

Webinar

The case for Wi-Fi offload

Wednesday 8 February 2012

Terry Norman

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Traffic growth is driving network costs

Operators cannot afford to support traffic growth with macro base stations alone

Wi-Fi represents a considerable cost saving

The value chain is complex

Wi-Fi moves forward

There are many hurdles to overcome

Wi-Fi traffic offload is set in a scene of growing mobile traffic and changing network architecture and pricing

Improved cellular devices

Advanced smartphones, with improved displays, user interfaces, processing, memory and batteries

Tablets, mobile broadband devices (embedded and USB) and smartphones proliferate

Falling prices of smartphones

Improved network architecture and delivery mechanisms

Technology developments (including HSPA, HSPA+ and LTE), coupled with cell-site backhaul enhancements

Smaller cells offering faster throughput, greater capacity, better quality of service and reduced cost per megabyte for MNOs

Affordable pricing and bundling

Voice bundles encourage usage

Decreasing prices improve affordability (particularly of traffic-intensive services)

Operators wish to reverse this trend, but in a competitive marketplace this is difficult

New services

A new wave of mobile services will drive wireless network traffic growth

The two important contributors will be:

- video
- social networks.

Spectrum

Spectrum is a key driver for network traffic

Globally important spectrum bands are becoming available

Other initiatives like refarming and digital dividend will have a significant impact upon network capacity and traffic

Increasing mobile connections

There is great potential for mobile penetration to increase in emerging markets

Mobile penetration is nearly saturated in developed markets, but users are adopting secondary devices, such as USB modems, tablets and phones, solely for business use

Traffic growth and falling revenue are the principle drivers of Wi-Fi offload [1]

Figure 1: Average wireless network traffic per connection, worldwide, 2011–2016 [Source: Analysys Mason, 2012]

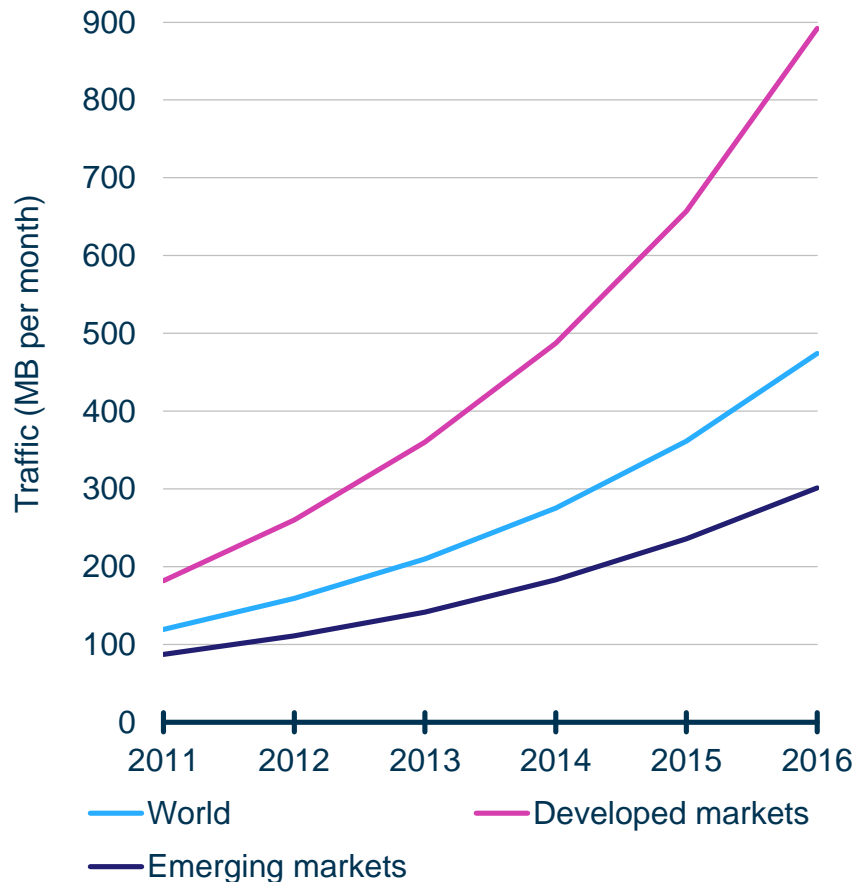
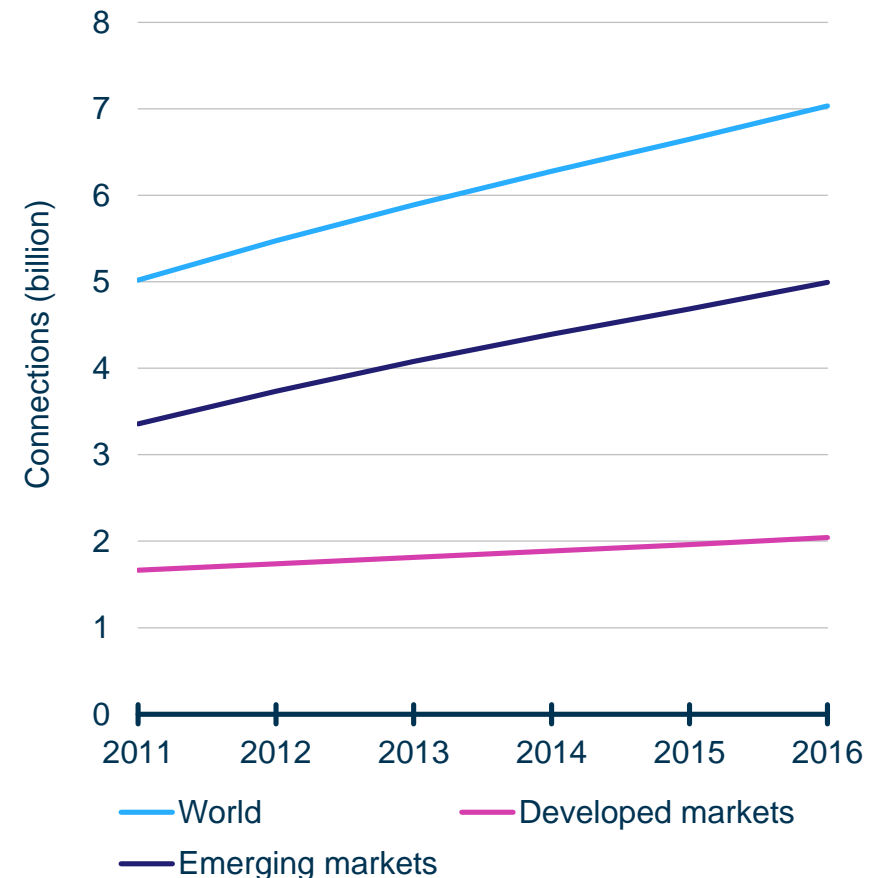


