WHAT HAPPENS WHEN IoT MEETS THE TELCO?

TELECOM TV SURVEY 2016

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This year we conducted a survey of our viewers’ opinions and asked them: “What’s going to happen when the long-expected Internet of Things (IoT) meets the telco”. Although we’ve all been hearing about the IoT for several years now this is still an open question - we thought our viewers could shine some light on it.

One thing is for sure - the telco route into the IoT market will be via the connectivity layer. This year has seen some solid progress in the so-called LPWA segment - the very slow-speed, low powered segment of the market that is expected to take the volume growth. Not only has the cellular industry’s 3GPP standards body finalised a range of IoT-targeted standards for 2G and 4G, but it has also reached agreement on a low-power narrowband standard - NB-IoT - designed to occupy guard bands in licensed sub-1Gigahertz spectrum, and behave in a similar fashion to the unlicensed narrowband technologies.

The unlicensed Low Power Wide Area players, in particular Sigfox and LoRa, are already deploying their services - usually in partnership with telcos anxious to get a head start in the market. Orange, for instance, has just announced that it is to continue with its LoRa deployments in unlicensed spectrum. It has 1,800 towns live today and it is aiming to get to 2,600 towns by early next year.

In the future we expect to see 5G high speed and low latency IoT - or Machine to Machine - services to support critical applications such as highly autonomous driving and remote surgery emerge. This is clearly telco territory.

Connectivity now

At present it looks like the IoT will be oxygenated by an extremely heterogeneous connectivity network of networks. This is partly because the use cases are extremely diverse and to perform optimally in terms of price versus performance, the IoT connectivity piece will need diversity to match.

For instance, some applications will require very long battery life and extremely low power with data travelling in one direction, others will also require long battery life but some interactivity (two directions).

Some ‘things’ categories will be mobile, others relatively static. Others will be mains-powered and will demand broadband connectivity.

Most importantly, the radio range required differs too, from in-room to multi-kilometers. That means a huge proportion of IoT connections from the home or from commercial premises may therefore not directly involve telcos at all. Machina Research says 71% of all IoT connections currently use a short range technology such as WiFi and its variants and by 2025 that will have grown slightly to 72%.

In short, the list of requirements will remain very long and the chances of today’s multiple (and growing) connectivity solutions being distilled to just a few key standards must be seen as remote. Higher level standards around data formats and categories are another matter because standardisation here is going to be crucial if data is to be exchanged efficiently across vertical silos.

Remember too that what we’re now calling IoT is expected to practically subsume the entire IT segment. Competition with both corporate and technological competition is going to be crucial - connectivity diversity is probably going to stay.
Q1.

After several years of hype IoT is thought by many to be gaining traction. But has it taken off as strongly as you might have expected three years ago?

There has been a feeling that IoT may have suffered slightly with a dose of over-enthusiasm four or five years ago in terms of how many billions of devices we should expect to see deployed. The big numbers, though, keep on coming: Machina Research recently estimated that the total number of IoT connections will grow from 6 billion in 2015 to 27 billion in 2025, a CAGR of 16 per cent.

On balance our viewers are mostly cautiously optimistic that IoT will prove to be as big a market (eventually) as the research firms consistently say it will be, with a significant ‘highly positive’ contingent expressing top level enthusiasm.

56% of our viewers expect to see uptake accelerate soon with another 20% claiming that its growth so far had exceeded their original expectations.

56.7%
Growth predictions are often exaggerated in the early stages. With the interest being shown both by providers and potential users of the technology I expect to see uptake accelerate soon.

20.6%
It’s somewhat slower to take off than I expected. I’m sure that eventually there will be a reasonable market, but it will be smaller than expected three years ago.

19.9%
Yes, I think it’s growing and gaining support now. In fact it’s exceeding my original expectations.

2.8%
IoT is not taking off as expected and it will remain a small market.

TOTAL NUMBER OF IOT CONNECTIONS WILL GROW FROM 6 BILLION IN 2015 TO 27 BILLION IN 2025
Q2.

What factors might be holding back user adoption?
(Rate each 1 to 5, with 5 the greatest obstacle)

On the debit side the last year has seen an appreciable rise in worries over IoT security and privacy. Our viewers have therefore nudged that concern into first place when asked what factors might be in danger of stalling IoT deployment by users.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.09</td>
<td>Lack of viable applications/use cases</td>
</tr>
<tr>
<td>3.32</td>
<td>Cost and complexity</td>
</tr>
<tr>
<td>3.71</td>
<td>Security/privacy concerns</td>
</tr>
<tr>
<td>3.39</td>
<td>Lack of in-house champions</td>
</tr>
</tbody>
</table>

Last year has seen an appreciable rise in worries over IoT security and privacy.
Q3.

