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THE CONCEPT OF "SMART VILLAGE" IN LEGAL ACTS AND OFFICIAL DOCUMENTS OF THE EUROPEAN UNION

Abstract: Regulation (EU) 2021/1060 of the European Parliament and of the Council of 24 June 2021 provides for the need to include initiatives such as “Smart Villages” in territorial development strategies. An explanation is needed for the purposes of constructing and implementing this element of the strategy. The research undertaken for this purpose started with a structural analysis, which showed, among other things, that the terms smart village and smart villages occur in about 100 legal acts and its preparatory documents of the European Union from the period between 2015 and 2021. A general definition of smart village as a concept that aims to develop services through digital technologies and better use of knowledge, for the benefit of inhabitants and businesses, is provided in a 2017 Commission document. Although a later opinion of the European Committee of the Regions, proposed replacing this term with smart rural areas; both phrases appear in the most recent documents. A contextual analysis of the 2020 and 2021 acts and documents shows expanded common elements of the smart village and smart city concepts compared to the original ones. This provides justification to the search for theoretical support in publications on smart cities, which, in addition to the opportunities and benefits, also points to the need to strengthen personal data protection and cybersecurity.

Keywords: smart villages, smart village definition, smart rural areas, smart growth, internet of things, EU Law, cybersecurity in smart village

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Introduction

For several years there has been a growing tendency in scientific publications and official documents to use the English word “smart” to describe a variety of items and phenomena. The word is associated with rationality: the ability to adapt to a changing environment. Traditionally, as a characteristic of a human being, it had a positive connotation, and its marketing appeal is based precisely on that. However, the smart characteristic in the context of new technologies also means the absorption of data for product control and potentially increased user control (Cerrone, 2020; Zuboff, 2019; Szpor, 2015).

In Europe, the expansion of the new meanings can be associated with the introduction of the term “smart growth” to the EU strategy in 2010. Consequently, its components came to be accompanied by this adjective. The “smart cities and communities” phrase appeared as first among these components. The term “smart villages” has also been used in the EU’s official journal for several years.

This paper aims to verify the thesis that unambiguity and scope of the term “smart village” are important for successful implementation of EU strategies and plans and rational spending of related funds.

To this end, EU legal acts and official documents have been examined. In addition to the traditional legal dogmatic method involving content analysis of legal acts, jurisprudence and scientific literature, Big Data methods were applied to perform a quantitative analysis of the occurrence of the term “smart village” in legal databases. The legal search systems such as EUR-lex and Lex Wolters Kluwer were used, which – thanks to the application of artificial intelligence tools – make it possible to carry out such an analysis.

Structural analysis

The phrase “smart city” entered in the EUR-lex search engine gave only 11 results in mid-2021. By year of document: in the years 2015-2017 it was 1 document per year, in the years 2018 and 2019 – 2 documents per year, in 2020 – 1 document, and in the first half of 2021 – already 3 documents. By Collection, amongst 11- EU law and case-law documents: 2 – Legal acts and 9 – Preparatory documents. By type of act: 3 Staff working document – 3, Budget – 2, Report – 2, Communication – 1, Own-initiative opinion – 1, Opinion – 1, Own-initiative resolution – 1. By author: European Commission – 6, Directorate-General for Regional and Urban Policy – 3, European Parliament – 3, Directorate-General for Agriculture and Rural Development – 3, Commission for Natural Resources – 1, European Court of Auditors – 1 and 1 document in each of 4 other Committees.

On the other hand, the phrase “smart villages” entered in the EUR-lex search engine gave as many as 81 results in mid-2021. By year of document: in 2015 and 2016 – 1 document per year, in 2017 – 9, 2018 – 16, 2019 – 14, 2020 – 26, and in the first half of 2021 – 14. By Collection, amongst 81 EU law and case-law there were 8 Legal acts and 73 Preparatory documents. By type of act: Staff working documents – 20,

Own-initiative opinions – 13, Budget – 6, Own-initiative resolutions – 5, Resolutions – 5, Opinions – 3, Adopted own-initiative opinions – 3, Provisional own-initiative opinions – 3, Regulations – 2, Synopsis reports of the public consultation – 2, Position – 2, Adopted Exploratory opinions – 1, Report – 1, Evaluation – 1, Proposal of regulation – 1, Corrigendum – 1, Exploratory opinion – 1, Reflection paper – 1, Provisional opinion – 1, Impact assessment – 1, Council Conclusions – 1, European Court of Auditors – 1. By author: European Commission – 32, Directorate-General for Agriculture and Rural Development – 24, European Parliament – 17, European Committee of the Regions – 15, European Economic and Social Committee – 13, and a number of documents of 14 other committees. By type of procedure: Budgetary procedure (BUD) – 6, Ordinary legislative procedure (COD) – 6.

