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Approach to check distributed ledger technology applicability in business

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Keywords: *distributed ledger technology, blockchain, applicability*

Abstract:

Every year, the number of new services and devices in the market is growing exponentially. More and more functions are being transferred to devices to make life easier and make more efficient use of time. At the same time, devices become more energy- and computationally powerful every year and get the opportunity to process information more efficiently and also make decisions independently. However, centralized coordination of an ever-growing number of devices is already becoming problematic. To ensure effective interaction of complex-scalable systems, it is proposed to use distributed ledger technology (DLT).

As part of the review of the basic requirements for the process of assessing the applicability of distributed ledger technologies and developing criteria, a literature analysis and analysis of a number of existing systems were carried out taking into account the problems of their application based on DLT.

As part of the study, various areas of applications of DLT were considered and problems associated with the applicability of distributed registry technology were identified.

Based on the literature analysis, the basic suitability criteria for the selection of a DLT design were proposed based on qualitative criteria such as consistency, correlation, discriminative power, high resolution, tracking. Based on that a list of suitability criteria for the selection of a DLT design was proposed.

1. Community: A group of individuals who have a common interest in using and/or maintaining a DLT design
2. Flexibility: The degree of technical freedom to customize a DLT design and to deploy applications on a DLT design
3. Law & Regulation: The ability of authorities to enforce compliance of a DLT design with legal and regulatory requirements
4. Performance: The accomplishment of a given task on a distributed ledger measured against targets for accuracy, completeness, cost, and speed
5. Security: The preservation of confidentiality, integrity, and availability of data stored on a distributed ledger
6. Transparency: The perception of an individual of being informed about the relevant actions and characteristics of another party who uses the DLT design
7. Usability: The extent to which DLT design users can achieve their goals with respect to effectiveness, efficiency, and satisfaction in their use contexts

Furthermore, a consolidated list of DLT characteristics was generated (49 characteristics). It was also decided that the parameters can also be referred to as properties that are characterized by identified groups (sets) of characteristics. A preliminary model of the relationship between specific criteria and configuration parameters was determined. The interrelations of certain characteristics with the parameters (properties) of DLT were revealed.

As part of the work, a survey was developed and prepared to confirm and clarify the parameters of the DLT and their dependencies on the characteristics, the results of which will be further used. The identified DLT characteristics and suitability criteria serve as a foundation for the creation of a DLT dependency model.