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## BLOCKCHAIN PLATFORM SELECTION AND SOFTWARE DEVELOPMENT FOR DECENTRALIZED EXCHANGE OF BUSINESS PROCESS MODELS

Modern organizations employing the Business Process Management (BPM) approach typically handle collections of hundreds or even thousands of business process models. Business process modeling stands as the central technology within the entire BPM methodology. In line with the BPM lifecycle, these models visually represent current organizational activities that necessitate improvement using various diagramming notations. These graphical business process models can subsequently be employed to analyze ongoing activities in the enterprise, identifying potential drawbacks or "weak spots" that hinder the company's performance. Through business process models, organizations can modify the "virtual twins" of their organizational workflows, conduct simulations, and make informed decisions for business process improvement. Thus, business process models constitute the most valuable assets of the organization, conveying knowledge about ongoing activities and potentially encapsulating the best organizational or industry practices. The implementation of a centralized database for business process models can significantly benefit the entire organization, enhancing the efficiency of knowledge sharing and accumulation. However, centralized business process model repositories prove less efficient for inter-organizational knowledge exchange. Additionally, most business process models require significant person-hours for development and cannot be shared freely with competitors. The exchange of business process models should adhere to established mechanisms for managing valuable digital assets. Presently, Distributed Ledger Technologies (DLT), especially Blockchain, have gained enormous popularity. Therefore, we can employ the principles of Blockchain technology and the cryptocurrency industry to create software for the Decentralized Exchange (DEX) of business process models. This study explores the selection of a DLT platform and the development of software for the decentralized exchange of business process models, utilizing asset tokenization and smart contract technologies.

**Keywords:** blockchain platform selection, software development, decentralized exchange of business process models.

**Introduction.** The most of existing studies in the BPM and Blockchain interdisciplinary domain focus on business process (BP) execution enabled by smart contracts. For example, Corneli A. et al. [1] propose a framework for BP choreographies execution driven by the Blockchain tasks notarization. Another study by López-Pintado O. et al. [2] offers the Business Process Model and Notation (BPMN) execution engine named "Caterpillar" that serves for BP scenarios execution on the Ethereum Blockchain. The paper by Di Ciccio C. et al. [3] suggests the principles of inter-organizational BP execution using Blockchain technology. In paper [4] Mahgoub S. et al. propose an approach to Blockchain-driven BP modeling, execution, and monitoring. The most interesting paper by Tran A. B. et al. [5] proposes the "Lorikeet" tool that can create smart contracts from BPMN models to facilitate the execution of collaborative BPs. The object of this work is the DEX process of BP models in the cross-organizational environment. The subject of this work is the model of the DLT platform selection to implement the DEX workflow of BP models. The goal of this work is to simplify the DEX process and handle BP models using asset tokenization and smart contract technologies.

**Motivation for the decentralized exchange of business process models implementation.** DLT, or distributed ledger technology, functions as a digital platform for recording asset transactions, where information is simultaneously stored across multiple

locations. In contrast to conventional databases, distributed ledgers operate without a central data repository and administrative capabilities [6]. Each node within the distributed ledger independently processes and verifies all transactions, creating a comprehensive record and achieving consensus on their authenticity. This technology is versatile and can accommodate the storage of both static and dynamic data, including financial transactions [6]. An exemplar of DLT is the widely recognized Blockchain [6].

Blockchain technology represents a specific type of distributed ledger. In distributed ledgers, independent computers, known as nodes, play a crucial role in recording, sharing, and synchronizing transactions within their individual electronic ledgers, diverging from the centralized approach of traditional ledgers. Blockchain achieves this by organizing data into blocks, which are linked in an append-only manner [7]. Both Blockchain and DLT serve as the underlying infrastructure for the "internet of value", enabling the recording of interactions and the peer-to-peer transfer of "value" without the necessity of a centralized coordinating entity. In this context, "value" encompasses any record of asset ownership, ranging from currency and securities to land titles, as well as ownership of specific information like identification, health data, and other personal details [7].

Over the past few years, a significant number of companies have embraced various BPM (Business Process Management) strategies. These initiatives have manifested

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in diverse forms, including directives for specific business units or departments to document work practices, and a broader organizational recognition of the imperative to align business processes with the overall financial and operational well-being. At one end of the spectrum, cubicle shelves are filled with numerous binders detailing specific work procedures, while at the other end, automated tools are employed to uphold and integrate business processes seamlessly into the daily execution of key applications. In instances where automated tools are utilized, they are often considered as essential assets for the organization [8].

The way an organization maintains information about its business processes (BPs) can signify whether they are perceived as mere optional documentation or genuine business assets. Typically, these documents serve as reference materials for the organization's daily operations. However, due to the nature of documentation, it tends to become outdated rapidly, posing challenges for monitoring and enforcement of adherence. The integration of these processes with the organization's automated technologies provides a mechanism to ensure timely updates and adherence [8].

