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I. REQUIREMENTS SPECIFICATION

Precursor to theorizing about the potential of microservices patterns for big data systems, we need to define what we mean by big data systems and what are the requirements of these systems. System and software requirements come in different flavour and can range from a sketch on a napkin to formal (mathematical) specifications. Therefore, we first need to identify what kind of requirements is the most suitable for the purposes of this study. To answer this question, we first explored the body of evidence to understand the current classification of software requirements.

There's been various attempts to defining and classifying software and systems requirements. For instance, Sommerville ([1]) classified requirements into three levels of abstraction that are namely 1) user requirements, 2) system requirements and 3) design specifications. The author then mapped these requirements against user acceptance testing, integration testing and unit testing. While this could satisfy the requirements of this study, we opted for a a more general framework provided by Laplante ([2]). In Laplante's approach, requirements are categorized into three categories of 1) functional requirements, 2) non-functional requirements, and 3) domain requirements.

Our objective is to define the high-level requirements of big data systems, thus we do not seek to explore 'non-functional' requirements. Non-functional requirements are emerged from the particularities of an environment, such as a banking sector and do not correlate to our study.

After clarifying the type of requirements, we then explored the body of evidence to realize the general requirements of big data systems. Indeed, the most discussed characteristics of big data systems are the popular 5Vs which are velocity, veracity, volume, Variety and Value ([3], [4], [5], [6], [7], [8]). Many researchers such as Nadal et al ([9]) have underpinned their artifact development on these characteristics and requirements that emerge from them.

Along the lines, we

REFERENCES

[1] I. Sommerville, *Software Engineering, 9/E.* Pearson Education India, 2011.
[2] P. A. Laplante, *Requirements engineering for software and systems.* Auerbach Publications, 2017.
[3] Y. Demchenko, C. De Laat, and P. Membrey, "Defining architecture components of the big data ecosystem," in *2014 International Conference on Collaboration Technologies and Systems (CTS).* IEEE, 2014, Conference Proceedings, pp. 104–112.
[4] J. Bughin, "Big data, big bang?" *Journal of Big Data*, vol. 3, no. 1, p. 2, 2016.
[5] M. Bahrami and M. Singhal, *The role of cloud computing architecture in big data.* Springer, 2015, pp. 275–295.
[6] B. B. Rad and P. Ataei, "The big data ecosystem and its environs," *International Journal of Computer Science and Network Security (IJCSNS)*, vol. 17, no. 3, p. 38, 2017.
[7] N. Marz and J. Warren, *Big Data: Principles and best practices of scalable real-time data systems.* New York; Manning Publications Co., 2015.
[8] H.-M. Chen, R. Kazman, and S. Haziyev, "Agile big data analytics development: An architecture-centric approach," in *2016 49th Hawaii International Conference on System Sciences (HICSS).* IEEE, 2016, Conference Proceedings, pp. 5378–5387.
[9] S. Nadal, V. Herrero, O. Romero, A. Abelló, X. Franch, S. Vansummeren, and D. Valerio, "A software reference architecture for semantic-aware big data systems," *Information and software technology*, vol. 90, pp. 75–92, 2017.