerable open-mindedness within the industry about how improvements in indoor coverage should be managed. Clearly the performance of LTE networks within buildings is going to become increasingly important to users and by extension to operators looking to provide those users with a service. But not all operators seem to believe that traditional models of provision are best suited to solving the indoor problem. And it is rare indeed to hear of operators openly calling for greater regulatory pressure in any area of their business. This is a space to watch with interest. ■

To what extent do you agree with the following statements regarding indoor coverage in your market

(1 – 7, where 1 is strongly disagree and 7 is strongly agree, is strongly agree)



The following proportion of respondents agreed strongly (rated their agreement six or seven out of seven) with these statements:

25.3% WIDESPREAD AVAILABILITY OF WIFI MEANS THERE IS NO URGENT NEED FOR INDOOR LTE

20.1% THERE IS AN ABSENCE OF PROVEN SPECIALIST INFRASTRUCTURE SOLUTIONS

21.4% OPERATORS DON'T UNDERSTAND ENOUGH ABOUT INDOOR NETWORK DESIGN

26.7% IT IS UNCLEAR WHO IS THE MOST APPROPRIATE OWNER OF INDOOR INFRASTRUCTURE

Who should own indoor LTE infrastructure?