A repository of business processes (BPs) acts as a centralized reference point to ensure consistent communication regarding the nature of each process, its application guidelines, the responsible parties for successful execution, a clear understanding of inputs or triggers, and the expected outcomes upon completion. This repository stores the necessary information for defining, analyzing, improving, and regulating business processes. It plays a crucial role in promoting awareness and acceptance of the cross-functional nature of many enterprise BPs, fostering collaboration across functional business units by facilitating and enforcing an end-to-end process-focused methodology [8]. The management of the business process (BP) repository is a critical aspect of BP management and should be regarded with the same level of seriousness as any other company asset. Serving as the organization's blueprint for process management, it not only establishes a common frame of reference and a method for consistent communication but also functions as the system of record for information related to process ownership, technological enablers, business rules, and both financial and operational controls. By promoting and acknowledging their cross-functional nature, the effective and consistent administration of this unique asset is essential for establishing and maintaining the holistic nature of the enterprise's processes [8]. As the size of an organization expands, there is a tendency to adopt a federated approach. Similarly, tools, designed to support the organization's strategic goals, often exhibit federated models [9].

Tokens within the Blockchain ecosystem serve as assets that facilitate the efficient and secure transfer, storage, and validation of information and value. These crypto tokens exhibit diverse forms and functionalities, with the capability to be programmed with unique qualities, expanding their range of applications. Categories such as security tokens, utility tokens, and cryptocurrencies have significant implications across various industries, contributing to enhanced liquidity, improved transaction

efficiency, and increased transparency and verifiability of assets [10].

Therefore, we suggest to explore the adoption of a decentralized business process (BP) model repository leveraging Blockchain and Distributed Ledger Technology (DLT). BP models are valuable knowledge assets that can be tokenized using Blockchain platforms, similar to other physical or virtual assets. Establishing such a repository could facilitate the exchange of BP models, representing best industry practices, among organizations implementing Business Process Management (BPM) strategies. This decentralized approach harnessing Blockchain and DLT technologies has the potential to enhance collaboration and knowledge sharing in the implementation of BPM strategies across different organizations.

**Analysis of existing distributed ledger solutions for digital assets tokenization.** Non-Fungible Tokens (NFTs) are currently making waves in the digital art and collectibles world, transforming the lives of digital artists with significant sales to a new crypto audience. Celebrities are also jumping on the bandwagon, finding a novel way to connect with their fan base. However, NFTs can symbolize ownership for any unique asset, whether digital or physical, functioning much like a deed for a property [11].

Currently, Ethereum stands as the most widely adopted Blockchain for establishing NFT marketplaces. Leading NFT platforms like "Rarible", "OpenSea", "SuperRare", and "Decentraland" leverage the Ethereum network. Creating NFTs on the Ethereum Virtual Machine (EVM) is notably straightforward for beginners; often, it involves uploading a file and providing some basic information. Resolving ownership concerns is also simplified due to the easily traceable transaction history and metadata. The use of popular token standards such as ERC-721 and ERC-1155 further enhances interoperability, streamlining the overall development process [12].

Ethereum is organized in layers, each providing essential support for the one above it (Fig. 1). These layers come with their tools to navigate and respond to market dynamics within the Ethereum economy [13]. The architecture includes the Ethereum Blockchain platform layer for ETH staking, the application layer for activities like savings and DeFi applications, and the user aggregation layer for liquidity providers [13].

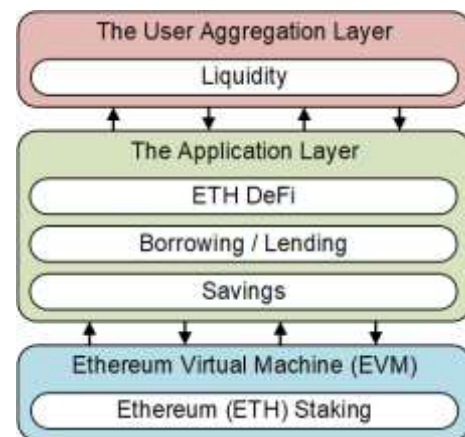


Fig. 1. The digital ecosystem of the Ethereum platform

Binance, recognized as the world’s largest cryptocurrency exchange, unveiled plans to launch the Binance NFT marketplace in June 2021. This platform is designed to facilitate cost-effective communication between NFT buyers and sellers, leveraging Binance’s substantial liquidity reserves [12]. Not only does the platform prioritize scalability and affordability, but it also boasts compatibility with Ethereum, ensuring interoperability. Additionally, numerous NFT marketplaces like “BakerySwap”, “Battle Pets”, “PancakeSwap”, among others, are actively operating on the Binance Blockchain [12]. Fig. 2 below illustrates the digital ecosystem of the Binance Smart Chain (BSC) platform [14].

Certainly, the BSC platform offers solutions for

NFT standard for Cardano is under development by NFT-DAO (Decentralized Autonomous Organization), and projects like “Cardano Kidz” have already sold out despite the absence of real-world services. Additionally, initiatives such as “Professor Cardano”, “LoveAda”, and “Somint” are actively working on establishing an NFT marketplace on the Cardano Blockchain [12].

The digital ecosystem of the Cardano platform is depicted in Fig. 3 below [15].

Cardano, as shown in Fig. 3, provides solutions for token management, NFTs, utilities, and DeFi [15].

