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THEORETICAL FOUNDATIONS OF AUTOMATION OF CORPORATE REPUTATION CONTROL

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The article is devoted to the study of corporate reputation as a key category of modern strategic management and the justification of the need to automate corporate reputation control and management. Reputation is conceptualised as a multidimensional phenomenon shaped by a company's historical actions, financial performance, product quality, and social responsibility. Special attention is given to the characterisation of reputation as an intangible asset with a cumulative nature that meets the criteria of the resource-based view of the firm and provides sustainable competitive advantages.

The paper analyses current approaches to corporate reputation assessment, including traditional index-based methodologies (RepTrak, Fortune's Most Admired Companies) as well as advanced Big Data, artificial intelligence, and natural language processing technologies. Probabilistic models and social network models for decentralised systems are considered, alongside the application of fuzzy logic to formalise qualitative reputation assessments and centralised versus decentralised mechanisms for collecting and aggregating reputation evaluations. Particular emphasis is placed on technologies for analysing unstructured data from social media, news portals, and corporate reports. Empirical relationships between corporate reputation and the firm's financial indicators are examined, including its impact on return on assets, market capitalisation, cost of capital, and the ability to attract investments on more favourable terms.

The article pays special attention to methodological issues in reputation assessment, including multidimensionality, dynamism, subjectivity of perception, and the lack of unified approaches. A comprehensive solution is proposed through the development of integrated information systems for automating reputation control, combining data from various functional subsystems of the enterprise and external sources. The paper substantiates the need to develop a multi-criteria reputation evaluation model based on fuzzy logic and to integrate reputation indicators into the overall corporate governance system as a basis for strategic decision-making.

Keywords: *corporate reputation, intangible assets, strategic management, management automation, Big Data, artificial intelligence, reputation risks, reputation management, reputation control, stakeholders, competitive advantages, information systems.*

Давиденко Олег, Койфман Олексій. Теоретичні основи автоматизації управління репутацією підприємства

Статтю присвячено дослідженню корпоративної репутації як ключової категорії сучасного стратегічного менеджменту та обґрунтуванню необхідності автоматизації управління репутацією підприємства. Репутація розглядається як багатовимірне явище, що формується на основі історичних дій компанії, фінансових результатів, якості продукції та соціальної відповідальності. Особливу увагу приділено характеристиці репутації як нематеріального активу з кумулятивною природою, що відповідає критеріям ресурсної теорії підприємства і забезпечує стійкі конкурентні переваги.

У роботі проаналізовано сучасні підходи до оцінювання корпоративної репутації, включаючи традиційні індексні методики (RepTrak, Fortune's Most Admired Companies) та новітні технології Big Data, штучного інтелекту і оброблення природної мови. Розглянуто ймовірнісні моделі та моделі соціальних мереж для децентралізованих систем, використання нечіткої логіки для формалізації якісних оцінок репутації, а також централізовані та децентралізовані механізми збору й агрегування репутаційних оцінок. Особливу увагу приділено технологіям для аналізу неструктурованих даних із соціальних медіа, новинних порталів і корпоративних звітів. Досліджено емпіричні зв'язки між корпоративною репутацією та фінансовими показниками підприємства, зокрема вплив на рентабельність активів, ринкову капіталізацію, вартість капіталу і здатність залучати інвестиції на вигідніших умовах.

Особливу увагу приділено проблемам методології оцінювання репутації, включаючи багатовимірність, динамічність, суб'єктивність сприйняття та брак уніфікованих підходів. Запропоновано комплексне рішення через розроблення інтегрованих інформаційних систем автоматизації управління репутацією, що поєднують дані з різних функціональних підсистем підприємства та зовнішніх джерел. У статті обґрунтовано необхідність створення мультикритеріальної моделі оцінювання репутації на основі нечіткої логіки та інтеграції репутаційних індикаторів у загальну систему корпоративного управління як основи для прийняття стратегічних рішень.