What might be holding back CSP/Telcos in the IoT market?
(Rate each 1 to 5, with 5 the greatest obstacle)

When it comes to telco inhibitors (see 3) lack of experience with vertical industry segments an undeveloped ecosystems leap out as the main worries. Lack of spectrum appears not to be that much of a concern.

<table>
<thead>
<tr>
<th>Score</th>
<th>Reason</th>
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<tbody>
<tr>
<td>3.15</td>
<td>Lack of channels to market</td>
</tr>
<tr>
<td>3.41</td>
<td>Cultural challenges</td>
</tr>
<tr>
<td>3.62</td>
<td>Lack of experience with verticals</td>
</tr>
<tr>
<td>3.84</td>
<td>Undeveloped ecosystems</td>
</tr>
<tr>
<td>2.53</td>
<td>Lack of spectrum</td>
</tr>
<tr>
<td>3.35</td>
<td>Slowness in defining IoT radio standards</td>
</tr>
<tr>
<td>3.06</td>
<td>Lack of technical expertise</td>
</tr>
</tbody>
</table>
Q4.

What should the CSP/Telco role be?

This a key question. For many years now telcos have been arguing against the proposition that with the advent and success of the World Wide Web, they should limit their ambitions in most segments to being ‘utility’ or ‘pipe’ players, providing connectivity for other service and content providers. Many telcos hope that the IoT will grant them a new opening in this endeavour by enabling them to play a value-added services role over and above the already complex role of providing the connections. Only in this way, many argue, can operators ensure the profitability of the next generation networks which will be taking the strain of the explosion in IoT data and applications.

The broader IT industry is split, but our viewers are less so. While a not insignificant proportion (16%) of our viewers consider that telcos should concentrate on connectivity only, and a further 20% think they could also incorporate mid-level roles (such as data collection and device management) an enthusiastic 64% think telcos should set their sights on taking the IoT connectivity, device management, data collection and; storage and analytics roles too. In other words, where possible becoming a one stop IoT shop.

64% THINK TELCOS SHOULD SET THEIR SIGHTS ON TAKING THE IOT- CONNECTIVITY, DEVICE MANAGEMENT, DATA COLLECTION AND; STORAGE AND ANALYTICS ROLES
Q5.

What vertical markets/sectors represent the biggest CSP/telecom opportunities in IoT services?
(rate each 1 to 5, with 5 the strongest opportunity.)

According to our viewers the juiciest vertical targets are smart city, healthcare, transport and autonomous vehicles; while the vertical presenting the earliest target is utilities. This makes sense as meter reading and reporting technology already has a longish history in communications, often with telco involvement.

THE JUICIEST VERTICAL TARGETS ARE SMART CITY, HEALTHCARE, TRANSPORT AND AUTONOMOUS VEHICLES,
Q6.

Which vertical market do you think is likely to get traction first?

Our viewers also selected transport and automotive as likely early markets, with 'healthcare in the community' running in a close fourth.

<table>
<thead>
<tr>
<th>Market</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart city</td>
<td>3.48</td>
</tr>
<tr>
<td>Home automation and home security</td>
<td>3.55</td>
</tr>
<tr>
<td>Utilities (meter reading &amp; smart grid)</td>
<td>4.01</td>
</tr>
<tr>
<td>Wearable Technology</td>
<td>3.50</td>
</tr>
<tr>
<td>Health/care in the community</td>
<td>3.63</td>
</tr>
<tr>
<td>Building Automation (Smart Buildings)</td>
<td>3.39</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>3.21</td>
</tr>
<tr>
<td>Construction</td>
<td>2.59</td>
</tr>
<tr>
<td>Transportation</td>
<td>3.76</td>
</tr>
<tr>
<td>Automotive (connected and autonomous car)</td>
<td>3.90</td>
</tr>
</tbody>
</table>
Q7.

Which partner arrangement is best able to make an IoT strategy a success?

(Rate each 1 to 5, with 5 the best.)