TRUESY, an NFT marketplace on the Tezos Blockchain, prioritizes minimizing its carbon footprint. The platform asserts that it uses 2 million units less energy

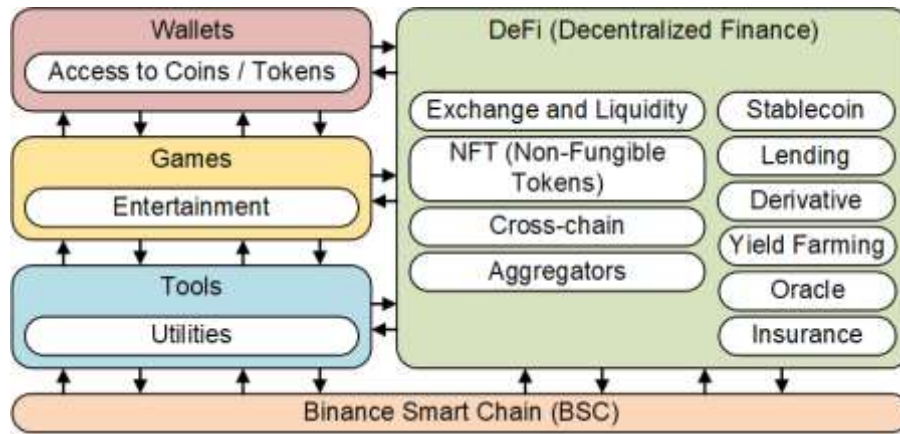


Fig. 2. The digital ecosystem of the BSC platform

cryptocurrency wallet management, decentralized gaming, cryptocurrency tools, and DeFi, as illustrated in Fig. 2 [14].

The Cardano Blockchain currently does not support smart contracts, but it does support NFTs. Users need to trust projects before they are fully launched in the platform’s ICO-like (Initial Coin Offering) concept. The

than rival NFT platforms by optimizing computing performance utilization. Another Tezos-based NFT marketplace, “Hic et Nunc”, also emphasizes environmental conservation by reducing energy consumption. “OneOf” is a new platform presenting itself as an ESG-friendly (Environmental, Social, and Corporate

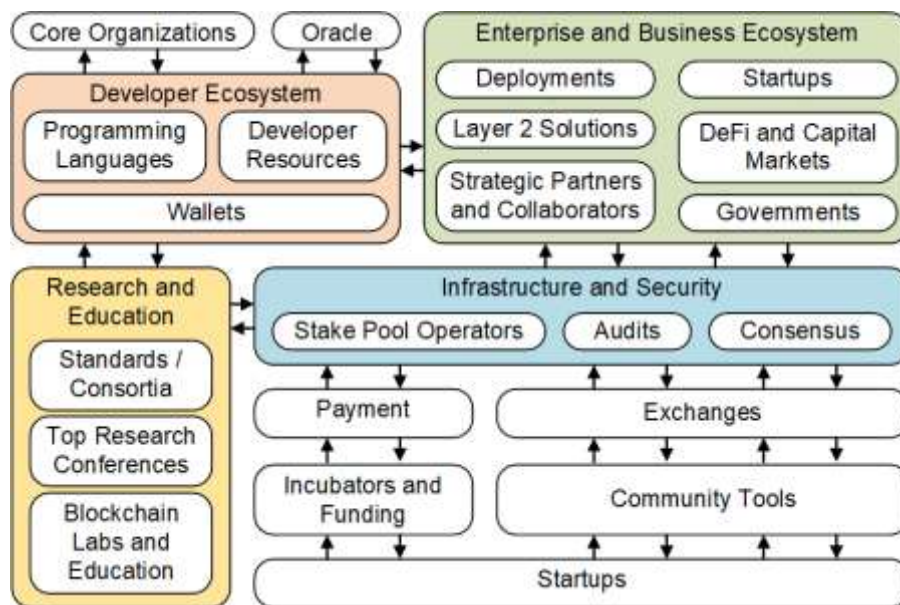


Fig. 3. The digital ecosystem of the Cardano platform

Governance) NFT marketplace, offering affordable NFTs for environmentally conscious music enthusiasts [12].

The Tezos platform offers cryptocurrency tools, DeFi, and NFT applications [16].

The digital ecosystem of the Tezos platform is illustrated in Fig. 4 below [16].

Despite the presence of competitors like BSC and

Blockchain, gain a lot of interest. As a result, we may recommend the deployment of software components to support the DEX process of BP models based on the principles of Blockchain technology and cryptocurrency industry.

However, the Blockchain platform should be selected among the ones used for NFT token minting. The list of



Fig. 4. The digital ecosystem of the Tezos platform

Cardano, a review of current distributed ledger systems highlights the maturity and leadership of the Ethereum platform. Its standing as a promising Blockchain solution is reinforced with the release of Ethereum 2.0. Additionally, the compatibility of Ethereum’s programming with BSC means that transitioning from one major platform to another requires no additional software customization.

However, the challenge of choosing among existing Blockchain smart contract execution platforms persists, especially with the continual improvement and growing popularity of other platforms like Solana, Algorand, and others [12].

**Formal problem statement.** A unified database of BP models can significantly enhance knowledge sharing and accumulation throughout the entire organization, improving efficiency. However, centralized BP model repositories prove inefficient for inter-organizational information exchange. Additionally, many BP models require extensive person-hours for development and cannot be freely shared with competitors.