Ключові слова: *корпоративна репутація, нематеріальні активи, стратегічне управління, автоматизація управління, Big Data, штучний інтелект, репутаційні ризики, репутаційний менеджмент, репутаційний контроль, стейкхолдери, конкурентні переваги, інформаційні системи.*

Introduction. Corporate reputation is one of the key categories of modern strategic management and business economics, determining the overall evaluation of an enterprise by its main stakeholders. In the academic literature, it is conceptualised as a multidimensional phenomenon formed on the basis of a company's historical actions, financial performance, product quality, communication effectiveness, social responsibility, and alignment with societal expectations. As noted by Veh A., Göbel M. & Vogel R. [1], reputation is the result of many years of corporate activity and communication, consolidated in the perceptions of consumers, partners, investors, and other interested parties.

An important characteristic of corporate reputation is its cumulative nature: it is accumulated through the consistent fulfilment of a company's obligations to both external and internal environments. In essence, reputation is formed as a set of knowledge, experience, and expectations that ensures the stable positioning of the enterprise in the market. According to the concept of Fombrun C. J. [2], corporate reputation acts as "a system of collective representations about an organisation's ability to create value and keep its promises", which confirms its social and economic significance.

Thus, reputation becomes an integral component of strategic management, as it influences stakeholder behaviour, reduces transaction risks, builds trust, and provides additional competitive advantages. As emphasised by L. P. K. Adeosun & R. A. Ganiyu [3], reputation is a strategic asset that integrates the marketing, financial, and social components of a company's activities, strengthening its market position. This is consistent with the resource-based view (RBV) concept, according to which reputation is a valuable, rare, inimitable, and organisationally embedded resource that determines the strategic success of an enterprise.

Among the key categories of intangible assets identified by R. S. Kaplan & D. P. Norton [4], reputation belongs to the organisational capital of the enterprise. In their model, intangible assets are divided into human capital, information systems, and organisational capital, which includes corporate culture, brand, and reputation. Organisational capital reflects a company's ability to coordinate its resources and processes for effective strategy implementation, with reputation serving as the external manifestation of the enterprise's internal capabilities.

In essence, reputation combines the characteristics of image, trust, interaction experience, and stakeholder satisfaction. It is accumulated through a long history of relationships between the enterprise and its external environment, as well as internal interactions with employees, which makes it impossible for competitors to quickly replicate. This aspect enhances the role of reputation in forming long-term competitive advantages, as even under technological parity, it is social and market capital that determine a company's success in the competition for customers, investments, and strategic resources.

In light of contemporary research, such as D. J. Teece [5], it can be argued that reputation as an intangible asset integrates all other components of organisational capital, as it serves as an "indicator of resource management quality" and of a company's ability to create sustainable value. Therefore, in the digital economy, reputation becomes one of the most important elements of a company's intellectual capital.

An important theoretical foundation for the study of corporate reputation is the resource-based view (RBV) of the firm, according to which sustainable competitive advantages are formed through the utilisation of unique, valuable, hard-to-imitate, and organisationally embedded resources. Reputation fully meets these criteria, as it is built over a long period, results from complex activities with cumulative effects, and cannot be rapidly replicated by competitors. G. S. McMillan & M. P. Joshi [6] argue that reputational capital enables enterprises to maintain higher prices for their products, attract more favourable financial resources, and strengthen partnerships.

Moreover, reputation significantly reduces transaction costs in interactions with counterparties,

as high levels of trust reduce the need for additional guarantees and verifications. Thus, a company with a strong reputation gains competitive advantage not only through increased demand but also through cost optimisation and access to strategic resources on more favourable terms.

In modern management practice, reputation also becomes the foundation for developing new business models oriented towards sustainability and social responsibility. This is driven by the increasing importance of non-financial factors in investment decisions, which enhances the strategic significance of reputation as a source of long-term enterprise value.

The economic value of corporate reputation is manifested in its ability to create future economic benefits for the enterprise. K. Cravens et al. [7] demonstrate that reputation directly affects a company's revenues by increasing customer loyalty, enabling sales growth without proportional increases in marketing expenditures. Furthermore, enterprises with high reputational capital attract investments on more favourable terms, which reduces the cost of capital and provides additional financial advantages.

Another important aspect is the impact of reputation on the labour market: companies with stable and positive reputations are more attractive to highly qualified personnel, which reduces recruitment costs and increases overall operational efficiency. Thus, reputation becomes not only an intangible asset but also a strategic resource that integrates financial and non-financial indicators into a unified system for creating long-term enterprise value. It should be emphasised that in the current conditions of globalisation and digitalisation of the economy, where information transparency is increasing and competition is intensifying, the role of reputation as an economic asset is only growing. This necessitates a systematic and scientifically grounded approach to its assessment and management.