Figure 2: Average number of wireless network connections, worldwide, 2011–2016 [Source: Analysys Mason, 2012]



Traffic growth and falling revenue are the principle drivers of Wi-Fi offload [2]

Figure 3: Traffic from mobile connections, worldwide, 2011–2016 [Source: Analysys Mason, 2012]

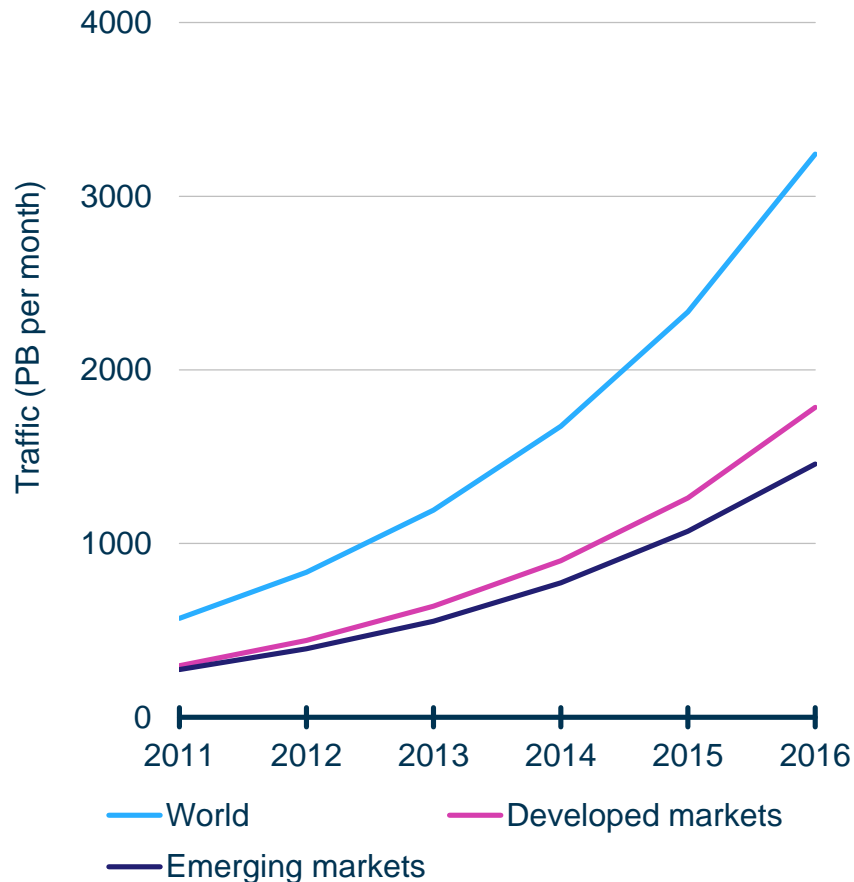
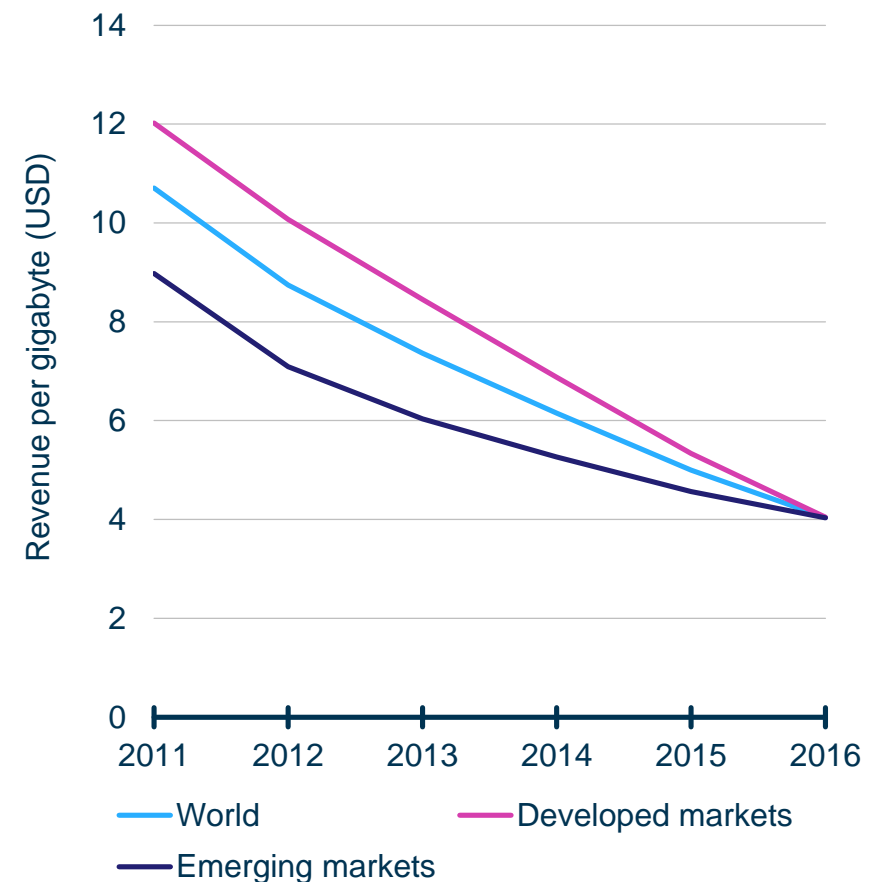


