



Institutionalization of the Smart City Concept in Hungary

Results of a Discourse Analysis of Development Policy

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ABSTRACT

The concept of the so-called smart city has been approached in many different ways. One of the most prominent contemporary researchers on smart cities, Boyd Cohen, in a 2015 article entitled ‘The 3 Generations of Smart Cities’, distinguished three phases of smart city projects and initiatives. The service-driven Smart City Phase 1.0 primarily linked to the market penetration efforts of large multinational corporations, the progressive city leader-driven Smart City Phase 2.0 and the Smart City Phase 3.0, now seen as the result of citizen collaboration. What is left out of such an approach is the place and role of higher level development policies in the conceptualization and institutionalization of the smart city. This is particularly true in the case of a Central and Eastern European country like Hungary, which is inherently characterized by a centralized (unitary) territorial system and where, due to its semi-peripheral location, smart city innovations are not the result of organic, autochthonous processes. Taking all this into account, the study, using the methodological tool of discourse analysis, seeks to answer the question of how the smart city concept at EU and/or national level, which is constantly changing according to the rules of the smart city discourse, is reflected in the local (municipal) level of urban development. To answer this question, I will empirically examine the relevant legal sources and other documents of the development policies of the European Union and Hungarian government level, as well as the development documents of Hungarian municipalities that have apparently recognized the need to move towards the smart city and have tried to make their tasks explicit by means of urban development documents that refer to the smart city concept in their title.

CCS CONCEPTS

• Sociology; • Law; • Social networks;

KEYWORDS

Smart city, Urban development, Discourse analysis, Hungary

ACM Reference Format:

Tibor, L., Buskó. 2023. Institutionalization of the Smart City Concept in Hungary: Results of a Discourse Analysis of Development Policy. In *Central and Eastern European eDem and eGov Days 2023 (CEEeGov 2023)*, September 14, 15, 2023, Budapest, Hungary. ACM, New York, NY, USA, 9 pages. <https://doi.org/10.1145/3603304.3604074>

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CEEeGov 2023, September 14, 15, 2023, Budapest, Hungary

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ACM ISBN 979-8-4007-0006-4/23/09...\$15.00

<https://doi.org/10.1145/3603304.3604074>

1 INTRODUCTION

The aim of the following study is to describe and evaluate some of the characteristic features of the process of institutionalization of the so-called smart city concept in Hungary using the methodological tool of discourse analysis. The smart city itself is one of the most frequently used concepts in contemporary development policies, sometimes with hype-like characteristics, but still not sufficiently clarified. Research by Ayyoob Sharifi and his co-authors on the conceptual history of the smart city concept, for example, shows that conceptual issues still account for a not insignificant proportion of smart city publications [1], which is a good indication that one of the most typical attitudes of researchers is still the search for a way forward, i.e. the need to establish a conceptual foundation in a jungle of unworked, contradictory definitions. Of course, the aim of our study cannot be to create a smart city definition for everyone, but we would like to start by drawing attention to some elements/directions of the related academic and development policy discourse that could greatly help the subsequent development of the topic.

As far as the academic discourse on the smart city is concerned, the origin of the attempts to approach this concept is usually considered to be the definition by Giffinger and his co-authors in 2007. The authors approach the smart city concept primarily in the context of the economy and jobs, whereby smart cities are defined as cities that can be described by smart industry, and the term ‘*smart industry*’ can be identified with industries in the fields of information and communication technologies (ICT) as well as other industries implying ICT in their production processes. However, they also refer to many other aspects of the smart city, such as a well-educated population, good governance including e-government and e-democracy, modern (and not only ICT-based) technologies for everyday urban life, but also refer to several expressions closely related to the smart city, such as ‘*safety*’, ‘*green*’, ‘*efficient and sustainable*’, or the ‘*energy*’. Based on all these, the smart city is defined as “is a city well performing in a forward-looking way in [...] six characteristics, built on the ‘*smart*’ combination of endowments and activities of self-decisive, independent and aware citizens”, where the six characteristics are identified by the dimensions of “‘*smart economy*’, ‘*smart people*’, ‘*smart governance*’, ‘*smart mobility*’, ‘*smart environment*’ and ‘*smart living*’” [2].