The above data show that the term smart village [villages] began to be used in EU legal acts and preparatory documents in 2015. Since then its frequency has been growing year by year. The plural was seven times more frequent amongst the analysed phrases than the singular. On average, there were eight preparatory documents per single legal act made public in EUR-lex. Preparatory documents came in several forms. Their authors included, among others, several committees and commissions in addition to the Parliament and the Commission.

The analysis showed that a search in EUR-lex should not be limited to the phrase “smart village” in singular, but should also include the plural phrase, i.e. “smart villages”. This conclusion applies also to parallel searches of phrases “smart city” occurring several times more often – 100 results and smart cities – 460 results. At the same time, these numbers of documents may not be summed up, because in some of them the examined phrases appear both in singular and plural. The Polish language EUR-lex database is insufficient to recognize the phenomenon. The term “smart village” does not occur and “smart villages” appears once, while their translation „inteligentna wieś” – 3 times and “inteligentne wsie” – 21 times. This much lower number of results stems mainly from the lack of translations of certain documents. A similar discrepancy of search results between the English and Polish language EUR-lex systems also applies to cities: the phrases inteligentne miasto and miasta (smart city and cities) have been found in 7 and 30 documents, respectively.

Structural analyses of “concept portraits” similar to the above have been possible thanks to Big Data methods for a dozen or so years, but are difficult to find in scientific publications. Meanwhile, they are useful for studying the conceptual network of a specific area or subject of regulation and for ensuring consistency of research and eliminating deficiencies in legislation. They may also be helpful in reading trends in legislation and in diagnosing deficits in social and economic relations, as confirmed, for example, by the analysis of intensive juridification of the term “trust” correlated in time with its decline.

Contextual analysis

As previous studies have shown the adoption of the Europe 2020 strategy in 2010, which made smart growth its first pillar, has intensified the interest in the smart city as its element (Olbrycht, 2015; Guzal-Dec, 2018). It was initially associated mainly with new technologies, transport and energy, and Structural Funds resources for the development of smart cities were obtained under relevant “thematic areas” (Opinion of the European Committee of the Regions: Smart Cities and Communities – European Innovation Partnership). Funding directly aimed at the development, experimentation and sharing of experience with respect to smart cities has been isolated for the first time in the programme Horizon 2020. Within the dedicated “Smart Cities and Communities” action it was possible to finance projects involving smart cities and communities solutions integrating the energy, transport and ICT sectors through “lighthouse” projects as well as the development of system standards for solutions in this field (Opinion of the European Economic and Social Committee: Smart cities as a driver of a new European industrial policy). According to the EC, they were primarily aimed at exploiting synergies between smart networks requirements, broadband infrastructure and “multi-network” in general, such as district heating and cooling networks. On the initiative of the European Commission aimed at creating a framework for cooperation between cities, the business sector, banks, science and other actors involved in the development of smart cities The European innovation partnership on smart cities and communities was also in operation.

The next phase was launched with the announcement of the “EU Action for Smart Villages” by the European Commission on 11 April 2017 (published on <https://ec.europa.eu>), covering initiatives from rural development, regional development, research, transport, energy, and digital policy and funds.

As defined in this document, the concept of Smart Villages refers to rural areas and communities which build on their existing strengths and assets as well as on developing new opportunities. “In Smart Villages traditional and new networks and services are enhanced by means of digital, telecommunication technologies, innovations and the better use of knowledge, for the benefit of inhabitants and businesses. Digital technologies and innovations may support quality of life, higher standard of living, public services for citizens, better use of resources, less impact on the environment, and new opportunities for rural value chains in terms of products and improved processes. The concept of Smart Villages does not propose a one-size-fits-all solution. It is territorially sensitive, based on the needs and potentials of the respective territory and strategy-led, supported by new or existing territorial strategies.” This Action Plan also highlights the critical importance of both local authorities and citizen engagement in the development of Smart villages.