The exchange of BP models should be based on established methods for managing critical digital assets. Nowadays, Distributed Ledger Technologies, especially

candidate Blockchain networks includes already given in the previous section, as well as two more popular Blockchain platforms – Solana and Algorand [12].

According to the practitioners’ guide [17], the most important aspects to consider when choosing the NFT Blockchain Platform (NFT-BP,  $P$ ) are:

- Transaction Speed (TS);
- Transaction Cost (TC);
- Smart Contract Functionality (SCF);
- Consensus Mechanism (CM).

Therefore, for each of the considered aspects (1 – 4), respective ranks can be calculated:

- TS Rank ( $TS_R$ );
- TC Rank ( $TC_R$ );
- SCF Rank ( $SCF_R$ );
- CM Rank ( $CM_R$ ).

The meta-model of NFT-BPs and their respective aspect ranks is given in Fig. 5 below.

Thus, we can formally describe the problem of the DLT platform selection to implement the DEX of BP models as follows:

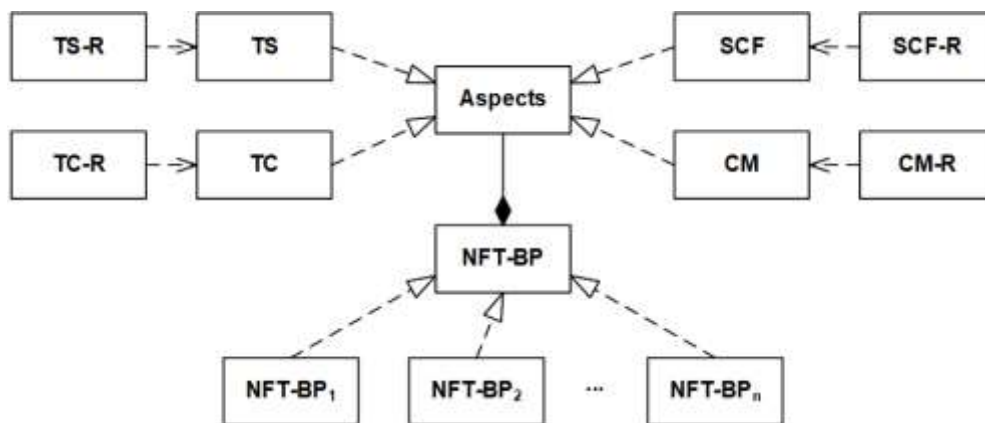


Fig. 5. The meta-model of NFT-BPs and their aspect ranks

$$\begin{aligned}
 TS_R(P) + SCF_R(P) + CM_R(P) &\rightarrow \max, \\
 TC_R(P) &\rightarrow \min, \\
 P &\in \{P_i, i = \overline{1, n}\},
 \end{aligned}
 \tag{1}$$

$$TS_R(P_i) = \frac{1}{TS_{\max}} TS(P_i),
 \tag{3}$$

where  $TS_{\max}$  is the maximum TS among all of the considered NFT-BPs:

$$TS_{\max} = \max_{i=1, n} \{TS(P_i)\}.
 \tag{4}$$

where  $n$  is the number of considered NFT-BPs for the selection.

**Selection of the blockchain platform for the decentralized exchange of business process models.** Table 1 below contains the metrics of considered blockchain platforms for NFT-based BP model collection deployment [17].

While the TC-R can be calculated using the reversed scaling:

Table 1 – Considered aspects and metrics of studied NFT-BPs

Aspect	Ethereum	BSC	Cardano	Tezos	Solana	Algorand
TS, TPS	15	60	250	40	2500	1200
TC, USD	7	3	0.02	0.1	0.00025	0.00022
SCF, smart contract programming language	Solidity, Vyper	Solidity, Vyper	Haskell, Plutus, Marlowe	SmartPy, LIGO	Rust, C, C++	TEAL, Python
CM, consensus algorithm	PoS	PoSA	PoS	LPoS	PoH + PoS	PPoS

Since the smart contract development language and consensus algorithm are given as linguistic variables and are not as much critical as transaction speed and cost, let us reduce the initial model and propose the relaxed problem of the DLT platform selection:

$$\begin{aligned}
 TS_R(P) &\rightarrow \max, \\
 TC_R(P) &\rightarrow \min, \\
 P &\in \{P_i, i = \overline{1, n}\}.
 \end{aligned}
 \tag{2}$$

The TS and TC aspect's metrics are proposed to be scaled in the [0,1] range.

Hence, the TS-R can be calculated using the following direct scaling:

$$TC_R(P_i) = 1 - \frac{1}{TC_{\max}} TC(P_i),
 \tag{5}$$

where  $TC_{\max}$  is the maximum TC among all of the considered NFT-BPs:

$$TC_{\max} = \max_{i=1, n} \{TC(P_i)\}.
 \tag{6}$$

The corresponding TS-R and TC-R values obtained using equations (3) – (6) are demonstrated in Table 2 below.

Fig. 6 represents the map of NFT-BPs placed in the Euclidean plane using the calculated ranks (Table 2).