Giffinger and his co-authors’ definition of a smart city is in fact still relevant today, except that the relative importance of the six characteristics has changed. The technological optimism on the eve of the fourth industrial revolution - that technologies would solve the problems of modern societies ‘by themselves’ - reached its peak at the end of the first decade of the new millennium. From then on, the smart city’s dominant approach to smart industry and the ICT technologies that support it became more nuanced. It was a

critical phase between 2012 and 2015 [3] that paved the way for the transition beyond a technology-based approach to the smart city. The direction of the critiques of the technology-based approach can be approached in two ways. On the one hand, there is a social turn of the smart city approach, which is based on the recognition that technologies, which should be seen as mere tools, cannot become an end in themselves for smart cities, and that people's well-being must remain at the centre of urban development efforts. One of the first systematic formulations of the opinion is summarized in [4]. The other main thrust of the search for direction can be outlined along the lines of sustainability - sustainable urban development [5]. This was based on an ecological approach, replacing the modernist paradigm of pursuing (economic) growth at all costs. The ecological approach no longer separates man and the environment as two autonomous entities, and even less does it affirm that man can once and for all subjugate his environment, but rather sees man and the environment - especially the natural environment - as dynamic, evolutionary and interdependent systems [6]. However, alongside the focus on maintaining a balance with natural systems (and the terms 'green', 'low-carbon', 'carbon-neutral', 'ecological', or 'circular' cities), there is a much broader understanding of sustainability, which has been based on the three (economic, social, environmental) pillars of sustainability in the literature [7] and which tries to capture the essence of the sustainable city as the result of their dynamic interaction. One logical continuation of this more complex approach to urban sustainability is the emergence of the so-called resilient city, [8] which is able to remain stable in its basic functions even under changing conditions. Already cited with increasing frequency in the 2010s, resilient city became one of the most topical concepts in urban development at the beginning of the current decade, in the context of the need to adapt to the shock of the COVID-19 crisis. The concepts of the sustainable/resilient city and the smart city are closely related for the followers of the critical thrust outlined here, and ultimately converge in the concept of the smart sustainable city. According to these interpretations, the potential for sustainable growth was previously limited in many respects by the bottleneck of information and technology, but the ICT applications of the fourth industrial revolution have enabled crucial advances in this area [9]. Think of the environmental pillar of sustainability in its narrowest sense: various smart city technologies are already helping to make cities more sustainable than ever before, for example by reducing greenhouse gas emissions, water consumption and waste [10].

The shift in emphasis in the literature outlined above is of course also reflected in urban development policies at local level. One of the most prominent contemporary researchers on smart cities, Boyd Cohen, in his 2015 article entitled *The 3 Generations of Smart Cities*, distinguished three phases of smart city projects and initiatives. The service-driven Smart City Phase 1.0, primarily linked to the market penetration efforts of large multinational corporations, the progressive city leader-driven Smart City Phase 2.0 and the Smart City Phase 3.0, now seen as the result of citizen collaboration [11]. What is left out of such an approach is the role of higher level development policies in conceptualizing and institutionalizing the smart city concept. After all, the implementation of good practices at local level can hardly be explained exclusively by the fact that city leaders first become trend-setting 'progressive' and then more open to