Figure 4: Revenue per gigabyte of mobile broadband traffic, worldwide, 2011–2016 [Source: Analysys Mason, 2012]



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Meeting traffic demand through macro network expansion will be expensive ... but technology choice can reduce capex ...

Figure 5: Annual radio access network capex spend in Western Europe, 2011–2016 [Source: Analysys Mason, 2012]

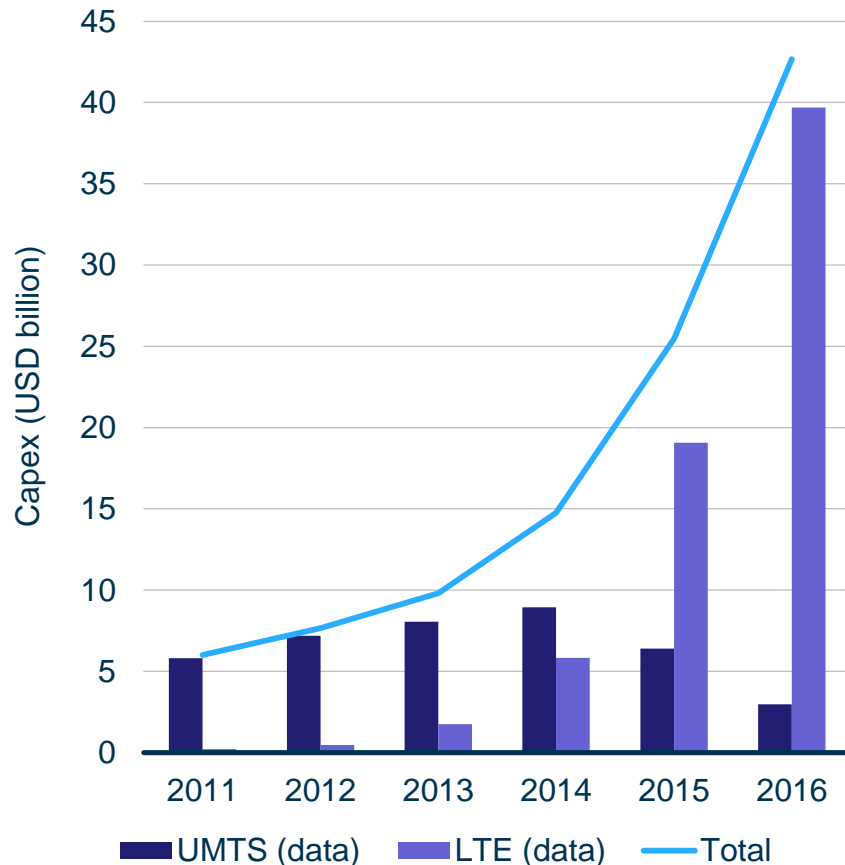
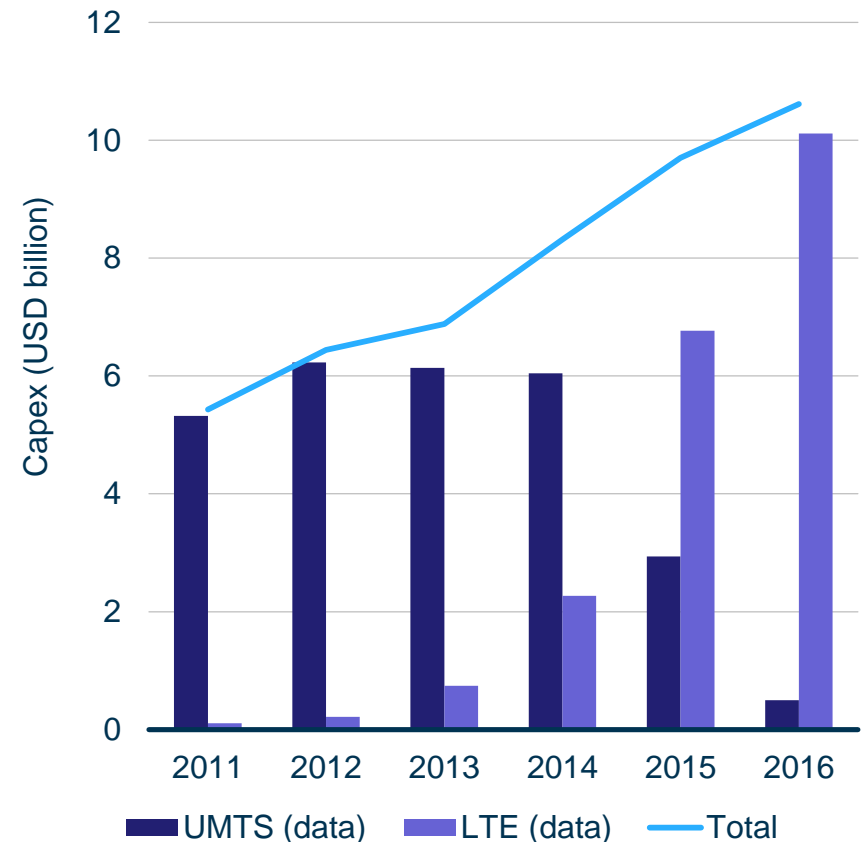


