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5G Business Models and Opportunities
for SMEs as savvy providers of 5G applications and services

Authors

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Focus Area

5G, SMEs, emerging business models, network function virtualization and service orchestration, network slicing.

Who stands to benefit and how?

Project managers, technologists, entrepreneurs, SMEs who have mastered the key technologies and services could be the real winners when it comes to taking 5G to market. SMEs are expected to enable some of the new business models emerging from the inevitable disruption not only in the telecommunications ecosystem but also in the vertical sectors making use of 5G including automotive, manufacturing, health, energy, and others.

Position Paper

The imminent arrival of 5G will bring disruption in business models for incumbent operators and verticals alike. While opportunities will surely arise for large, well-positioned market participants, the real winners may well be those SMEs who have mastered the key technologies and services enabling the new business models emerging from the inevitable disruption not only in the telecommunications ecosystem but also in the vertical sectors making use of 5G including automotive, manufacturing, health, energy, and others.

Market disruptions and 5G

Whenever disruption has upended a market, incumbent players have often been caught without access to the key capabilities needed to play a role in the aftermath. This is where SMEs have an advantage – traditionally agile, close to the leading edge of technological innovation, without legacy baggage to slow them down. SMEs with expertise in Network Function Virtualization and service orchestration will become key partners to their larger counterparts in the drive toward full Network Slicing, a foundational capability in the new business models. SMEs pioneering vehicular connectivity and secure mobile data transfer will benefit from the emergence of new forms of monetisation ranging from media streaming to usage-based mobile commerce. 5G will open up technology gaps that the SMEs can rush in to fill. SMEs are leaders in technologies needed to solve the spectrum allocation problem (e.g. beamforming) for mobile business models; technologies for supporting new services in areas like stadia (edge computing, small cells); new forms of data mining and analytics to support usage-based business models (e.g. machine learning, Big Data). SMEs well introduced in vertical sectors may also find new opportunities for offering new services to their customers via 5G. This workshop will explore the new playing field that is emerging with the advent of 5G, and the opportunities for SMEs to be at the leading edge.

To explore these opportunities, Global5G.org[1] co-hosted a workshop with NetWorld2020 SME Working Group[2] and To-Euro 5G[3] at EuCNC 2019 in Valencia on Emerging 5G Business Models: Opportunities for SMEs and large companies-lesson from 5G PPP[4].

The workshop brought together nine projects from 5G PPP phases 2 and 3 along with their European SME partners and other small business that can benefit from 5G market opportunities. The workshop zoomed in on what kind of business models really were poised to emerge from the inevitable disruption of 5G, and what opportunities this disruption was really bringing for SMEs.

As a featured workshop by the 5G PPP during EuCNC, it gathered a full room of participants, coming from enterprises large and small, public and private, including EC representatives. Co-Chair Nicola Ciulli highlighted the complex environment faced by SMEs, giving the participants much to keep in mind as they listened to the presentations.

Perspectives on European Broadcasting and 5G

Darko Ratkaj from the European Broadcasting Union (EBU)[5] expects enormous disruption in the services of broadcasting coming from the advent of digital broadband, which is destined to reach higher levels with the coming deployment of 5G[6]. But even more to the point of the workshop, he explained at length the role that SMEs will be able to play in this disruptive environment. Broadcasting is first of all a creative activity; secondly, it is invariably a local activity, reflecting local culture and mores. As such, it needs local, creative talent, which is difficult to nurture, and difficult to replace. SMEs are the ideal entities to provide this creative talent in their local environments.

Perspectives on Open Source Software

Perspectives on the intriguing concept of Open Source Software Networks and 5G came from Josep Martrat of Atos. The open source business model has made huge advances in software, and it is not unreasonable to be curious about its possible relationship to 5G technologies. Josep coordinates the 5G PPP 5Gtango project[7], where much open source development

1   https://www.global5g.org/news/report-eucnc-2019-business-models-workshop.
2   https://www.networld2020.eu/sme-support/.
3   https://5g-ppp.eu/.
4   https://www.eucnc.eu/workshops/workshop-5/.
5   https://www.ebu.ch/home.
6   https://tech.ebu.ch/groups/5gdeployments; https://tech.ebu.ch/groups/5gcp; https://www.ebu.ch/legal-policy/5G.
7   https://www.5gtango.eu/.

is being used and consolidated. Since the well-known "some additional development needed" maxim of open source is operative here, there are opportunities for third-party, specialised SME actors to play key roles in the introduction of open source into the 5G mainstream.