community participation. Nor should the inspiration from the top be overlooked as an explanation for this process. In the European Union, which is the broader context of the development policies at the Member State level, the smart city came to the fore after 2010 as the urban dimension of the Europe 2020 Strategy's 'Smart Growth' priority, but the specificities of the concept's history, as outlined above, initially led to a predominance of technology-related connotations. The smart city model developed by the European Innovation Partnership on Smart Cities and Communities (EIP-SCC) launched in 2012 and its Strategic Implementation Plan published in 2013 continued to focus on the use of innovative technologies and the so-called vertical priorities ('Sustainable Urban Mobility', 'Sustainable Districts & Built Environment', 'Integrated Infrastructure and Processes') that depend on the application of different smart technologies [12]. However, changes were already beginning to mature in line with the results of the critical turnaround in the smart city discourse. The European Parliament and Council Regulation (EU) No. 1301/2013, Chapter II, Article 7, earmarked at least 5% of the European Regional Development Fund (ERDF) resources allocated at national level under the 'Investing for growth and jobs' objective for sustainable urban development. And the preamble of the 2016 Amsterdam Pact, which is the founding document of the changing urban agenda, has already clearly put sustainable urban development at the heart of its objectives, with the economic, social and territorial cohesion and citizens' quality of life [13].

However, in an East-Central European country like Hungary, which is inherently characterized by a centralized (unitary) territorial system and where, due to its semi-peripheral location, innovations like the smart city do not emerge as a result of organic, autochthonous processes, the place and role of the central level cannot be avoided even more. The definition of the smart city was introduced by the 2017 amendment of Government Decree No. 314/2012 (XI.8.), which is the basic legal document for planning at the municipal level, and this definition reflects the primary role of the national government in a specific way. According to this definition, a smart city is a municipality that prepares and implements its integrated settlement development strategy (according to the terminology under revision: its development plan) on the basis of a smart city methodology [14]. Development of the methodology in question has been made the exclusive task of the Lechner Knowledge Centre, the professional background institution of the Prime Minister's Office for Architecture, Building, Real Estate Registry and Spatial Information. Against this background, the study seeks to answer two questions. On the one hand, we will examine the traces left by recent development policy approaches on the first self-interpretations of the first Hungarian smart cities that emerged from this period, and on the other hand, we will try to clarify the place and role of the local level in this process of meaning construction. But to understand the double problem thus raised, we must firstly reflect on some of the relevant features of the methodological tool we have chosen, the so-called discourse analysis.

2 METHODOLOGY

As I mentioned earlier, the process of institutionalization of the smart city concept in Hungary can be interpreted as a kind of discourse. In methodological terms, the following study is therefore a

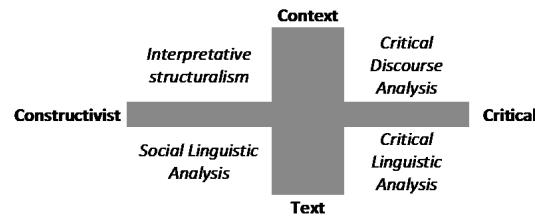


Figure 1: Different approaches to discourse analysis according to Philips – Hardy 2002 [18]

discourse analysis, which essentially requires a prior brief theoretical reflection. In social sciences, discourse analysis itself is one of the typically soft, i.e. non-quantitative, methods of analysis. Its key concept is the discourse, by which ordinary language understands conversation, but modern social sciences have in the recent decades given it a much more complex and profound meaning. Authors who have given a variety of definitions of discourse more or less agree that it should be understood as the institutionalized ways of thinking [15] that governs our social life. More practical approaches emphasize the constructionist nature of discourses, where the aim is to show *'how the objects and concepts that populate social reality come into being'* [16] through the discourse.

Within the methodological tool of discourse analysis, several subtypes can be distinguished, depending on how broad of a meaning we wish to give to the term 'discourse' and how we see the nature of discourse itself. Nelson Phillips and Cynthia Hardy's model [17] identifies two axes of the discourse analysis (the y-axis between textual and contextual approaches, and the x-axis between constructivist and critical approaches) and uses them to distinguish four subtypes. Textual approaches, at one end of the y-axis, tend to understand discourse as texts in the literal - or moderately metaphorical - sense of the word. A good example is the discourse analysis approach to various legal texts. Contextual approaches at the other end of the y-axis, on the other hand, interpret the concept of discourse as synonymous with a broader social practice, without, of course, excluding the possibility of drawing on literal texts or textual discourses to unpack this context. Turning to the x-axis, constructivist approaches at one end of this axis are concerned with the regularities of the production of the meanings that can be considered as the result of discourse (the aforementioned *'objects and concepts that populate social reality'*), while critical approaches at the other end focus on the power relations that underlie the construction processes just mentioned. On this basis, four character varieties of discourse analysis can be distinguished, such as the textual-constructivist *social linguistic analysis*, the contextual-constructivist *interpretative structuralism*, the textual-critical *critical linguistic analysis* and, finally, the contextual-critical *critical discourse analysis* (Figure 1).