A separate place in the study of the essence of corporate reputation is occupied by the analysis of the role of information systems in its formation and management. S. V. Scott & G. Walsham [8] note that information systems are a key tool for rganization the management of intangible assets, as they enable the integration of data from various enterprise subsystems, ensuring transparency, timeliness, and relevance of information for strategic decision-making.

Reputation control and management information systems integrate data from marketing, communications, operations management, production, and finance, creating a unified information field for analysing the impact of image and behavioural factors on a company's economic performance. This is particularly relevant in the digital economy, where the speed of information processing and the ability to respond promptly to changes in public brand perception are critical for maintaining reputational resilience.

Thus, the automation of reputation management is a logical continuation of the development of enterprise information systems, enabling not only data collection and processing but also the forecasting of reputational risks and modelling their impact on business outcomes.

The automation of corporate reputation management is primarily necessary in the field of strategic planning, where reputation indicators can be integrated into financial forecasting processes, investment planning, and the selection of development directions. This is especially important for enterprises operating in international markets and highly competitive industries, where reputation serves as a marker of reliability and determines partnership, financial institution, and government agency decisions regarding cooperation. The presence of an automated system that accumulates and comprehensively analyses reputation data enables management to develop well-founded positioning and development strategies for the company.

Furthermore, automated reputation control and management is a critical component of risk management systems and marketing communications, as reputational risks directly affect a company's credit ratings and investment attractiveness, while marketing determines brand perception among consumers. The use of artificial intelligence algorithms, machine learning, and Big Data analytics enables timely identification of threats in the media space and among stakeholders, modelling of their development scenarios and impacts, as well as building a comprehensive reputation profile within CRM, ERP, and social networks. This ensures proactive management, organization of PR and marketing costs, increased return on communication investments, and organization of the financial consequences of potential crises.

Automation is also extremely important for operations management, especially in industrial enterprises, where reputation depends not only on marketing but also on technological discipline, environmental responsibility, product quality, production safety, and social policy. A reputation control system integrated with production management, environmental, HR, and corporate social responsibility modules allows for

the development of comprehensive reputation analytics and demonstrates business transparency to stakeholders.

Finally, the automation of reputation management is a necessary precondition for the development of corporate sustainability and ESG (Environmental, Social, Governance) strategies. Modern investors and partners increasingly evaluate companies based on non-financial criteria, among which reputation occupies a key place. The integration of automated reputation monitoring and forecasting systems into ESG platforms enables not only reporting according to international standards but also the creation of real added value, forming a resilient brand as an employer, partner, and socially responsible rganization.

Materials and Methods. Enterprise reputation management as a scientific category has emerged at the intersection of strategic management, marketing, information systems, and organisational sociology. Modern approaches are based on the understanding that reputation is not only the result of communicative activity or PR but also a reflection of the integral quality of managing all business processes of the company, its economic resilience, innovativeness, and social responsibility. As emphasised by S. V. Scott & G. Walsham [8], in the knowledge economy, reputation management acquires the features of a strategic process involving risk forecasting and modelling, stakeholder expectation assessment, development of comprehensive communication policies, and integration of these functions into the overall corporate governance system.

According to D. Hu, J. L. Zhao & J. Cheng [9], reputation management involves a combination of reactive and proactive approaches, where reactive approaches focus on mitigating the consequences of reputational crises, while proactive approaches involve continuous monitoring, forecasting, and building mechanisms to strengthen reputational capital. This approach aligns with modern concepts of risk-based management, where reputational risk is considered an integral part of the enterprise risk management system alongside financial, operational, and strategic risks.

Scientific research also classifies reputation management methods by levels: strategic (corporate-level reputation management), business unit level, and operational level, allowing the integration of reputation policies into all levels of enterprise management hierarchy [2].

The modern paradigm of reputation management increasingly relies on the use of information systems and analytical models. K. Aberer [10], in his work, compares two key groups of approaches to reputation assessment and management in decentralised systems: probabilistic models and social network models. Probabilistic models are based on the mathematical evaluation of agent behaviour parameters (e.g. frequency of obligation fulfilment), which allows predicting the probability of reliable future interactions. Social network models are built on the analysis of the structural characteristics of the network of connections that determine an agent's reputational status within the group. Although these approaches were originally developed for digital platforms, they are relevant to corporate governance, especially in large industrial companies with extensive stakeholder structures.