Figure 6: Annual radio access network capex spend Western Europe, assuming 50% reduction in network carriage costs, 2011–2016 [Source: Analysys Mason, 2012]



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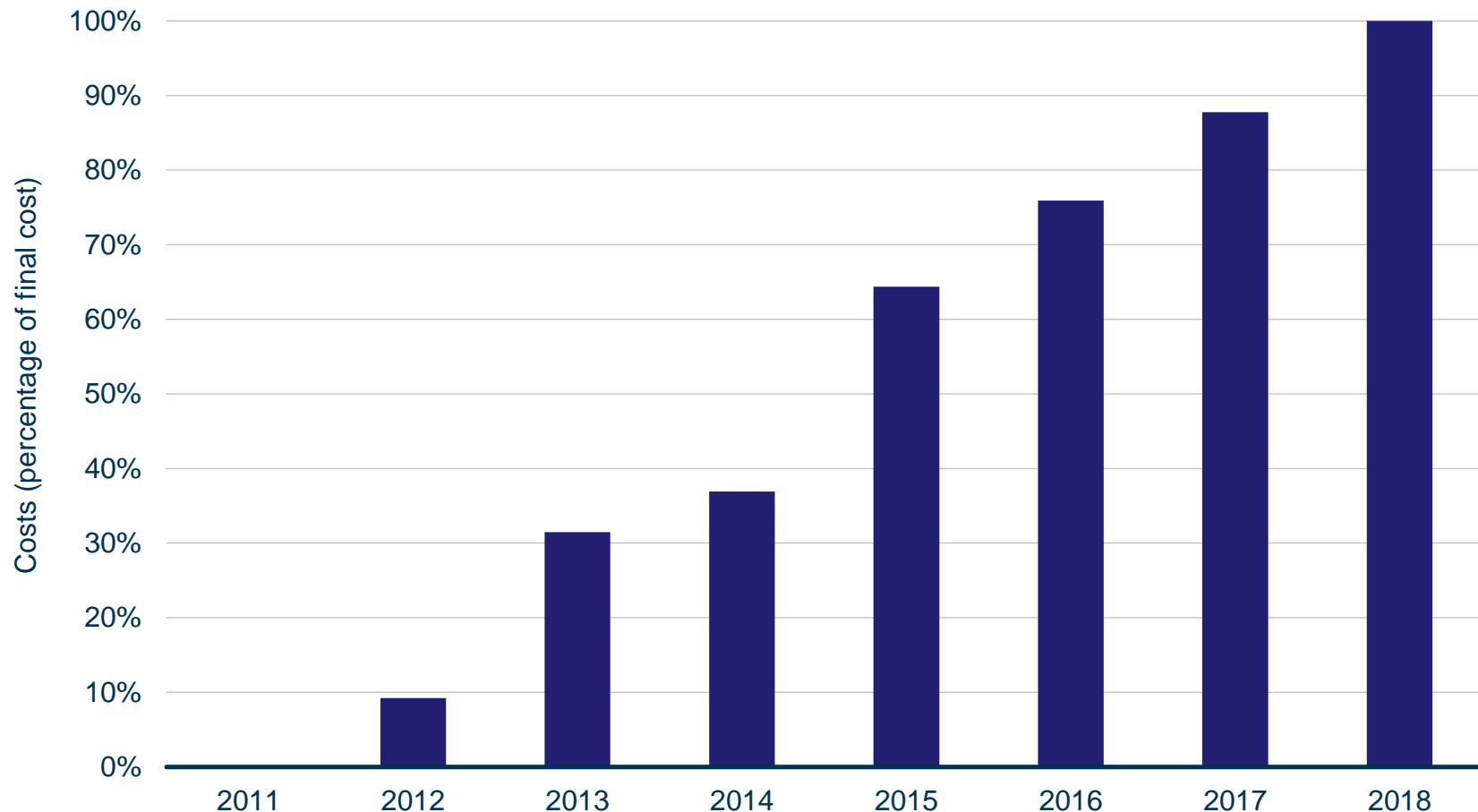
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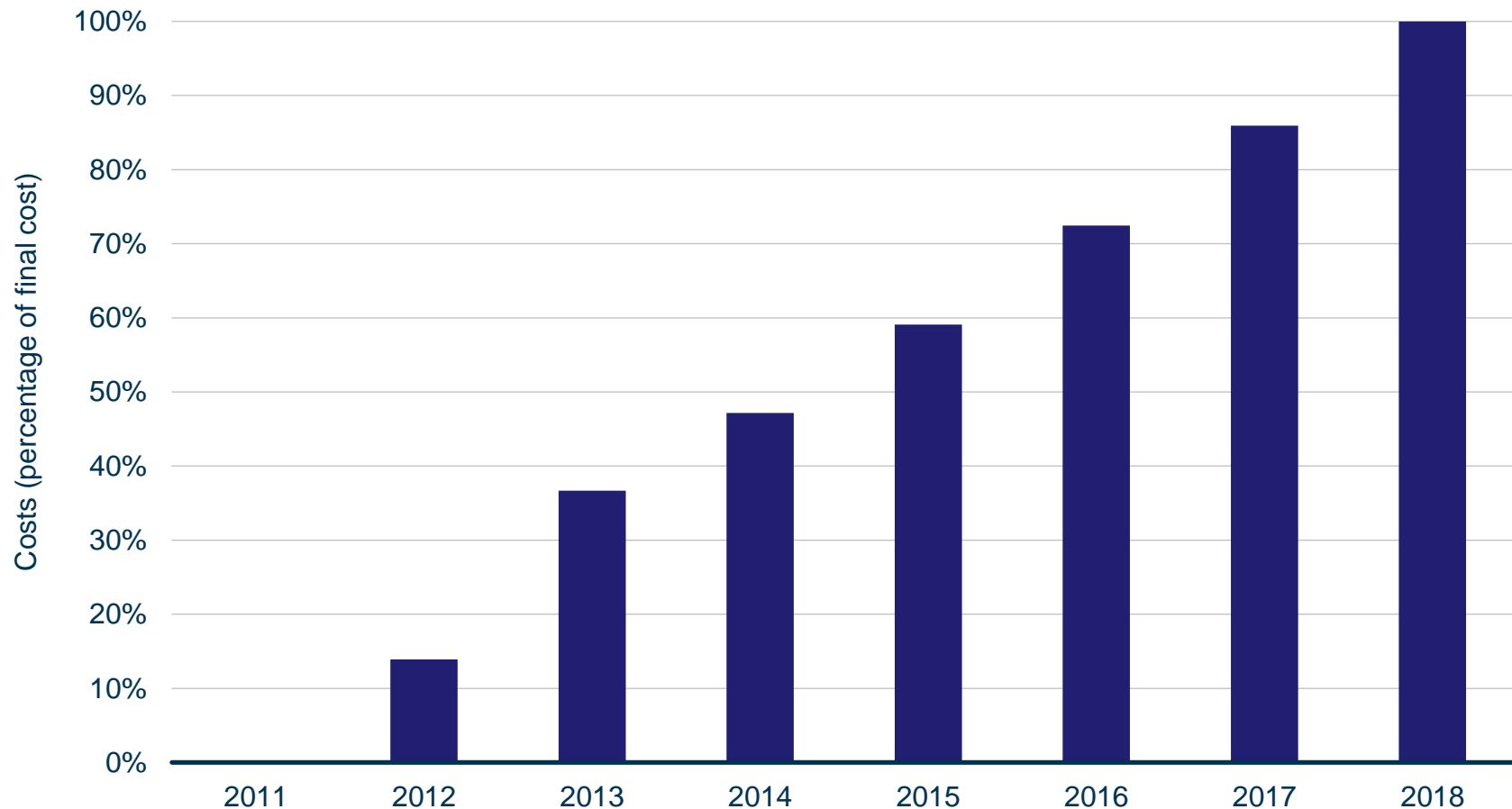
To provide additional capacity using 4G only, over EUR600 000 accumulated capital may be spent on a single, congested site