The most commonly used critical discourse analysis in political science is traditionally based on the repressive nature of power, as for [19], power *'the probability that one actor within a social relationship will be in a position to carry out his own will despite resistance, regardless of the basis on which his probability rests'*. So, the related definition attempts to try to understand the functioning

of different discourses in the context of the expectations and rule systems constructed by those in power. The authors belonging to this group are most inspired by Michel Foucault's theory of discourse, according to which *'we must conceive discourse as a violence which we do to things, or in any case to practice which we impose on them; and it is in this practice that the events of discourse find the principle of their regularity'* [20]. From here, there are two alternatives. Postmodern discourse theories and analyses conceived in the spirit of the negation of *'metanarratives'* [21] can, ironically, often become ideological in character, ranging from interpretations that seek to expose the order of postcolonial discourse [22] to feminist criticism [23]. The other way, avoiding the trap set for the above authors, is much closer to critical linguistic analyses, and is mostly satisfied with focusing *'on the role of discourse in the (re)production and challenge of dominance'* [24] through specific texts and/or particular practices.

In one of my earlier studies on the institutionalization of the smart village discourse in Hungary, [25] I drew attention to the consensual components of the discourse, essentially moving the focus of the study towards a kind of interpretative structuralism. Here, however, a counter hypothesis can be put forward, namely that it is more appropriate to describe and evaluate the process of institutionalization of the smart city by means of a more critical type of discourse analysis. The hypothesis may be supported by several considerations. Firstly, from the perspective of higher level development policies, the 'smart' development of urban areas has been identified from the outset as a key strategic precondition for economic, social and territorial cohesion at the national level. This means that the central level may want to intervene more directly in defining the smart city concept and in elaborating and implementing the associated development paths than in the case of rural municipalities and areas that are 'left behind' and are peripheral in terms of location, economy and society. For more on understanding centre-periphery relations, cf. [26]. Furthermore, the inherently larger scale of urbanized areas as well as the greater distance between local governance and other actors that could benefit from the smart city innovations may also mean that the bottom-up nature of urban development becomes less effective. Finally, it should not be forgotten that in the initial, service-driven phase of the smart city, local governances relied heavily on technological innovations and related smart city interpretations offered by large multinational companies, even without the involvement of higher level development policies. This, in contrast to rural municipalities and regions

that entered the smart path of development later and were therefore less affected by the technological approach of the Smart City Phase 1.0, could have forced the local level even more strongly into a passive role in the process of constructing the meaning of the smart city.

The recently published research of Anett Árvai [27] has been of great help in unpacking our hypothesis. In contrast, however, we do not attempt to present all the development documents analysed by her, so we ignore, for example, the entire spectrum of integrated settlement development strategies prepared on the basis of the instructions of Government Decree No. 314/2012 (XI. 8.). Rather, we would like to analyse in more detail a few municipalities that have apparently recognized the need to move towards the smart city and have tried to make their tasks explicit by means of urban development documents that refer to the smart city concept in their title. Based on the smart city definitions that emerge from these documents, we will try to outline some of the basic directions in which the Hungarian smart city concept is taking shape: we will foremost try to define the place and role of the three most important actors in the domestic development policy discourse, namely the European Union, the level of national government and some of the municipalities at the forefront of the smart city discourse.

