

MATILDA: A Value Proposition for Telecommunication Service Providers for Vertical Applications' Integration in a 5G -Ecosystem

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Abstract—5G networks will constitute a complete transformation in the ICT domain by enabling the deployment of vertical services while significantly affecting the existing stakeholders' roles. The 5G-PPP project MATILDA aims at delivering a holistic 5G end-to-end services operational framework, including 5G-ready applications lifecycle management over 5G network infrastructures. This paper aims at defining the business applicability of the MATILDA project, focusing on the value proposition for the Telecommunication Service Providers.

Keywords—5G Business Roles; Verticals; Value Proposition; Telecommunication Service Provider;

I. INTRODUCTION

5G networks will go beyond performance enhancements of the existing telecommunication services, to a complete transformation of the ICT domain towards enabling the deployment of various vertical services (industry 4.0, automotive, multimedia, smart cities, eHealth, etc.) over the 5G infrastructures ([1]-[3]). New business models will emerge, involving a transformation of existing stakeholders' roles, ([1],[2],[4],[5]); the Telecommunication Service Provider (TSP) holding a principal role among the 5G stakeholders. The TSP (Mobile/Fixed-network operator), operating a (5G) programmable network infrastructure spanning from the radio/ fixed access to the edge, transport and core network can be also the network infrastructure owner; alternatively, network resources can be leased as a Network Service (NaaS) from an Infrastructure Provider.

MATILDA 5G-PPP project [6] aims at designing and implementing a novel holistic 5G end-to-end services operational framework tackling the overall lifecycle management of both 5G-ready applications from multiple vertical sectors and 5G network services over programmable 5G infrastructures. This paper aims at defining the business applicability of the MATILDA for the TSP as main targeted customer. At first, the MATILDA solution is briefly presented, along with the interactions with the main stakeholders. Secondly, the MATILDA value proposition for the TSP is analysed.

II. MATILDA FRAMEWORK AND BUSINESS USERS

The vision of MATILDA [3] is to design and implement a novel holistic 5G end-to-end services operational framework tackling the overall lifecycle of design, development and orchestration of 5G-ready applications and 5G network services over programmable 5G infrastructures adhering to runtime policies. For this purpose, it devises a unified programmability model and a set of control abstractions serving as interface between the 5G applications and the 5G infrastructure layers, while incorporating intelligent orchestration mechanisms for the automated placement of the 5G-ready applications and the creation and maintenance of the required network slices; the network services defined as VNF graphs are managed by a multi-site NFV Orchestrator (NFVO).

A detailed description of the MATILDA architecture and technical innovations are provided in [7]-[9], but product-wise, the MATILDA framework comprises the following three major layers (Fig.1), [4]:

(a) The MATILDA 5G-ready Applications Layer is primarily oriented to software developers, to flexibly support the design and development of 5G-ready applications, while also enabling the definition of the critical configuration parameters for application components' initial deployment and runtime, their chainable interfaces among them, quantitative metrics with regard to the required QoS, etc.

(b) The 5G-Ready Applications' Orchestration Layer is oriented to Application/Service Providers (AP/SPs), to support the life-cycle management of the 5G-ready applications across the multi-site programmable infrastructure, using optimisation schemes to provide the needed resources and also specify runtime policies and configuration options on a per application deployment basis.

(c) The Network and Computing Slice Management Layer is oriented to TSPs, to fully support 5G application-aware network slice instantiation and management, including functionalities such as: compute and network slice instantiation and management, network services and

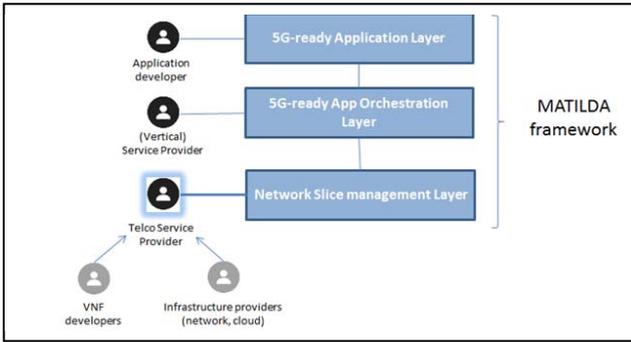


Fig. 1. MATILDA Direct Users/Roles and Interactions

mechanisms activation and orchestration, monitoring streams management and runtime policies enforcement. This layer includes OSS/BSS, NFVO and a resources manager to handle the network and compute resources deployment.

It becomes obvious that three main business roles will be directly interacting with the MATILDA technical layers, namely the 5G-Ready application developers, the (Vertical) AP/SPs and the TSPs.