In 2018, a Smart Village Network was established to exchange information and experiences of different villages from 8 states and its members adopted on 7 February 2019 the Smart Villages Network Declaration (<https://www.smart-village-network.eu>). Shortly thereafter, the Declaration of the Member States of the European

Union, „A smart and sustainable digital future for European agriculture and rural areas”, signed on 9 April 2019, stated: „Technologies such as artificial intelligence, robotics, blockchain, the Internet of Things, high performance computing and fast broadband, including 5G, are already causing profound transformations in our economies and societies, and will be particularly critical for smart farming and rural areas. Europe has very valuable assets to build on, such as our strength in robotics for precision farming and CAP implementation systems based on digital data management solutions”. (DD3 Declaration on agriculture and rural areas – signed.pdf <https://digital-strategy.ec.europa.eu/en/news/eu-member-states-join-forces-digitalisation-european-agriculture-and-rural-areas>). In the same time (04.2019) the results of the Smart Eco-Social Villages Pilot Project, initiated by the European Parliament, carried out by a consortium consisting of Ecorys, Origin for Sustainability and R.E.D. under the responsibility of the European Commission, in which "smart villages" were defined, were published. As stated in a briefing note, new definition: “has sought to embrace the width of current activities and future possibilities as well as the need for flexibility to facilitate its use in diverse national and local contexts. It also considers the policy context, and particularly the proposal for the CAP after 2020, which anticipates greater flexibility in policy choices for Member States. The idea is to allow Member States to align and focus policy on their specific needs, and thus also in relation to design and implementation of interventions for support to Smart Villages. The purpose of the definition is therefore to inspire and explain the potential of the concept – for communities in rural areas to take action, as well as for policy makers in taking decisions on future support of Smart Villages”. “Communities in rural areas can include one or several human settlements, without any restrictions regarding the administrative boundaries or the number of inhabitants. As regards eligibility conditions for support, Member States may use definitions of rural areas as provided for by the OECD, EUROSTAT or other definitions”. It was assumed that: “Smart Villages are communities in rural areas that use innovative solutions to improve their resilience, building on local strengths and opportunities. They rely on a participatory approach to develop and implement their strategy to improve their economic, social and/or environmental conditions, in particular by mobilising solutions offered by digital technologies. Smart Villages benefit from cooperation and alliances with other communities and actors in rural and urban areas. The initiation and the implementation of Smart Village strategies may build on existing initiatives and can be funded by a variety of public and private sources.” This definition is available on the website: <https://digitevent-images.s3.amazonaws.com/5c0e6198801d2065233ff996-registrationfiletexteditor-1551115459927-smart-villages-briefing-note.pdf>. It can be found through a website of European Network for Rural Development (<https://enrd.ec.europa.eu>), which organised the European Rural Networks Steering Group with The Agricultural European Innovation Partnership – EIP-AGRI (<https://ec.europa.eu/eip>). In 2019, work on the use of the latest information technology solutions for rural development was undertaken in Poland, in the Mazowieckie Voivodeship. (<https://geodezja.mazovia.pl/projekty/smartyv/smart-village.html>).

Confirmed by the quantitative analysis of the EUR-lex, the intensification of the presence of the term “smart village” [villages], which appeared in more than 40 EU acts and documents from 2020 and the first half of 2021, is conducive to the verification of – on the basis of selected examples – the previous findings.

Regulation (EU) 2021/1058 of the European Parliament and of the Council of 24 June 2021 on the European Regional Development Fund and on the Cohesion Fund PE/48/2021/INIT OJ L 231, 30.6.2021, p. 60–93(47). Recital (47) of the preamble reads: “To improve the resilience of communities in rural areas and their economic, social and environmental conditions, support from the ERDF should be used to develop projects such as smart villages, as referred to in the European Parliament resolution of 3 October 2018 on addressing the specific needs of rural, mountainous and remote areas [(2018/2720(RSP)) OJ C 11, 13.1.2020, p. 15–17], in particular by developing new opportunities, such as decentralised services and energy solutions, digital technologies and innovations”. Within the funding of the smart village concept, the resilience goal of the otherwise named entity: “communities in rural areas” comes first here, through previously unexposed “decentralised services”.