Another direction in the development of reputation management methods is the use of fuzzy logic to formalise qualitative reputation assessments and integrate them into decision support systems [11]. Their study demonstrated the effectiveness of using fuzzy sets to build trust and reputation profiles of agents under conditions of informational uncertainty. This is particularly relevant for industrial enterprises whose activities are evaluated based on multidimensional criteria: economic, environmental, social, and innovation-related.

Furthermore, A. E. Arenas, B. Aziz & G. C. Silaghi [12] proposed a reputation management model for collaborative computing systems that combines centralised and decentralised mechanisms for collecting and aggregating reputation evaluations. This approach could potentially be applied in corporate reputation control information systems to integrate data from various functional subsystems – production, environmental, financial, marketing, and social.

At the strategic level, reputation management involves the development and implementation of corporate social responsibility (CSR), sustainability, and business ethics policies as fundamental tools for building long-term stakeholder trust. As noted above, it is reputation policy rather than isolated PR campaigns that determines the real reputational capital of an enterprise.

Social approaches to reputation management are based on stakeholder theory, according to which a company should build dialogue and partnership relationships with all key influence groups, not only with shareholders or customers. This entails comprehensive management of stakeholder expectations, satisfaction, engagement, and loyalty, achieved through transparent communication, ethical behaviour, and social investments.

Organisational approaches focus on integrating reputation management functions into the enterprise's quality management, risk

management, and strategic communications systems. For example, in industrial enterprises, a reputation control system may include monitoring technological indicators (product quality, environmental standards), managing production risks (labour safety, emergencies), social policy (employment, regional development), and building transparent stakeholder communication through sustainability reporting.

Corporate reputation assessment is an important task of strategic management, providing a quantitative interpretation of qualitative characteristics of enterprise activities and stakeholder perceptions. One of the world's most well-known reputation measurement tools is the RepTrak index developed by the Reputation Institute, based on a seven-dimension model: performance, innovation, workplace, governance, citizenship, leadership, and products/services. Each of these dimensions is assessed through stakeholder surveys and open data analysis, enabling the formation of an integrated evaluation of corporate reputation in the market [13].

In addition to RepTrak, widely used tools in practice include the Fortune's World's Most Admired Companies rankings, the Harris Poll Reputation Quotient, and the Financial Times Corporate Reputation Index. Despite their commercialisation to some extent, these methodologies are based on scientific evaluation models that include both emotional components of company perception (affection, trust, admiration) and rational assessments (innovativeness, financial stability, product quality). For example, the Harris Poll Reputation Quotient consists of 20 attributes grouped into six dimensions, reflecting a comprehensive approach to evaluating reputational capital.

Despite the prevalence of index-based methodologies, modern scholarship emphasises the need to integrate traditional assessments with advanced data analytics tools to increase the accuracy, dynamism, and relevance of reputation evaluations in a rapidly changing information environment [11].

In contemporary reputation research, Big Data technologies, artificial intelligence (AI), and natural language processing (NLP) are gaining increasing importance. A. Westermann & J. Forthmann [14] note that Big Data analysis combined with social listening opens new opportunities for corporate reputation management by enabling the collection and analysis of large volumes of unstructured data from social media, news portals, forums, and publicly available corporate reports.

Natural Language Processing (NLP) is used to analyse sentiment, extract key topics and concepts dominating public discourse regarding the enterprise. S. Pandey & S. K. Pandey [15] demonstrated that NLP models can not only measure reputation but also identify hidden communication patterns and reputational risks that remain unnoticed by traditional survey methods. This creates prerequisites for implementing predictive reputation control models capable of forecasting potential crises and determining optimal response strategies.

Furthermore, modern AI models are integrated with enterprise ERP and CRM systems, allowing for the creation of unified platforms for managing intangible assets, with reputation being one of the key components. As noted by K. Kasztelnik & N. Delanoy [16], the use of NLP in combination with Big Data analytics forms a new level of business decision-making based on the real information environment rather than solely on internal company data.