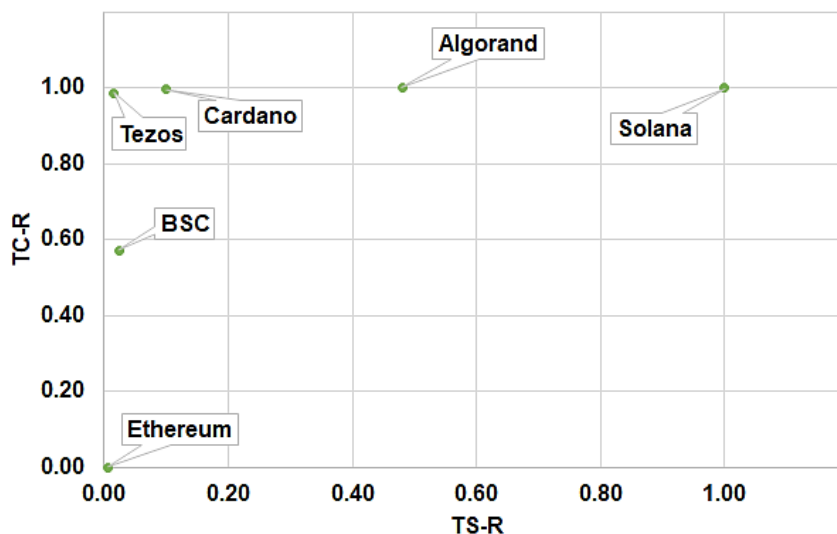


Fig. 6. The map of NFT Blockchain platforms in the Euclidean plane

Table 2 – Ranks of studied NFT-BPs

Aspect's Rank	Ethereum	BSC	Cardano	Tezos	Solana	Algorand
TS-R	0.00600	0.02400	0.10000	0.01600	1.00000	0.48000
TC-R	0.00000	0.57143	0.99714	0.98571	0.99996	0.99997

Therefore, the “best” Blockchain platform in terms of TS and TC metrics then can be found using the following equation based on the Maximin principle [18]:

$$P^* = \arg \max_{i=1, \dots, n} \{ \min \{ TS(P_i), TC(P_i) \} \}, \quad (7)$$

where  $P^*$  is the Blockchain platform selected as the “best” to implement the DEX workflow of BP models.

The obtained results are demonstrated in Fig. 7 below.

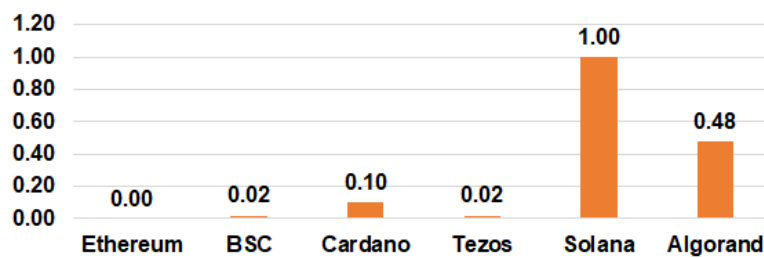


Fig. 7. Ranks of evaluated NFT Blockchain platforms calculated using the Maximin principle

According to Fig. 7, Solana is the best DLT platform for minting NFT collections of business process models.

**Development of the blockchain platform for the decentralized exchange of business process models.** To perform the experiments, the following software solution was created for minting NFT collections of business

process models. Its UML (Unified Modeling Language) deployment diagram is demonstrated in Fig. 8 below.

According to Fig. 8, the software for minting NFT collections of business process models has the client-server architecture. The server side (back-end) is implemented using the NodeJS platform and the JavaScript programming language. The application uses third-party library XML2JS [19] for processing BPMN 2.0 files given as specially-structured XML (eXtensible Markup

Language) documents. The server application consists of two major components:

- “Endpoint” – for HTTP (HyperText Transfer Protocol) requests processing and responses generation when interacting with the client side (front-end);

