

Identifying the factors that will affect 5G market adoption and evolution

5G networks are expected to offer advanced services and functionalities that can be launched in an efficient and cost-effective manner leading to new market opportunities and players. Moreover, 5G networking will support vertical markets such as automotive, energy, media and entertainment e.t.c by providing specialized solutions. Thus, verticals use cases and requirements (low latency, high data rate, security e.t.c) have been considered with high priority and used as drivers for the design and standardization process. 5G is likely to significantly affect both social and economic terrain.

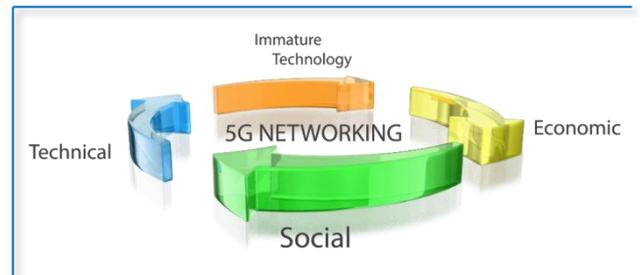
In order to achieve all the demanding requirements, 5G will be built upon heterogeneous systems using several technologies. Recent advances in cloud computing, edge computing, Software Defined Networking (SDN) and Network Function Virtualisation (NFV) will facilitate this endeavor.

It is then evident that such a business venture is quite risky due to the high number of unknowns. Thus, a better understanding of the many issues surrounding the 5G business landscape is required through a roadmapping exercise.

Roadmapping Survey

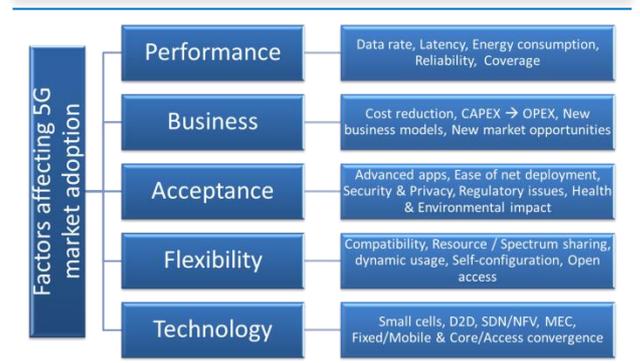
In order to identify the factors that will affect 5G market adoption and evolution, a list of criteria and sub-criteria were initially determined through interviews and group discussions with experts. This led to the design of the required hierarchy of objective, criteria and sub-criteria. An appropriate questionnaire was then conducted and distributed among the experts of 5G-PPP charisma project. According Fuzzy Analytic Hierarchy Process (Fuzzy AHP) used, the questionnaire consisted of several pairwise comparisons. Interesting results were derived by processing the collected questionnaires.

Roadmapping



Source: incITES, 5G-PPP CHARISMA project, 2016

Fuzzy AHP Hierarchy



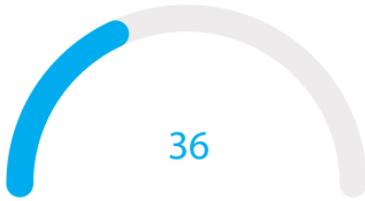
Source: incITES, 5G-PPP CHARISMA project, 2016

Fuzzy AHP Survey



Source: incITES, 5G-PPP CHARISMA project, 2016

Ranking of influencing factors



Performance

Regarding performance, experts seem more concerned about low latency. High data rate and high reliability seem to be the second most important issues.



Business

New market opportunities sub-criterion is found in the first rank indicating its increased importance and revealing market expectations.



Acceptance

Security and privacy issues are the most important. Experts seem to also highly prioritize advanced applications and ease of deployment.



Flexibility

Optimized and more dynamic usage of all distributed resources, open access and resource/spectrum sharing seem to take precedence over other issues.



Technology

SDN and NFV sub-criterion is the first choice among the experts regarding the Technology criterion. Fixed-Mobile and/or Access-Core Convergence, Mobile Edge Computing (MEC) and D2D – Ad Hoc/Mesh Networks sub-criteria are shown to be of almost equivalent importance after SDN/NFV.

Source: inCITES, 5G-PPP CHARISMA project

Policy Implications

Strategic planning and policy decisions should be taken in order to facilitate and accelerate 5G network deployments as well as motivate users. These include subsidies to providers/operators, fair pricing, regulatory issues, activities to educate people and increase public awareness.

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