SMEs in the Spotlight

A key feature of the workshop was a series of Lightning Talks from SMEs looking at what innovations they are planning to take to market.

› Nicola Ciulli, Nextworks srl8:explained the challenge to an SME of deciding which market sectors to enter, considering that the choice of market sector can be literally a matter of life and death for a small enterprise, given the few resources available to them. He described their presence in two major sectors (mainstream 5G technology and Smart Buildings), and outlined their plans to establish a presence in Industry 4.0, in subareas such as process monitoring and predictive maintenance), while noting the risks and opportunities involved for SMEs when entering new markets.

› Aitor Zabala, CTO of Telcaria[8]: experiences in the 5G CORAL project[9], where they are exploring novel federation and zero-touch technologies through network softwarisation. SMEs can play a potential role as novel service providers by leveraging these new technologies. Even more intriguing is the role of SMEs as 5G network operators for verticals – for example, managing the distributed edge and fog facilities in shopping malls, airports, train stations, and the like.

› Maurizio Cecchi of 5G EVE[10] presented an innovative instrument targeted at motivating the use of the results of the project: a set of prizes to be awarded for contributing new use cases, with specific emphasis on the inclusion of SMEs. SMEs bring great added value through their innovative solutions all along the value chain, and especially with respect to verticals. SMEs will likely be the early adopters of 5G services, he pointed out, and therefore will build the future market (more on that concept later).

› Riccardo Ferrari of Azcom[11] is a representative of a typical SME involved in building such a future 5G market, in particular through involvement in several 5G PPP projects including 5G CORAL, where he elaborated on their proof of concept development for connected cars.

› Panagiotis Demestichas of WINGS ICT[12], an SME specialising in AI-powered solutions for various vertical sectors, presented a surprising and fascinating 5G use case involving "smart aquaculture". Opportunities and challenges facing SMEs in the 5G business include the garnering of support from legislative and regulatory bodies and from well-designed support programmes.

› Nicola Ciulli presented an initiative from Canada called ENCQOR[13] involving a 5G innovation platform spanning Canadian provinces, with an emphasis on offering work spaces for SMEs to get involved and connect to innovation hubs in the participating provinces. This is yet another perspective for the participants on the possibilities for SMEs in the 5G ecosystem.

5G Business Models across Vertical Industries

› John Favaro of Trust-IT[14] outlined the many services of Global5G.org on behalf of 5G verticals and SMEs, ranging from intelligence gathering through dissemination in popular White Papers and reports. He outlined also the specific services and tools developed in Global5G.org such as the verticals cartography[15] covering a very diverse set of use-case experiments across verticals, as well as a user-friendly guide to issues in spectrum allocation and management[16], and a standardisation tracker helping verticals to orient themselves in the thicket of 3GPP standardisation activities.

› Asma Chiha from the University of Ghent presented a textbook case of emerging 5G business models, within the overall context of the SAT5G PPP project[17] and satellite communications. Non-terrestrial communication technology has an enormous potential to solve some of the thorniest problems on the way to the Digital Single Market, such as conquering the digital divide – the lack of connectivity in poorly served areas. However, there are also challenges posed by that same potential: the problems of risk-sharing, demand forecasting, managing multi-operator networking situations, and much more. Against that background, SAT5G is working towards a new business model involving a broker, mediating between network operators, handling negotiations, and simplifying overall relationships.

› Simon Fletcher of independent wireless experts Real Wireless[18], zooming in on his work in 5G-MONARCH[19] The existing B2C business model of the tradition MNO is on its last legs, and new business models must replace it. Companies do not want to manage complex networks, leading to opportunities for Mobile Virtual Network Operators to step in and shift the CAPEX of setting up a network to pure OPEX for the customer. Innovative public-private partnership models are also perfectly possible in this context, creating often-overloaded but equally important public value across the entire ecosystem.