III. MATILDA VALUE PROPOSITION ANALYSIS FOR TELECOM SERVICE PROVIDERS

The main customer segment targeted by MATILDA is the TSP that by acquiring, operating and maintaining the MATILDA solution will be able to improve its business offerings towards verticals and software developers. The value proposition of MATILDA to TSPs lies in bridging the existing gap in end-to-end orchestration solutions and delivering an easy and flexible environment for vertical applications integration into a 5G ecosystem and has been analysed with the Value Proposition Canvas [10] (Fig. 2).

Considering the Customer Profile, that is, the TSPs profile, their “jobs” related to the provisioning of 5G-ready applications, include the processes shown in Fig. 2.

Existing application deployment frameworks are not sufficient for 5G-ready applications, because application deployment procedures are detached from underlying network systems and resources. In this context, TSPs have to face a number of challenges - “pains”, the most critical ones shown in Fig. 2. These “pains” result in significant human and infrastructure resources and cost overheads as well as lack of deployments’ flexibility.

MATILDA builds a value proposition for TSPs around an advanced holistic framework [7] consisting of a set of products and services (a) to relieve part of these “pains” in the deployment of the 5G applications, and (b) having capabilities comprising “gain creators” for the TSPs (Fig. 2). As a result, the “gains” for the TSPs are the following:

- Fast and cost efficient expansion of their service portfolio in various vertical industries for the generation of new revenue streams.
- Optimisation of 5G network resources provisioning leveraging the latest technological advancements, well before or aligned with the competition.
- Cost-efficient utilisation of infrastructure resources (owned and/or obtained as a Service) while maintaining high QoS for advanced services.

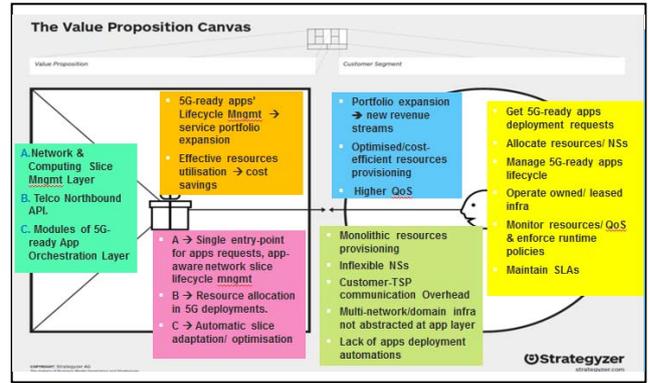


Fig. 2. Overview of MATILDA Value Proposition to TSPs

IV. CONCLUSIONS

This paper discusses the positioning of the 5G-PPP project MATILDA solution in the 5G business framework; which is to bridge the existing gap in end-to-end orchestration solutions and delivering an easy and flexible environment for integration of vertical applications into a 5G ecosystem. The value proposition of MATILDA is analysed from the TSP’s perspective considering the “jobs” the “pains” and the “gains” that are foreseen in the process of delivering 5G services.

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REFERENCES

- [1] 5G-PPP, "5G empowering vertical industries", white paper, 2016. http://ec.europa.eu/newsroom/dae/document.cfm?doc_id=14322
- [2] NGMN Alliance, “NGMN 5G White Paper”, https://www.ngmn.org/fileadmin/ngmn/content/images/news/ngmn_news/NGMN_5G_White_Paper_V1_0.pdf
- [3] 5G-PPP View on 5G Architecture, V2.0, 2017, <https://5g-ppp.eu/wp-content/uploads/2018/01/5G-PPP-5G-Architecture-White-Paper-Jan-2018-v2.0.pdf>
- [4] MATILDA, Deliverable D7.4, “Market Analysis, Business Plan, Sustainability Model & Innovation Management”, September 2018
- [5] IEEE 5G Initiative, “5G an Beyond Technology Roadmap”, white paper, 2017. <https://futurenetworks.ieee.org/images/files/pdf/ieee-5g-roadmap-white-paper.pdf>
- [6] 5G-PPP Project MATILDA, <http://www.matilda-5g.eu/>
- [7] MATILDA, Deliverable D1.1 “MATILDA Framework and Reference Architecture”. December 2017
- [8] P. Gouvas, et.al., "Design, Development and Orchestration of 5G-Ready Applications over Sliced Programmable Infrastructure", First International Workshop on Softwarized Infrastructures for 5G and Fog Computing (Soft5 2017), Genoa, Italy, 2017, pp. 13-18
- [9] P. Gouvas, et.al., "Separation of concerns among application and network services orchestration in a 5G ecosystem", EuCNC Workshop on “From Cloud ready to Cloud Native Transformation: What It Means and Why It Matters”, Ljubljana, Slovenia, 2018.
- [10] Value Proposition canvas template <https://strategyzer.com/canvas/value-proposition-canvas>.