Figure 7: Accumulated capital investment: upgrade to 4G scenario, 2011–2018 [Source: Analysys Mason, 2012]



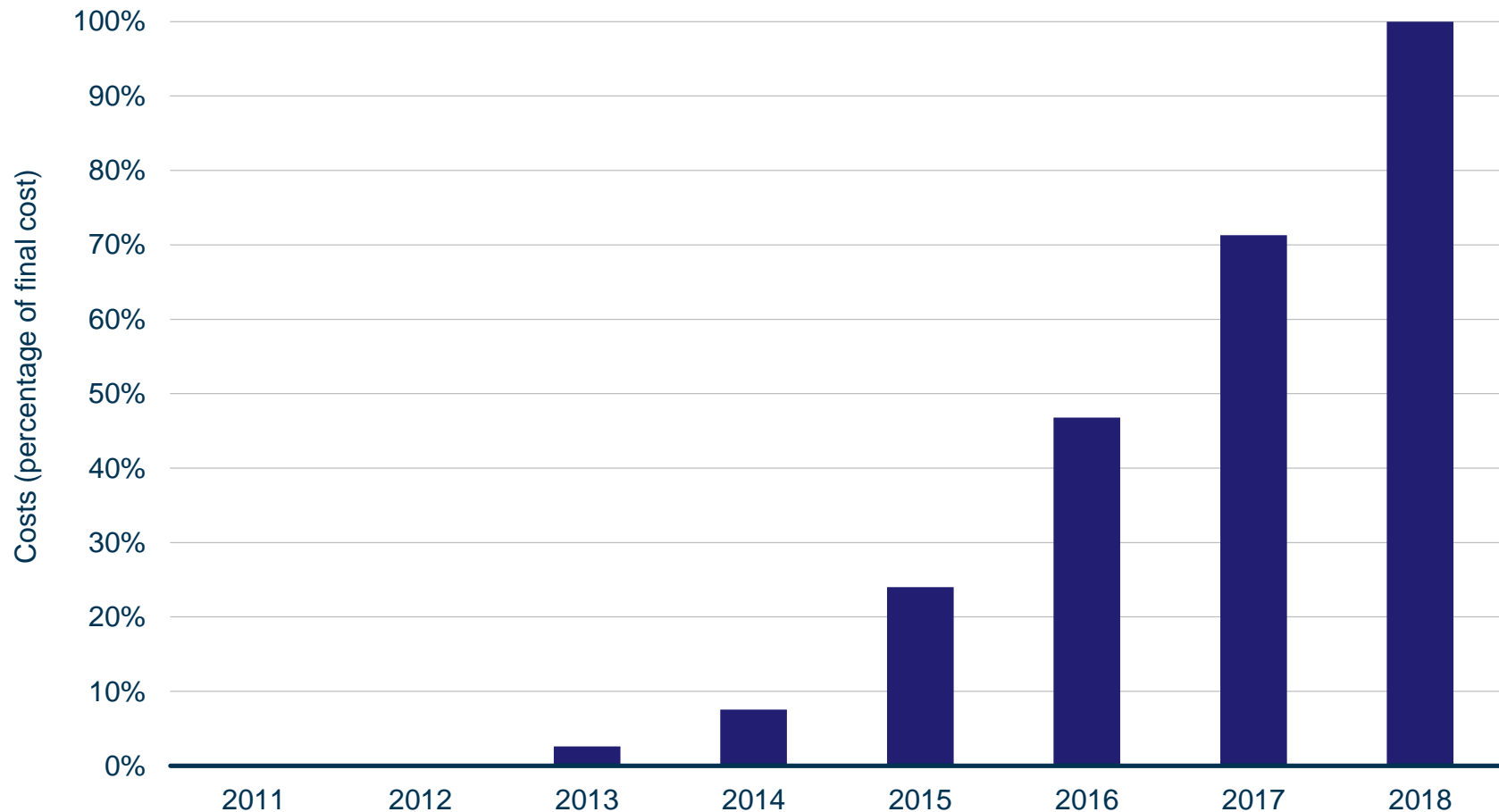
The cost to provide additional capacity using outdoor cells first then indoor cells