3 SOME BASIC TRENDS IN THE DEVELOPMENT OF THE SMART CITY CONCEPT IN HUNGARY

Árvai mentions by name municipalities Tatabánya (2016), Szeged (2016), Zalaegerszeg (2017), Baja (2019) and Debrecen (2020) among the medium-sized and large cities with urban development documents that refer to the smart city concept in their title [27]. The years next to each municipality indicate the year of birth of the urban development document that gives the smart city concept its title. We add to this list the Smart Budapest Smart City Framework Strategy, adopted in 2019 by the General Assembly of Budapest, our only metropolis on a European scale; finally, the smart city pilot project in the Pest county municipality Monor, foreseen in the Government Decision No. 2040/2017 (XII. 27.), which adds a small city to the spectrum of our analysis. Particular attention will be paid to the critical nature of the discourse analysis model elaborated in the 'Methodology' chapter, i.e. we will always keep in mind the extent to which higher levels (EU, national government) play a dominant role in the process of meaning construction related to the concept of 'smart city'. In the following, in order to facilitate a more structured description and understanding of the process of institutionalization of the smart city concept, I will divide the history of the related discourse into three phases:

- the introductory phase, when the smart city concept is not yet sufficiently developed in the Hungarian development policy discourse;
- the turnaround phase, when the smart city concept becomes the focus of interest in development policy at the level of national government;
- finally, the present, based on the delicate balance between the European Union, the national government level and the local level.

3.1 The introductory phase

The first appearances of the smart city concept in Hungary, as in other countries, show the characteristics of the service-driven Smart City Phase 1.0. László Gere and János Balázs Kocsis, for example, link the first comprehensive smart city experiment to the T-City Szolnok programme launched in 2009, a definitely *'technology-driven, top-down development approach'* aimed at testing the Hungarian Telekom PLC's services that are about to be introduced. At the time, the results of the academic discourse were still very much linked to the market penetration efforts of large multinational companies related to the Smart City Phase 1.0. The first ground-breaking study was commissioned by IBM and carried out by the Western Hungarian Institute of Science of the Centre for Regional Research of the Hungarian Academy of Sciences (MTA RKK NYUTI) in 2011 [3].

In line with the above, let us first present a type of urban development document that tries to give meaning to the smart city in the spirit of the technology-driven approach characteristic of the Smart City Phase 1.0. The Smart City Development Concept for Tatabánya City of County Rights, adopted in 2016, could be a good example of this. The authors of the concept do not refer to any definition of smart city that reflects the insights of the critical phase between 2012 and 2015, but simply identify the concept with the optimal use of the latest technologies. More specifically, according to the concept, *'Tatabánya can be considered a smart city if it provides quality services to its residents with maximum efficiency, using minimum resources and making the best use of the latest available technology.'* [28] The document therefore does not approach the smart city as a complex system, but rather on its focus areas (safety, energy efficiency, modern transport management and IT-based public services), with a detailed description of the various smart technologies that can help to achieve them.

The smart city concept is presented in a much more complex way in the Smart City Vision and Concept of Szeged City of County Rights, adopted in early 2016. The commitment to a more complex direction is clearly visible in the reflections on the wider context of the smart city discourse. First, let us look at the impact of the EU discourse. Szeged's Smart City document already makes explicit reference to the EIP-SCC and its objectives [29]. However, the concept also saw that the EU context influences the smart city document of Szeged primarily through the mediation of the Hungarian development policy discourse. Here, the National Info Communication Strategy (Nemzeti Infokommunikációs Stratégia - NIS) for the 2014-2020 programming period [30], admittedly in line with the EU context, and the Digital Nation Development Programme (Digitális Nemzet Fejlesztési Program - DNFP) [31], setting out the action plan framework for the implementation of the NIS, that are of particular interest. For the purposes of our analysis, we can highlight point 7 of the Government Decision No. 1631/2014. (XI. 6.) on the implementation of the DNFP, which calls on the Minister for National Development to draw up a *'concept for the dissemination of smart urban services'* in order to implement the Digital Community and Economic Development pillar of the DNFP, and identifies the Integrated Transport Operational Programme (Integrált Közlekedésfejlesztési Operatív Program - IKOP) and the Operational Programme for Spatial and Urban Development (Terület és Településfejlesztési

Operatív Program - TOP) as the sources of the developments to be implemented. In addition to the IKOP and TOP funds, Szeged's Smart City document also draws attention to direct Brussels and Norwegian funding opportunities, such as Horizon 2020 and the Norwegian Fund for Szeged Smart City-related tenders [32].