In the academic literature, corporate reputation is increasingly viewed not only as a social or communicative category but also as an economic asset that directly affects a company's financial performance. Reputation serves as an indicator of the quality of resource management, strategic orientation, and the ability of a company to create long-term value. Research by R. Ali et al. [17] confirms the existence of a positive correlation between corporate reputation and a firm's financial indicators such as market capitalisation, return on assets (ROA), return on equity (ROE), and share price. The meta-analysis conducted by the authors demonstrates that companies with high reputation achieve better financial results compared to lesser-known firms or those with negative or neutral reputations.

At the same time, scholars emphasise that the relationship between reputation and economic performance is nonlinear and mediated by other factors such as the quality of corporate governance, ownership structure, industry characteristics, and market environment [18].

Among the main mechanisms through which corporate reputation influences economic indicators, Y. Wang & G. Berens [19] identify the following: increased customer loyalty, market share growth, the ability to set premium prices for products, reduced marketing costs, and the ability to attract financing on more favourable terms. This is explained by the fact that high reputation builds trust in the company among consumers, investors, and partners, reducing transaction risks and facilitating contract negotiations.

Furthermore, reputation affects the cost of capital, as investors and creditors consider

companies with high reputations to be less risky investment objects, enabling them to attract financial resources at lower interest rates [20]. This confirms the thesis that reputation is an intangible asset with a direct monetary equivalent reflected in a company's value.

At the same time, C. M. Q. Ramos & A. M. Casado-Molina [21], in their study, note that online reputation and its active management through digital communication channels are separate factors influencing financial performance, as they determine the speed of customer acquisition, transaction volumes, and brand value.

Empirical studies confirm the existence of a stable positive relationship between corporate reputation and financial performance. For instance, in the study by A. Blajer-Golebiewska [18] conducted on a sample of Polish enterprises, it was found that companies with high levels of reputation demonstrate higher return on assets and return on equity, as well as recover more rapidly after economic crises. This is explained by greater investor trust and consumer loyalty, which ensure cash flow stability even during periods of economic turbulence.

The analysis conducted by J. Lee & J. J. Roh [20] confirmed the existence of a direct correlation between corporate reputation indices (e.g. Fortune's Most Admired Companies) and company share prices, indicating that reputation is perceived by the stock market as an indicator of financial stability. At the same time, as noted by Y. Wang & G. Berens [19], the positive impact of reputation on financial results is more pronounced in industries where product quality is difficult to assess prior to consumption, making reputation a "trust marker".

For industrial enterprises, particularly in the metallurgy, mining, and mechanical engineering sectors, reputation has an additional dimension related to environmental responsibility, production safety, and technological reliability. High reputation in these areas reduces the risks of regulatory pressure and environmental fines, which directly impacts the financial performance of companies. Furthermore, in industrial enterprises, reputation determines the ability to attract investments for the implementation of capital-intensive projects, as investors evaluate not only economic efficiency but also the risks of image losses from potential social or environmental conflicts. Thus, reputation acts as a strategic asset that integrates the economic, social, and environmental aspects of industrial company activities, ensuring their long-term resilience and competitiveness.

Results. In the academic literature, corporate reputation is defined as a multidimensional category that includes economic, social, ethical, technological, and psychological components. S. Helm & C. Klode [22] emphasise that the multidimensionality and dynamism of reputation complicate its quantitative measurement, as it is formed in stakeholders' minds under the influence of a wide range of factors – from financial performance to managerial behaviour in crisis situations. Additionally, reputation is a subjective category perceived differently by each stakeholder group depending on their interests, experiences, and cognitive biases. This means that reputation assessment always contains a significant degree of emotional colouring and subjective interpretation.

A specific feature of reputation is its dynamism, as in the information society even a single negative news item or crisis event can instantly alter a company's reputational profile, regardless of years of efforts to build it. F. Pollák & P. Markovič [23] note that during the COVID-19 pandemic, many companies faced reputational risks due to a mismatch between societal expectations and their actions in crisis situations, which significantly affected their economic performance.

Furthermore, it is important to consider that reputation is not a static characteristic; it changes over time under the influence of internal corporate decisions and external environments, including economic cycles, competitive actions, regulatory policy changes, and societal expectations.