Figure 8: Accumulated capital investment: outdoor Wi-Fi first then indoor Wi-Fi scenario, 2011–2018 [Source: Analysys Mason, 2012]



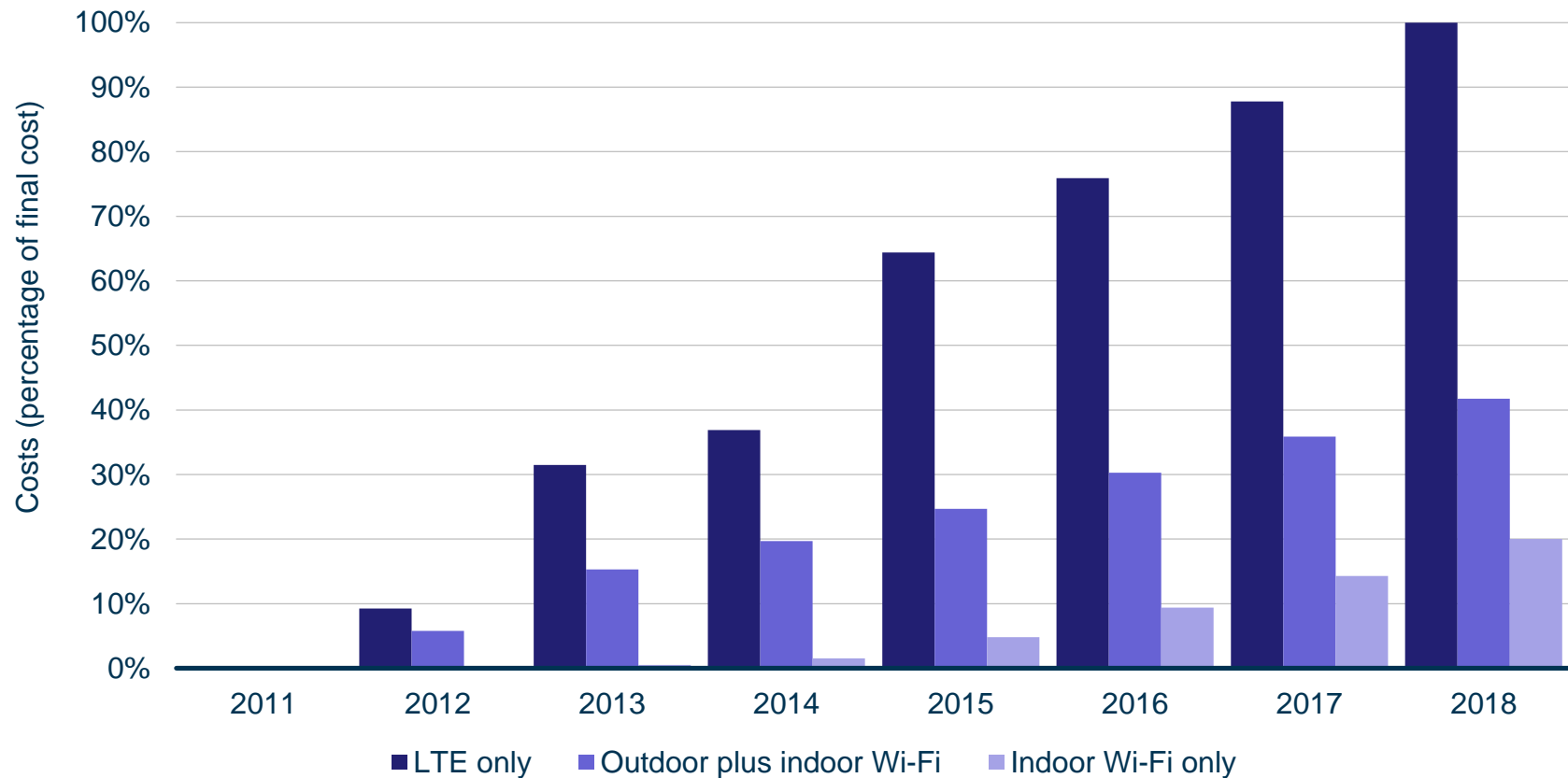
The cost to provide additional capacity using indoor cells only