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8   https://www.telcaria.com/.
9   http://5g-coral.eu/.
10   https://www.5g-eve.eu/.
11   http://www.azcomtech.com/.
12   https://wings-ict-solutions.eu/.
13   https://www.encqor.ca/.
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15   https://www.global5g.org/cartography.
16   https://www.global5g.org/news/beginner's-guide-european-5g-vertical-spectrum-issues.
17   https://www.sat5g-project.eu/.
18   https://www.real-wireless.com/.
19   https://5g-monarch.eu/.

› Theodoro Rokkas of inCITES[20] brought to the table one of the more important new models, the neutral host, within the context of smart cities in particular, based on the experiences in the 5G PPP project 5GCity[21]. Several features of the neutral hosting model characterise a whole new set of emerging relationships, ranging from new businesses with enterprise customers to new types of commercial relationships with MNOs.

› Valerio Frascolla, Director of Research and Innovation at Intel[22], brought fascinating international perspectives in the context of the 5G-MiEdge project[23], an EU-Japan co-funded research project whose purpose is to propose new 5G enabling technologies to be showcased at the Tokyo 2020 Olympics. The business modelling efforts include using the popular business canvas methodology and related cash flow analysis, including CAPEX and OPEX projections, illustrating the kind of analyses that are involved in business case development in a 5G context.

› Mikael Fallgren of Ericsson[24] and the 5GCAR project[25] presented the results of a recent White Paper produced by the 5G PPP Automotive Working Group[26] consisting of a variety of industry players (including workshop co-organiser Trust-IT), with the results of a cost-benefit analysis that the authors carried through to support a feasibility study on pan-European deployment of automotive connectivity.

Conclusions: Challenges and Opportunities moving forward

The workshop participants queried the maturity of 5G today, both in terms of technology and business model development. For example, technologies like WiFi still retain a high level of "stickiness", and are themselves evolving at the same time as mobile generations, thus retaining also a strong value proposition.

Caution is key. Some parts of the 5G community are pushing the classic "hype cycle", which mismatches marketing messages with deployment realities, thus creating undue expectations that are inevitably but unfairly dashed. We must recognise that current research and innovation will not have a return on investment that is coincident with the peak of the hype cycle (where we are now), but rather within some years. 5G today is a bit like a Swiss army knife – designed to do many things, but too many forget that it is only a tool to enable real applications. However, the newly launched ICT-19 projects may well have an opportunity to exploit this Swiss army knife in real, realised applications. All agreed that when 5G arrives in full, it will also bring in new value chains and players, which will surely impact current SMEs one way or another – for better and for worse.

What should SMEs do in the meantime? Should they just wait for 5G to eventually arrive in full deployment at some unspecified time? The unanimous response of SMEs and others in the group was a decisive No. On the contrary, it is the other way around, they observed: SMEs can and should exploit their expertise and capacity for innovation to work with the state of the market as it stands now. They will be the generators of new business models capable of exploiting the advantages of 5G when it has fully matured. The future won't create them – rather, they will create the future.

The workshop was organised by Jacques Magen, Interinnov and chair of the SME WG, and Stephanie Parker, Trust-IT and Coordinator of Global5G.org. It was co-chaired by John Favaro of Trust-IT, who is the Deputy Director of Global5G.org, and Nicola Ciulli, Head of R&D at Nextworks, a leading SME in 5G technologies and Co-Chair of the SME WG. The workshop was also organised in the context of the European Commission's Common Dissemination Booster with project group 5G-TRANSFORMER[27] and 5G-CORAL.

20   https://www.incites.eu/.
21   https://www.5gcity.eu/.
22   https://www.intel.de/content/www/de/de/homepage.html.
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24   https://www.ericsson.com/en.
25   https://5gcar.eu/.
26   https://bscw.5g-ppp.eu/pub/bscw.cgi/d293672/5G%20PPP%20Automotive%20WG_White%20Paper_Feb2019.pdf.
27   http://5g-transformer.eu/.