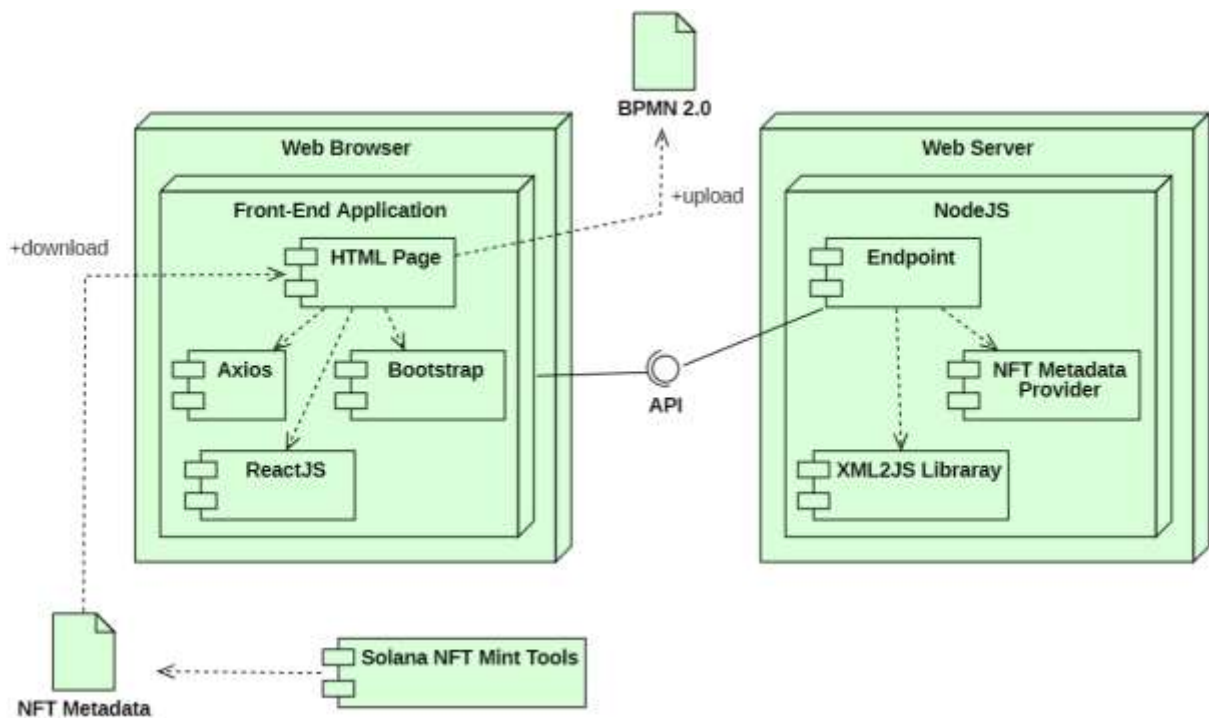


Fig. 8. The structure of developed software solution for minting NFT collections of business process models

- “NFT Metadata Provider” – for generating Solana-based NFT metadata files in the JSON (JavaScript Object Notation) for further deployment into the Blockchain network.

The client side (front-end) is implemented using HTML (Hyper Text Markup Language) and JavaScript. Third-party components are CSS (Cascading Style Sheets) framework Bootstrap [20] for web-pages design, Axios for HTTP requests and responses handling [21], and ReactJS for dynamic web pages rendering [22].

This software solution allows users to process BPMN 2.0 files and generate NFT metadata, which is further can be deployed to the Solana platform (i.e. the “Solana NFT Mint Tools” component in Fig. 8). The Metaplex protocol [23] is used to build NFT collections.

In general, the workflow of minting the NFT collection based on BPMN business process models includes the following steps:

- the author of business process models uploads corresponding BPMN 2.0 files;
- the data extracted from BPMN 2.0 files is sent to the server where NFT metadata is generated;
- the generated NFT metadata is sent to the client and displayed in the user interface;
- the author of business process models downloads NFT metadata and images;
- the author of business process models uses Metaplex to create the NFT collection (using generated

NFT metadata and images) on the Solana Blockchain platform;

- the author of business process models now can use the created NFT collection.

Let us demonstrate the sample BPMN 2.0 model, which describes the travel booking business process of a travel agency. Its diagram is illustrated in Fig. 9 below.

According to Fig. 9, this business process is described using:

- 7 tasks;
- 1 start event and 3 end events;
- 3 XOR (exclusive logic) and 1 event-based (also exclusive logic) gateways;
- 15 nodes in total;
- 15 sequence flows.

The home page of the created software for minting NFT collections using BPMN business process models is demonstrated in Fig. 10 below.

This web page illustrates the tokenized travel booking business process model (Fig. 9) with downloadable NFT metadata and image.

**Experimental results and discussion.** Table 3 below demonstrates approximate costs in native Blockchain network tokens and USD required to create NFTs on different Blockchain platforms [24].

Table 3 – Cost of creating NFTs on different Blockchain platforms

Blockchain Platform	Cost of creating NFT (native network tokens)	Cost of creating NFT (USD)
Ethereum	0.00252 ETH	2.90000
BSC	0.00500 BNB	1.24000
Cardano	1.50000 ADA	0.39000
Tezos	1.00000 XTZ	0.82000 (for an entire collection)
Solana	0.00045 SOL	0.00810
Algorand	0.00100 ALGO	0.00018

