

The 5G Myth: When vision decoupled from reality

By William Webb

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5G - the next generation in mobile telephony - is heralded as a huge advance in global connectivity. But the vision is flawed. It is flawed because users will not value the higher data rates that are promised and will not need the higher capacity forecast. It is flawed because technological advances are insufficient to realise the vision and because mobile operators are insufficiently profitable to afford it. Yet it is not in the interests of any of the stakeholders to point this out. They all benefit from the interest, funding and potential that 5G promises. There is an alternative vision where industry focuses on consistent connectivity everywhere rather than ridiculously fast speeds in city centres. This short and easily digested book explains why the vision of 5G is flawed and sets out a better vision for a connected future. Chapter 1 examines the lessons of history, looking back at the transitions through previous generations and showing what simple extrapolations of trends would predict for 5G. It shows that if previous trends were followed, 5G would become widely deployed in 2022 and deliver realistic end-user data rates of 200Mbps/s and an increase in capacity of around 2x compared to current networks. Chapter 2 examines whether such increases in speed and capacity are needed. It shows that users do not value speeds above those already widely available on 4G. It demonstrates that while data requirements are currently growing rapidly, the rate of growth is slowing and if extrapolated will result in a plateau in data rate requirements around 2027, with little growth in the 5G era. Hence, it concludes that the advances in speed and capacity that 5G might bring are not needed. Chapter 3 considers whether the technology is available to provide such gains. It shows that further capacity improvements are very difficult and likely to be expensive to realise, raising the cost of provision for MNOs. It also suggests that some changes to the core network may have unexpected side-effects of enabling different industry structures, splitting the functions provided by MNOs today across multiple players. Chapter 4 considers industry economics and shows that MNOs are in a position of declining revenues relative to GDP, and poor profitability. Few expect this to change with 5G with the result that investment is highly unattractive. Chapter 5 asks why, if the position is so bleak, that the industry collectively appears so supportive of 5G. It shows that it is not in the interest of any of the key players to cast doubt on a bullish 5G vision and that for some the emergence of 5G is essential to their very survival. Chapter 6 examines the visions set out for 5G in more detail. It shows that they are often

over-stated. The collective vision of the MNOs, as set out by the NGMN group is examined in detail and each service is shown to be either deliverable via existing wireless solutions such as 4G, or economically unviable. The chapter shows that few know what 5G actually is. Chapter 7 asks what might transpire in place of the current 5G vision. It suggests that consistent connectivity of around 10Mbits/s everywhere is a more compelling vision and shows how it can be delivered via a mix of 4G and Wi-Fi. It also lays out a possible path for its introduction showing how this could result in seismic changes to the structure of the industry. Chapter 8 looks more broadly at the communications world, considering the impact of regulations, spectrum and broadband access to the home. It shows that regulation is set to maintain the status quo which early chapters have shown to be unsustainable and predicts this will cause further problems for any 5G vision. Chapter 9 summarises the findings of the book, sets out why the current 5G vision is a myth, and discusses what is more likely to transpire.

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Editorial Review

About the Author

William is a Director at Webb Search Consulting, a company specialising in providing the highest level of advice in matters associated with wireless technology and regulatory matters. He is also CEO of the Weightless SIG, the standards body developing a new global M2M technology. He was President of the IET – Europe’s largest Professional Engineering body during 14/15. He was one of the founding directors of Neul, a company developing machine-to-machine technologies and networks, which was formed at the start of 2011 and subsequently sold to Huawei in 2014 for \$25m. Prior to this William was a Director at Ofcom where he managed a team providing technical advice and performing research across all areas of Ofcom’s regulatory remit. He also led some of the major reviews conducted by Ofcom including the Spectrum Framework Review, the development of Spectrum Usage Rights and most recently cognitive or white space policy. Previously, William worked for a range of communications consultancies in the UK in the fields of hardware design, computer simulation, propagation modelling, spectrum management and strategy development. William also spent three years providing strategic management across Motorola’s entire communications portfolio, based in Chicago. William has published 14 books, over 100 papers, and 18 patents. He is a Visiting Professor at Surrey and Southampton Universities, an Adjunct Professor at Trinity College Dublin, a Board member of Cambridge Wireless, a member of multiple oversight Boards and a Fellow of the Royal Academy of Engineering, the IEEE and the IET. In 2015 he was awarded the Honorary Degree of Doctor of Science by Southampton University in recognition of his work on wireless technologies and Honorary Doctor of Technology by Anglia Ruskin University in honour of his contribution to the engineering profession. His biography is included in multiple “Who’s Who” publications around the world. William has a first class honours degree in electronics, a PhD and an MBA.

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