It is rather difficult to assess the introductory phase in a uniform way. The lack of maturity of EU intentions to create smart cities, and the lack of clear guidance from Hungarian development policies, may in some cases result in self-definitions stuck at the level of Smart City 1.0, as we have seen in the case of Tatabánya. The situation is much more complex in the case of Szeged, which is considered the most forward-looking product of the introductory phase. Of course, the smart city definition of the European Union, which was perhaps still too technology- and service-focused at that time, influenced fundamentally the smart city concept of the document, if only because of the need to adapt to the related tendering opportunities. On the other hand, one of the unintended (and overall positive) consequences of the immature nature of smart city policies at EU and Member State level was that local actors were not yet forced to use and adapt to a smart city definition decided at a higher level and not necessarily compatible with local conditions and opportunities. Szeged, for example, mentions a number of smart city concepts and models developed by academia, professional organizations and market service providers, such as:

- the IBM model;
- the Siemens Green City Index, which is also widely used for the evaluation of Smart Cities;
- the Vienna University of Technology's 'European Smart Cities 3.0' survey and model;
- and the Smart City model used by the International Telecommunication Union (ITU) [33].

Taking such concepts and models into account and integrating them into the smart city approach most relevant for the city could even broaden the spectrum of certain non-EU and non-domestic funded developments (e.g. those implemented by the municipality from its own resources). For instance, the Siemens Green City Index could have paved the way for the concept of smart sustainable cities at a time when it was less prominent in the technology and service-focused EU and national smart city discourse. It is another matter, of course, that the Hungarian local government system, which was always short of resources in the 2010s, had little opportunity to carry out such developments on its own.

3.2 The turnaround phase

At the beginning of Chapter 3, I identified the turnaround phase as the period when the smart city became the focus of Hungarian development policy interest at the government level. If we were to pinpoint the beginning of this phase with a single event, we would probably have to name the 2017 amendment of Government Decree No. 314/2012 (XI. 8.), but it is also worth reviewing the background to this in more detail. We have seen that the NIS and the DNFP tried to define the main directions for the development of the info communication sector as early as 2014, although their practical implementation was not without controversy. Shortly before the Government Decision No. 1631/2014 (XI. 6.) concretely named the

measures related to the four pillars of the NIS (digital competencies, digital economy, digital infrastructure and digital state), on 21 October 2014, Minister of National Economy Mihály Varga announced the introduction of a rather ill-considered internet tax, which would have imposed a HUF 150 tax on every gigabyte of data traffic [34]. Following protests, the bill was not even adopted in its amended version (capped at HUF 700 per month), which was more favourable to users. In his regular morning radio interview on 31 October 2014, Prime Minister Viktor Orbán not only withdrew the proposed tax, but also announced the launch of a national consultation on the internet (InternetKon), which was finally held between 6 May and 30 September 2015. Taking into account the results of the InternetKon, the Government of Hungary addressed the problem of digitalization in Government Decision No. 2012/2015 (XII. 29.). The Digital Success Programme (DigitálisJólét Program - DJP), launched following the Government Decision, can be interpreted as both a continuation and a revision of the National Info Communication Strategy: the deadline for the revision was 30 June 2016.

The government decision itself does not mention the concept of the smart city, but the Digital Success Programme 2.0, a strategic document on the overall vision of digitalization in Hungary, which was adopted in July 2017 within the framework of the DJP, already includes the concept of the smart city as '*a well-understood local-level mapping of digital well-being*' among its horizontal themes. The explanation of the smart city concept in this document will help us to point out the main thrust of the smart city discourse of the turnaround phase, as well as its internal contradictions. We highlight that perhaps the most important keyword in the creation of the smart city concept has become standardization in order to achieve '*interoperability and compatibility between municipalities as well as international, state and local systems*' [35]. This required the development and subsequent integration of a new (standardized) smart city operating model into the Hungarian administrative legal system and practice. This was finally embodied in the already mentioned amendment of the Government Decree No. 314/2012 (XI. 8.) of 2017, which - in the spirit of standardization - identified the adaptation of the Lechner Knowledge Centre's Smart City methodology as the sole criterion of the smart city.