Business models and partnerships must be a key consideration in telco IoT strategy but not surprisingly it’s difficult to tease out which partners would be most useful in all circumstances. So while using integrators and consultants as lead partners came out top here, it was clear that multiple partners were going to be important for any given strategy. Using a combination of partners got the most votes.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Arrangement</th>
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<tbody>
<tr>
<td>4.34</td>
<td>Partnerships between any 2 or 3 of the above</td>
</tr>
<tr>
<td>2.88</td>
<td>In-house project leader or department</td>
</tr>
<tr>
<td>3.06</td>
<td>Equipment/infrastructure IT vendor-led project</td>
</tr>
<tr>
<td>3.17</td>
<td>CSP/Telco led project</td>
</tr>
<tr>
<td>3.68</td>
<td>System integrator or consultant-led project</td>
</tr>
</tbody>
</table>

**BUSINESS MODELS AND PARTNERSHIPS MUST BE A KEY CONSIDERATION IN TELCO IOT STRATEGY**
Q8.

As a deployer of IoT which approach would you say was the most important for your company?

We wanted to get a feel for how much interest in IoT was directed towards selling on IoT to other companies and how much was being internally directed to help enterprises instrument their own infrastructures. Selling on IoT services, rather than putting them to work internally, is the predominant concern.

44.7%
New revenue/monetisation opportunities from selling on services to other parties or users.

30.5%
Operational efficiency projects with internal applications around remote monitoring, asset management and efficiency/cost saving.

9.9%
Developing managed services and/or selling on data.

14.9%
Technology and architecture: Data centre vs. edge.
Q9.

How important will edge computing or 'open fog' be for users who want to locate intelligence at or near the edge where appropriate using a distributed cloud or ‘fog’ arrangement, rather than just rely on the conventional cloud/data centre architecture?

One of the big issues with IoT is whether a reliance on big central clouds to store and manipulate the huge data sets generated, will always meet the application need. There is considerable support for the concept of ‘fog’ computing which envisages much of the data, by necessity, being sifted, stored or responded to right at the edge of the network, both to relieve pressure on the network and the central cloud and to improve latency for many use cases, particularly automotive or for some distance medicine applications. Our viewers overwhelmingly support the notion of fog or edge computing.

**57.4%**

Very important - users will find that high performance and reliability is essential for many applications and that means locating intelligence at the edge.

**34%**

Important for a minority of applications - the cost and other advantages of the data centre means most applications will be cloud-based.

**8.5%**

Technology and architecture: Radio in licensed and unlicensed spectrum.

**THERE IS CONSIDERABLE SUPPORT FOR THE CONCEPT OF ‘FOG’ COMPUTING**
10.

How is Telco IoT investment related to investments in NFV and SDN projects?

The overwhelming weight of opinion was that the greater deployment of IoT projects would in turn accelerate investment in NFV and SDN projects.

- **3.79** Standardised cellular variants for 2G and 4G (and soon 5G)
- **3.70** Licensed spectrum narrow band (NB-IoT) to be deployed by carriers in licensed spectrum
- **3.77** Public spectrum-based low-powered WAN (SigFox, LoRa, Weightless etc.)
- **3.87** Public spectrum, standards based LAN and PAN (WiFi/ ZigBee, etc.)
EMERGING IOT SECTORS ARE OFTEN DRIVEN BY PASSION (AND PROFIT)

IoT is not the IT business as usual with an extra ‘o’ thrown in. The people I meet and interview around IoT are often passionate believers in what they are doing in a way that goes far beyond the enthusiasm one encounters for the cleverness or shininess of a technology or the innovation implicit in a business model. In other words, IoT enthusiasts don’t get off on the technology for its own sake. They tend to get off on the transformation they hope and believe can be achieved by its clever, human-centred application to whatever vertical segment they occupy.

There’s an amazing range here, but the passion is widespread. IoT verticals include retail display, where practitioners are crossing boundaries into conceptual art and are intent on using the technology to create profound experiences.

They include those who see the technologies as ‘cost-appropriate’ for a myriad of developing and emerging country applications, such as helping to deliver clean water.

And the passion brigade very much includes the healthcare sector where practitioners often see infinite scope for IoT, not just to improve health outcomes by oiling the health machine we currently have, but for using technology to completely rework the way healthcare is delivered.

‘Transformation’ in other words.

Human centred IoT

So belief and passion will drive and steer the use and spread of IoT technologies in tandem with those perennial IT motives - opportunity and self interest. If your organisation is banking on IoT growth, the fact that we appear to have an army of enthusiasts primed to kick it along must be counted as a major assist.