Figure 9: Accumulated capital investment: indoor-only scenario, 2011–2018 [Source: Analysys Mason, 2012]



The cost of capacity required to relieve congestion in a 3G macro-cell is lowest for indoor-only Wi-Fi

Figure 10: Comparison of accumulated costs for capacity upgrade investments, 2011–2018 [Source: Analysys Mason, 2012]



** Note that the cost of outdoor networks can vary significantly

* Outdoor Wi-Fi is supplemented with some indoor deployments to fully offload users

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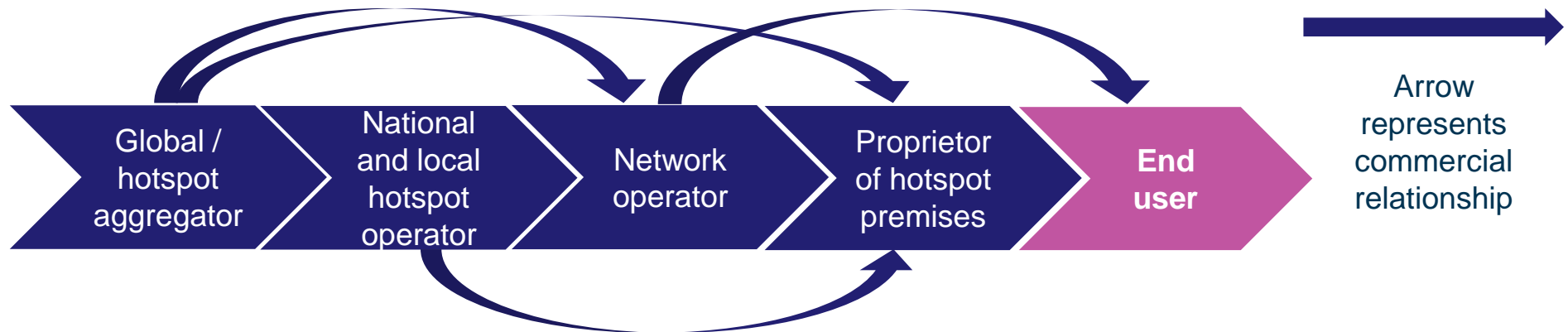
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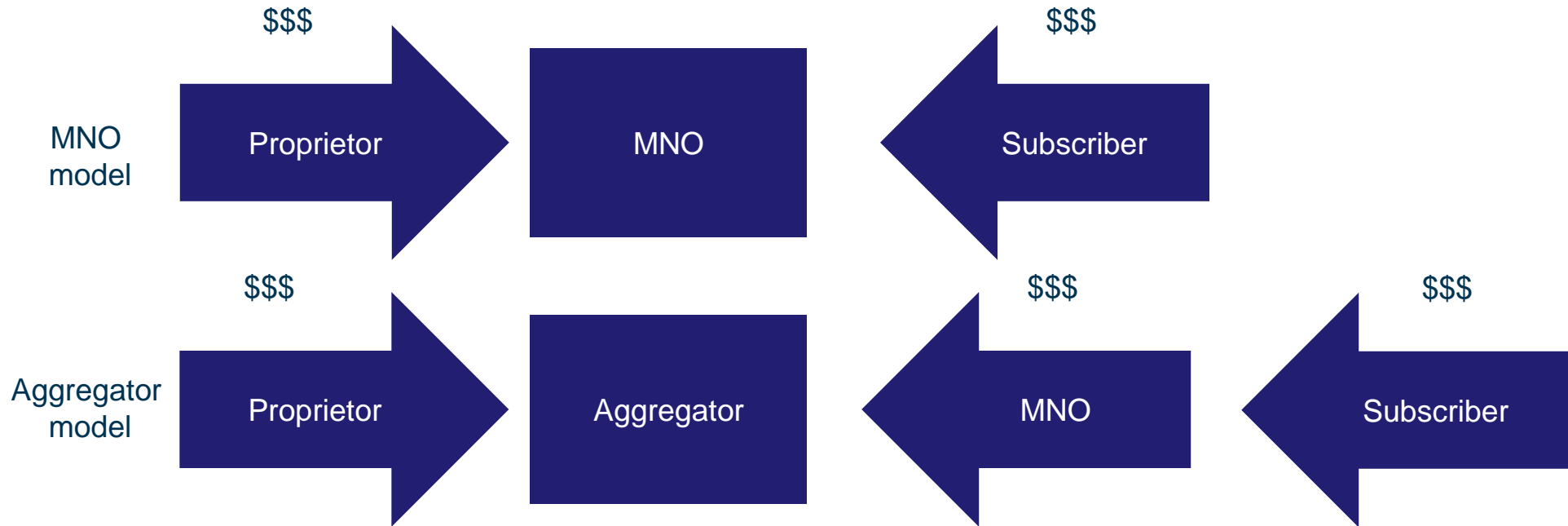
The Wi-Fi hotspot value chain demonstrates a number of commercial relationships

Figure 11: Wi-Fi value chain [Source: Analysys Mason, 2012]



The current commercial position ...