When examining references to smart villages in EU legal acts and preparatory documents, an additional search should now include the phrase “communities in rural areas”, which has appeared in 6 legal acts and 8 preparatory documents since 2017 and “Smart Rural areas” – in 14.

The European Parliament’s Resolution mentioned here was preceded (1.12.2017) by the Opinion of the European Committee of the Regions – Revitalisation of rural areas through Smart Villages (2018/C 164/08), 8.5.2018, OJ EU (C 164/45), which proposed “expanding the notion of Smart Villages to that of Smart Rural Areas and incorporating the initiative into the European Rural Agenda, so as to also encourage and develop synergies between neighbouring small villages within Smart Rural Areas”. Although the term smart villages still prevails, the phrases “communities in rural areas” and “Smart Rural areas” also appears instead of this term or alongside it. However, its subject-matter scope is non-obvious, since as stated in the Opinion of the European Economic and Social Committee on “Villages and small towns as catalysts for rural development – challenges and opportunities” (own-initiative opinion) (2018/C 081/03), the communities of small towns and villages lie within and are part of rural areas.

In the Opinion of the European Committee of the Regions – Smart cities: new challenges for a just transition toward climate neutrality – how to implement the SDGs in real life? (OJ C 39, 5.2.2020, p. 78-82) in recital 3 it is mentioned that as already stated in the opinion on “Smart Cities and Communities – European Innovation Partnership”, reaffirms the importance of recognising the existing great variety of urban settlements, be they considered cities or not, and the importance of their relationship and complementarity with the surrounding rural territories; as already stated in the opinion on “Revitalisation of rural areas through Smart Villages”, also reaffirms that 'in common with the Smart City model, a Smart Rural Areas initiative should take a broad approach to development and innovation to include the six

dimensions: (a) a smart, innovative, entrepreneurial and productive economy; (b) improved mobility, with accessible, modern and sustainable transport networks; (c) an environmental and sustainable energy vision; (d) qualified and engaged citizens; (e) quality of life in terms of culture, health, safety and education; (f) an efficient, transparent and ambitious administration.

In the Opinion from 2020 it is emphasized that an essential additional element of promoting 'smartness' must be to involve citizens and provide the conditions for them to develop their potentials, through education and support for research, innovation and social cohesion. This also requires for effective, transparent and reliable regulation of data protection and data use to be in place.

There are also other motifs in this opinion. The European Committee of the Regions recognises that the transition towards a climate-neutral future, beyond the necessary adaptation to the effects of climate change and the decarbonisation of the energy, buildings and mobility sectors, also involves a transition towards a circular economy, the sustainable transformation of the agriculture and food systems, and the protection of ecosystems and biodiversity. ECR invites Member States to include the topic of smart communities in their National Energy and Climate Plans, recognising its great potential in terms of cost efficiency, energy efficiency and emission reduction. The Committee highlights that smart cities and communities provide an excellent opportunity to implement smart governance mechanisms and in doing so improve the capability of local authorities to take decisions in an increasingly complex environment. On "smart governance of smart communities" ECR highlights the need to accelerate the transition to a smart governance model at local and regional level by developing and implementing electronic services, which enable citizens to get access to a wider range of e-government services from a single account.

Also, the following should be pointed out: Regulation (EU) 2021/1060 of the European Parliament and of the Council of 24 June 2021 laying down common provisions on the European Regional Development Fund, the European Social Fund Plus, the Cohesion Fund, the Just Transition Fund and the European Maritime, Fisheries and Aquaculture Fund and financial rules for those and for the Asylum, Migration and Integration Fund, the Internal Security Fund and the Instrument for Financial Support for Border Management and Visa Policy L 231/159(30). According to recital 30: „To strengthen the integrated territorial development approach, investments in the form of territorial tools, such as integrated territorial investments, community-led local development, referred to as 'LEADER' under the European Agricultural Fund for Rural Development (EAFRD), or any other territorial tool which supports initiatives designed by the Member State, should be based on territorial and local development strategies. The same should apply to related initiatives such as the Smart Villages. For the purposes of integrated territorial investments and territorial tools designed by Member States, minimum requirements should be set out for the content of territorial strategies. Those territorial strategies should be developed and endorsed under the responsibility of relevant authorities or bodies. To ensure the involvement of relevant authorities or bodies in implementing territorial strategies,