One of the key problems is the lack of a unified methodology for reputation assessment. As noted by I. Oncioiu et al. (2020) [24], different organisations use different criteria and indicators, making it impossible to compare results between companies or industries. For example, in the financial sector, the focus is on reliability and transparency; in FMCG, on brand recognition and emotional connection with customers; in industry, on technological safety and environmental responsibility.

Another methodological problem is the complexity of financially modelling reputation as an intangible asset. Reputation has no direct KPI or universal metric that would unequivocally reflect its "value" on the balance sheet, unlike brand or patent assets. This creates difficulties in determining its impact on profitability, capitalisation, and company value indicators. Moreover, A. Veh et al. [1] highlight the validity issues of existing reputation indices. Many methodologies are based on surveys with low objectivity or utilise aggregated ratings that do not consider industry specifics, scale of operations, and cultural characteristics of markets.

Among practical problems, information asymmetry should be noted, wherein a company's

internal behaviour is not always fully reflected in the public domain [22]. This is particularly relevant for industrial enterprises whose activities are largely technological and complex for the general public to understand, creating gaps in the perception of their reputation.

Another problem is the difficulty of collecting relevant data for comprehensive reputation assessment, as such data are contained in various sources – consumer surveys, media outlets, financial reports, HR reports, environmental and social reporting – which require integration into a unified control and management system. Without quality informational support, reputation assessment becomes a declarative function without real value for strategic decision-making.

Equally important is the issue of integrating reputation assessment results into enterprise control and management systems. Many companies view reputation solely as a marketing or PR category, without linking it to financial, production, or innovation decisions, which limits the effectiveness of using reputational capital as a strategic resource [23].

In the modern business environment, reputation is extremely vulnerable to changes in the external environment. As noted by I. Oncioiu et al. [24], crisis events, scandals, negative media campaigns, and even viral news on social networks can instantly destroy a company's reputational profile that has been built over years. This is especially relevant for large industrial enterprises, where the consequences of accidents, technological disasters, or environmental violations quickly become the subject of public criticism and regulatory scrutiny.

For industrial enterprises, the issue of reputation assessment is complicated by the need to consider technological, environmental, innovation, and social components. For example, assessing the reputation of a metallurgical plant must include data on production safety, levels of harmful emissions, innovativeness of technological processes, impact on regional development, treatment of employees, financial transparency, and more [1]. Combining these heterogeneous indicators into a single integrated assessment is a complex methodological task requiring the development of multi-criteria models and information systems for automating reputation control.

Conclusions. Thus, the automation of corporate reputation control is a necessary condition for effective functioning in today's dynamic and information-rich environment. This requires the development of integrated information systems capable of providing assessments that take into account multiple criteria and influencing drivers, forecasting reputational risks, and supporting strategic decision-making based on the analysis of Big Data from production indicators, operational activities, and media information.

Solving the problem of collecting relevant data for comprehensive reputation assessment requires a scientifically grounded approach to creating integrated information systems. The automation of reputation management involves the formation of a unified information space that accumulates data from all functional subsystems of the enterprise, including CRM, ERP, HR, financial, environmental, and social reporting, as well as external sources such as media and social networks. This creates the prerequisites for the development of reputation control systems as a complex interdisciplinary category combining economic, marketing, social, and technological aspects.

The next step is the unification and standardisation of data received from various sources in different formats. To achieve this, it is necessary to implement a Data Warehouse with preliminary data processing (ETL processes) and the application of data quality verification algorithms to ensure their reliability and comparability between different subsystems. Such an approach will avoid information fragmentation and allow the formation of comprehensive analytics with a high level of validity.

The third step in solving the problem is the development of a multi-criteria reputation assessment model that will include economic, technological, environmental, marketing, and social indicators. This model should be based on fuzzy logic methods and multi-criteria optimisation to formalise the qualitative characteristics of reputation that are difficult to measure. Thus, the enterprise will gain a tool that transforms subjective assessments into quantitative parameters for further analysis.

The fourth direction for addressing the problem is the integration of reputation assessment results into the overall enterprise control and management system. This involves creating modules that display reputational indicators alongside financial and production metrics, as well as using this data in decision support systems at all management levels – strategic, tactical, and operational. Such integration will ensure the use of reputation analytics as a basis for developing business strategy, optimising investments, innovation activities, and risk management.

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