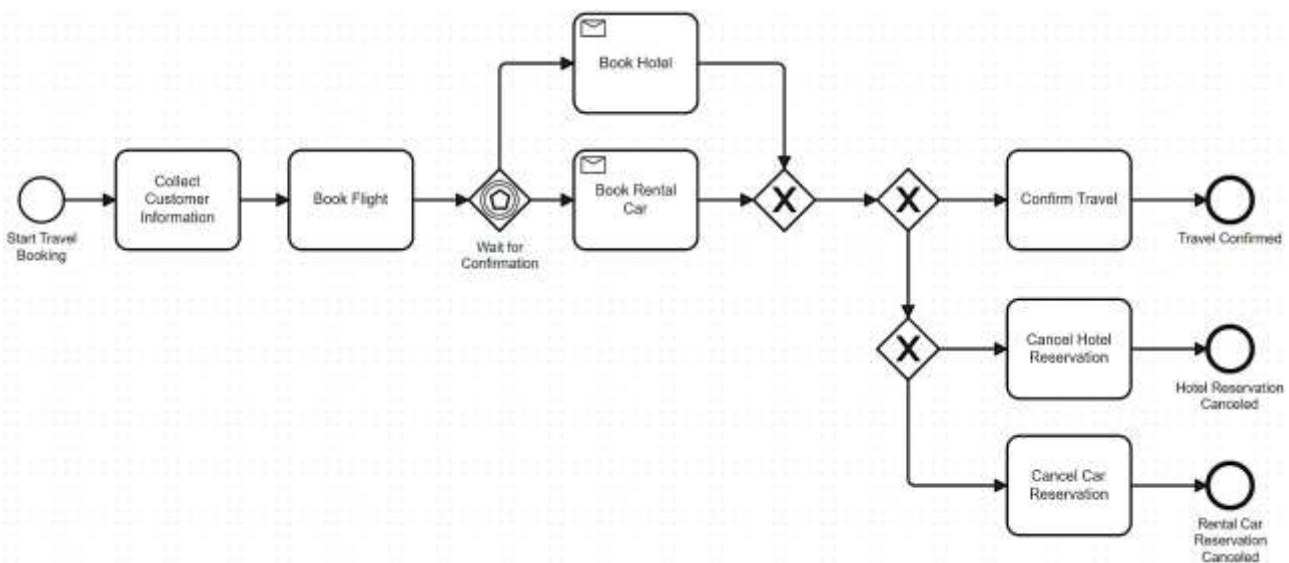


Fig. 9. The travel booking BPMN business process model of a travel agency

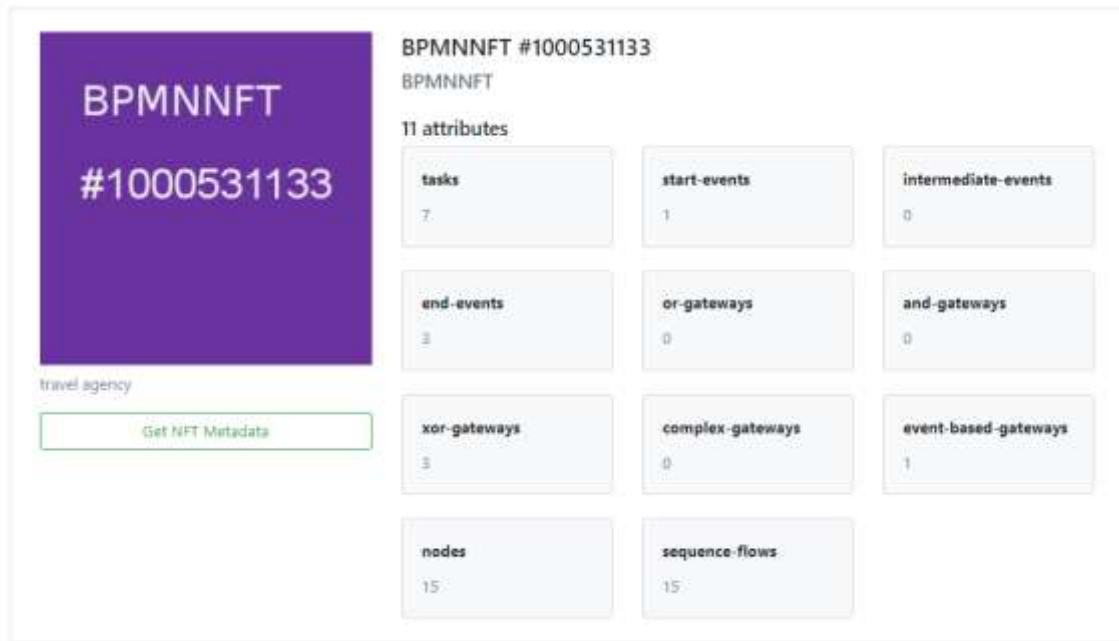


Fig. 10. The home page of developed software solution for minting NFT collections of business process models

The experiments were performed using BPMN models of the BPMNI (Business Process Management Academic Initiative) collection [25]. It includes 18812 business process models. Therefore, the following results were obtained to define the TC-R, TS-R, and total Ranks of the compared blockchain platforms (Table 4).

According to results in Table 4, Solana demonstrates the best deployment time, while Algorand demonstrates the best deployment cost.

The Maximin principle [18] (6) demonstrates the equal ranks of these Blockchain platforms, as well as the comparison to their competitors (Fig. 11).

Table 4 demonstrates that Solana outperforms Algorand by the total time (seconds) in  $15.68 / 7.52 \approx 2$  times only, while Algorand outperforms Solana by the total cost (USD) in  $152.38 / 3.39 \approx 45$  times. Therefore, Algorand could be considered as the alternative to Solana for minting NFT collections of business process models. Nevertheless, Solana is the second largest DLT platform for NFT (after Ethereum) with the unique consensus mechanism (PoH + PoS) capable of handling approximately 2500 TPS [17]. Powerful NFT ecosystem and community, relatively easy development and a low entry threshold make Solana still a reasonable choice for

Table 4 – Evaluation results of minting the collection of NFTs on different Blockchain platforms

Blockchain Platform	Total cost, USD	Total time, Seconds	TC-R	TS-R	Rank
Ethereum	54554.80	1254.13	0.00	0.00	0.00
BSC	23326.88	313.53	0.57	0.75	0.57
Cardano	7336.68	75.25	0.87	0.94	0.87
Tezos	0.82	470.30	1.00	0.63	0.63
Solana	152.38	7.52	1.00	0.99	0.99
Algorand	3.39	15.68	1.00	0.99	0.99