those authorities or bodies should be responsible for the selection of operations to be supported, or be involved in that selection”. In the recital, it is also emphasized that “Territorial strategies, when promoting sustainable tourism initiatives, should ensure an appropriate balance between the needs of both residents and tourists, such as interconnecting cycling and railway networks”. It stresses the need to include “Smart Village Initiatives” in the framework of comprehensive strategies and, moreover, it postulates to include “sustainable tourism initiatives” in the strategies, which raises the postulate to locate them within Smart Village Initiatives as “smart tourism”, which previously appeared in EU documents – as opposed to the literature – as specialized tourism, the opposite of mass tourism (Szpor, 2019).

On 30 June 2021, the European Commission put forward a long-term Vision for the EU's rural areas, identifying the challenges and concerns that they are facing, as well as highlighting some of the most promising opportunities that are available to these regions. The Vision proposes a Rural Pact and a EU Rural Action Plan, which aim to make rural Europe stronger, connected, resilient and prosperous. The Vision and Action Plan identify four areas of action, supported by flagship initiatives, to enable: Stronger: focus on empowering rural communities, improving access to services and facilitating social innovation; Connected: to improve connectivity both in terms of transport and digital access; Resilient: preserving natural resources and greening farming activities to counter climate change while also ensuring social resilience through offering access to training courses and diverse quality job opportunities; Prosperous: to diversify economic activities and improve the value added of farming and agri-food activities and agri-tourism (https://ec.europa.eu/commission/presscorner/detail/en/ip_21_3162). For details see: Annex to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions A long-term Vision for the EU's Rural Areas – Towards stronger, connected, resilient and prosperous rural areas by 2040 {SWD(2021) 166 final}–{SWD(2021) 167 final} https://ec.europa.eu/info/sites/default/files/strategy/strategy_documents/documents/ltv-ra-c2021-345-annex_en.pdf).

Based on these examples, it can be concluded that the EU acts and documents among the objectives of the smart villages initiative highlight the resilience to various threats and similar conditions for the development of smart cities and villages. They include smart management of the smart infrastructure. They underline the advantages of a closed circulation, a kind of self-sufficiency and, on the other hand, the need for cooperation in the implementation of this initiative between small villages and between villages and small towns for synergy effects, which provides justification for expanding the notion of Smart Villages to that of Smart Rural Areas. It may also be noted that to determine the meaning of these legal terms, a search of the EUR-lex database is not sufficient and a search of the Commission's website is needed.

Legal literature

The legal dogmatic method of research includes – apart from the analysis of legal acts and official documents – also the analysis of case law of courts and tribunals, and law-related scientific publications.

A search of the CJEU judgments database showed that the phrases smart village (villages), smart city (cities), smart rural area [areas] do not appear there. Also, in the national database of decisions issued by Polish administrative courts these phrases were not found.

For the purpose of studying the legal regulations, it was first indicated that the components of smart growth are smart governance, economy, mobility, environment and living (Drobek, 2015), the expansion of features that qualify the municipality to be described as smart are of importance for financing innovative solutions (Olbrycht, 2015) and the terms “smart city” and “smart village” aggregate innovations in the management of the municipality’s space (Szpor, 2015). In English-language legal literature, the concept of smart villages is rare; it is mentioned mainly in the context of surveillance and inadequacy of legal regulations for the use of high-tech instruments (Ferguson, 2020). The book "Smart Village Technology" (Mahmoud & Sen, 2021) may be helpful in understanding these issues. There are also publications on countries such as Egypt, Kenya, Rwanda and India (heinonline.org – 8 results). Referring to the experience of India – whose Prime Minister in 2015 took up initiatives to create 2 500 “smart villages” by 2019 (Karol, 2015) – a definition of the smart village model is cited from the official document of the state government of Gujarat: “a village which has foresight for the development and proper planning to keep the village clean, healthy, green, pollution free, crime free, and disease free with coordination of various community development and welfare schemes of Government”. A definition is also cited, as proposed previously by Sengupta in 2014: “Smart village means a village which wishes to increase facilities for the citizen by taking decisions democratically. Smart village means a village in which the youth, women, farmers, village artisans, backward, and deprived people may get equal opportunity for development”, and it is stressed that “these guidelines aim to offer a design of rural development that focuses not only on improving economic indicators of development but also on bettering the social indicators of development such as health, sanitation, education, women's empowerment, inclusiveness, etc.” (Joshi, 2019). In Polish publications, legal aspects appear in the context of public authority in a smart municipality (Szpor, Olszewska, 2020), but mainly on the margins of smart village analyses of economics, geography, agriculture and regional studies. One of them includes a comparison of smart city and smart village concepts (Guzal-Dec, 2018). More publications relate only to “smart city”, but some of their aspects may also be useful. For example, compilations of definitions (Albino et al., 2015), analyses from a legal perspective (Chrisidu-Budnik & Przedańska, 2018; Kidyba, 2018; Gotlib & Olszewski, 2016; Tyburska, 2015) and models. Vasileios Niaros divides smart city according to the criterion of purpose – into capital and commons (generally accessible smart technological solutions) and according to the