Figure 12: Current Wi-Fi value chains [Analysys Mason, 2012]



Currently, the provider, MNO or aggregator, gets paid twice!

Soon, proprietors will recognise the strength of their brand ...

- MNOs will want to align their brand.
- Proprietors will recognise the strength of their position.
- Already we are seeing moves in this direction.
- MNO/aggregators may have to pay proprietors.
- Strong branding from proprietors will squeeze MNO/aggregator monetisation opportunities.

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Recent events support the claim that Wi-Fi is on the verge of becoming an integral network component for MNOs [1]

- **AT&T and the WISPr Protocol:** AT&T Apple iPhones and Windows Phone 7 phones have WISPr protocol support. This protocol allows phones to automatically switch from cellular data to AT&T's Wi-Fi hotspots when they are available. (Notably, the WFA has abandoned support for this particular protocol).
- **Deutsche Telekom and iPass:** DT views Wi-Fi as 'a re-emerging technology'. In partnership with iPass, DT has launched 'Wi-Fi Mobilize' which is solution that incorporates a software client on user terminals to act as a smart agent for connection management and network selection.
- **KDDI and Rukus Wireless:** KDDI's 'Au Wi-Fi SPOT' is based on 802.11u infrastructure supplied by Rukus.
- **Republic Wireless (USA):** This is a new hybrid phone network that lets you seamlessly make calls using any available Wi-Fi hotspot, falling back to the regular cellular network when you move out of Wi-Fi range. The company estimates that most people are near a Wi-Fi network 60% of the time.
- **iPass OMX:** iPass has activated Open Mobile Exchange (OMX), which claims seamless 'zero-click' authentication and 'roaming'.

Recent events support the claim that Wi-Fi is on the verge of becoming an integral network component for MNOs [2]

- **Shaw Communications (Canada) and Cisco:** Announced on 27 October 2011 that they will conduct a technical trial of Hotspot 2.0. Shaw owns AWS spectrum but recently shelved plans to become a traditional MNO in favour of deploying a Wi-Fi hotspot network.
- **Various:** Various MNOs have launched Wi-Fi offload apps for smartphones and tablets. These increase awareness of hotspot availability and allow subscribers to easily locate local hotspots. Of course, these apps will become redundant when automatic authentication becomes widespread.

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Wi-Fi is cheaper than LTE and operates in free spectrum, so where is the catch?

- Wi-Fi is a certainly a cost-effective delivery mechanism.
- The cost of provision can largely be considered as a sunk cost to provide wireless broadband to the home.
- Current MNO approach is passive.
- Moving towards a carrier class of service presents the operator that wishes to deploy Wi-Fi with a number of operational challenges.
- Wi-Fi is burdened by the time and cost of site acquisition and hampered by local regulation.
- Backhaul is a real problem for outdoor Wi-Fi.

The Wi-Fi industry must overcome some major challenges in order to deliver 'carrier-grade' products and services

- The mobile operator is in fact entrusting a major part of the service it delivers to a potential competitor – the fixed operator.
- SIPTO – selective IP traffic offload.
- Wi-Fi uses unlicensed spectrum.
- Heterogeneous networks are on the horizon.

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Contact details

Terry Norman

Principal Analyst

terry.norman@analysysmason.com

Cambridge

Tel: +44 (0)845 600 5244

Fax: +44 (0)1223 460866

cambridge@analysysmason.com

Dubai

Tel: +971 (0)4 446 7473

Fax: +971 (0)4 446 9827

dubai@analysysmason.com

Dublin

Tel: +353 (0)1 602 4755

Fax: +353 (0)1 602 4777

dublin@analysysmason.com

Edinburgh

Tel: +44 (0)845 600 5244

Fax: +44 (0)131 443 9944

edinburgh@analysysmason.com

London

Tel: +44 (0)845 600 5244

Fax: +44 (0)20 7395 9001

london@analysysmason.com

Madrid

Tel: +34 91 399 5016

Fax: +34 91 451 8071

madrid@analysysmason.com

Manchester

Tel: +44 (0)845 600 5244

Fax: +44 (0)161 877 7810

manchester@analysysmason.com

Milan

Tel: +39 02 76 31 88 34

Fax: +39 02 36 50 45 50

milan@analysysmason.com

New Delhi

Tel: +91 11 4700 3100

Fax: +91 11 4700 3102

newdelhi@analysysmason.com

Paris

Tel: +33 (0)1 72 71 96 96

Fax: +33 (0)1 72 71 96 97

paris@analysysmason.com

Singapore

Tel: +65 6493 6038

Fax: +65 6720 6038

singapore@analysysmason.com

Washington DC

Tel: +1 202 331 3080

Fax: +1 202 331 3083

washingtondc@analysysmason.com