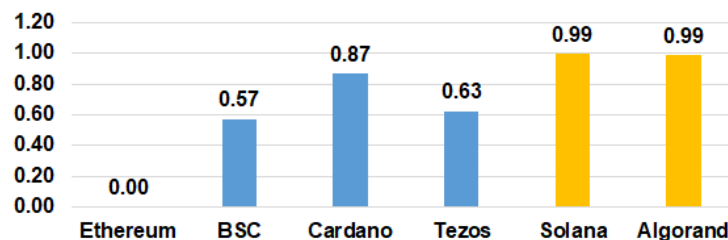


Fig. 11. The comparison of Blockchain platform evaluation results for minting the collection of 18812 NFTs



the tokenization of such digital assets as business process models for decentralized exchange.

**Conclusions.** Enterprises implementing BPM strategies commonly manage extensive collections of BP models, often numbering in the hundreds or thousands. Central to the BPM methodology is BP modeling, a key technology that involves visually representing current organizational processes in need of change using various diagramming notations, as per the BPM lifecycle.

The exchange of BP models should follow existing procedures for managing crucial digital assets. Currently, DLTs, especially Blockchain, are gaining significant traction. As a result, in this study we proposed the model of the DLT platform selection to implement the DEX workflow of BP models based on the principles of Blockchain technology and cryptocurrency industry.

Therefore, to streamline the DEX process of BP models using asset tokenization and smart contract technologies, this study has addressed the following tasks:

- the state-of-the-art is reviewed, and the research object, subject, and goal are defined;
- the motivation for the implementation of the decentralized exchange of business process models is outlined;
- the analysis of existing distributed ledger solutions suitable for digital access tokenization is made;
- the formal problem statement is made using the multi-objective choice model, which is proposed to be solved using the Maximin principle [18] due to the risk and uncertainty involved in the Blockchain and NFT field, while the tradeoff between the transaction speed and cost objectives is eliminated by reversing transaction cost rank values (5);
- the blockchain platform for the decentralized exchange of business process models is selected – Solana is identified as the best solution for NFT deployment by transaction speed and cost criteria;
- the software solution for minting NFT collections of business process models is developed – it takes BPMN models and products JSON-based NFT metadata for further deployment in the Solana network;
- experiments are performed and respective results are obtained – even though Algorand may outperform Solana in the transaction cost, Solana is still a reasonable choice for minting NFT collections of business process models.

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## ВИБІР БЛОКЧЕЙН-ПЛАТФОРМИ ТА РОЗРОБКА ПРОГРАМНОГО ЗАБЕЗПЕЧЕННЯ ДЛЯ ДЕЦЕНТРАЛІЗОВАНОГО ОБМІНУ МОДЕЛЯМИ БІЗНЕС-ПРОЦЕСІВ

Сучасні організації, які практикують концепцію процесного управління Business Process Management (BPM), як правило, мають справу з наборами сотень або навіть тисяч моделей бізнес-процесів. Моделювання бізнес-процесів – це ключова технологія у всій методології BPM. Відповідно до життєвого циклу управління бізнес-процесами, моделі бізнес-процесів використовуються для візуального представлення поточної організаційної діяльності, яка потребує удосконалення, за допомогою різних графічних нотацій. Ці графічні моделі бізнес-процесів можуть в подальшому використовуватись для аналізу поточної діяльності підприємства для визначення можливих недоліків або «слабких місць», що знижують продуктивність компанії. За допомогою моделей бізнес-процесів організації можуть вносити зміни до «віртуальних двійників» організаційних процесів, здійснювати імітаційне моделювання та прімати рішення щодо вдосконалення бізнес-процесів. Таким чином, моделі бізнес-процесів є найбільш цінними організаційними активами, оскільки вони передають знання про поточну діяльність та можуть містити найкращі організаційні або галузеві практики. Наявність централізованої бази даних моделей бізнес-процесів може стати корисним для всієї організації – розповсюдження та накопичення знань стане значно ефективнішим. Проте, централізовані репозиторії моделей бізнес-процесів не дуже ефективні для міжорганізаційного обміну знаннями. Крім того, на більшість моделей бізнес-процесів було витрачено сотні людино-годин і вони не можуть бути розповсюджені серед конкурентів на безкоштовній основі. Обмін моделями бізнес-процесів має базуватись на вже відомих механізмах управління цінними цифровими активами. Наразі технології розподіленого реєстру (DLT – Distributed Ledger Technologies), особливо блокчейн, стали наймовірніше популярними. Таким чином, пропонується застосувати принципи технологій блокчейн та криптовалютної сфери для розробки програмного забезпечення для децентралізованого обміну (DEX – Decentralized Exchange) моделями бізнес-процесів. У цьому дослідженні розглядається вибір DLT-платформи та розробка програмного забезпечення для децентралізованого обміну моделями бізнес-процесів з використанням технологій токенизації активів та смарт-контрактів.

**Ключові слова:** вибір блокчейн-платформи, розробка програмного забезпечення, децентралізований обмін моделями бізнес-процесів.

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