criterion of centralised and distributed management – into global and local. On this basis, four smart city models were distinguished: corporate smart city, sponsored smart city, resilient smart city and commons-based smart city, which, taking into account their subsequent analyses (Blicharz & Kisielewicz, 2017), should also be considered in decision-making processes concerning smart villages. Attention should also be paid to the phrase “smarter cities” as a trademark as part of a campaign to market technology-driven urban management, as well as to the issues of the algorithmic transparency for the smart city (Brauneis & Goodman, 2018; Szpor 2016; Wiewiórowski, 2015) and new problems of “Cyberpandemic” (Gryszczyńska & Szpor, 2020). Moreover, the analysis of the need for a digitally inclusive smart city governance framework proves to be inspiring, as it highlights the need to take into account differences in the use of open data platforms in rural and urban areas (Brooks & Schrube, 2017; Guzal-Dec, 2018).

The search in scientific publications for theoretical support for research on the legal conditions for the development of smart villages in Europe becomes meaningful when papers on smart cities are considered. They serve as a revision of the optics of EU documents which are oriented mainly towards opportunities and benefits. They confirm the need for a broader recognition of current threats, whose legal regulation is crucial for the effects of implementing smart villages initiatives.

Conclusion

The term smart village, singular and plural, appears in about 100 legal acts and preparatory documents published from 2015 to 2021 in EUR-lex, the electronic search system for European Union law, but there is no definition in them. So legally it is a relevant but vague term. A definition is provided by the “EU Action for Smart Villages”, a document promulgated by the European Commission on 11 April 2017 and published on <https://ec.europa.eu>. This definition exposes the improvement of networks and services through digital technologies, telecommunications, innovation and better use of knowledge.

On 1 December 2017 the European Committee of the Regions proposed “expanding the notion of Smart Villages to that of Smart Rural Areas”. In subsequent legal acts and documents of the bodies of the European Union, concerning EU strategies and plans as well as the financing of their implementation, the terms smart village/villages and smart rural area/areas appear simultaneously (but smart villages most often). Their scopes overlap in certain aspects, but the term smart rural area also refers to a few villages and possibly also small towns – without their communities.

Since, according to the 2020 opinion of the European Committee of the Regions – similar to the smart city model – the smart rural initiative should take a broad approach to development and innovation, covering six dimensions, including “qualified and engaged citizens” and “an efficient, transparent and ambitious administration”. It would also be advisable to supplement the 2017 EU definition of smart village with these elements. In the light of EU official documents, it can be assumed that the goal of

the smart village concept is the development of services through digital technologies and better use of knowledge, for the benefit of residents and businesses, with the involvement of authorities and citizens. However, legal acts and official documents do not provide an answer to the question: what is a smart village? To this question it can be answered taking into account the results of research. A smart village is an area legally qualified as rural (e.g. by EUROSTAT) and its community, whose potential is innovatively exploited by active citizens and competent public authorities as part of a strategy to improve social, economic and environmental indicators of development, in particular through the use of digital technologies solutions, where the benefits outweigh the risks to privacy and cyber security.

This or another new official definition could facilitate the interpretation of regulations and the application of the law.

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