At first reading, it seems that development policy at the government level has sought to fully define the meaning of the smart city through the smart city methodology, appropriating the whole process of meaning construction. However, the situation is much more complex. In the pages of DJP 2.0, there is not only talk about standardization, but also, for example, about the creation of different Smart City Platforms (Knowledge Platform and Technology Platform) that would not, as it happens, convey a standardized interpretation of the smart city to local actors. And indeed, the Smart City Guidebook, launched in April 2017 on the Knowledge Centre's website, has already collected around 1000 good practices from around the world by the end of 2020 [36]. More recently, the Smart City Marketplace Platform launched by the DJP in January 2022 [37] is a similar step. Through this quality-assured platform, suppliers, developers and potential customers of smart city products will be able to find each other faster and easier than ever before. The existence of a platform connecting Hungarian companies offering smart developments and municipalities looking for innovative digital solutions may therefore also point to the fact that the Hungarian

governmental-level development policy does not necessarily wish to fully dominate the smart discourse in this area. On the contrary, in addition to the local level, it is also giving way to certain bottom-up processes and/or market players in determining the direction of the discourse on smart cities. All this makes the intention of the government level, and perhaps the interpretation of the turnaround phase, unclear. The question, whether it is the intention of standardization or the intention to mobilize the creative energies of other actors (municipalities, market players) that will ultimately prevail, can only be answered in the light of a more detailed analysis of the smart city discourse.

It seems that the Lechner Knowledge Centre's Methodological Guide to the Smart City Development Model (hereafter: the Guide) clearly promoted a standardized interpretation. The real problem, however, is that the standardized smart city concept on the pages of the Guide reflects an outdated approach. The smart city concept at the beginning of the Guide, according to which a smart city '*develops its natural and built environment, its digital infrastructure, the quality and economic efficiency of the services it provides, using modern and innovative information technologies, sustainably and with the increased involvement of its inhabitants*' [38] seems to be only at first sight to be moving beyond a technological approach dominated by ICT technologies. Despite the fact that the document correctly identifies and distinguishes the three pillars of sustainability used in the literature (the economic, social and environmental sustainability), it pays special attention only to the first pillar, the economic sustainability. Thus, although the first sentence of the Sustainability subchapter on page 12 of the Guide states that economic sustainability has a priority only 'alongside' social and environmental sustainability in the development of smart city strategies, the later sections of the subchapter concentrate exclusively on the economic sustainability of the projects to be implemented [39]. This puts the emphasis back on the innovative technologies to be implemented in the projects, rather than on the sustainability of the city as a complex system, supported by smart solutions.

Reading the smart urban development documents produced between 2017 and 2019, the impact of the standardization efforts of the Guide seems clear. Typically, the smart city concept and strategy of Zalaegerszeg, prepared in 2017, does not even include a definition of a smart city, the authors are content with presenting and following the Smart City Development Model of the Guide. The project-oriented nature of the document is well illustrated by its title, which states that the local government administration has drawn up a concept and strategy '*on the basis of the selected projects*'. But perhaps even more telling is the special attention it pays to a project that is insignificant from the point of view of the smart city as a system (a test track for car manufacturers in Hungary and factories in neighbouring countries): while the term 'test track' appears 38 times in the document, the term 'sustainable' only three times [40]. Not much more autonomy is to be found in the Baja Smart City Concept, which will be ready by 2019. The document, which also draws on the Guide's methodology, at least tries to formulate its own (preliminary) smart city definition in its introduction, but a formulation such as '*a municipality can be considered SMART when concrete technological solutions become part of the city's everyday life*' only makes the implicit technological approach in the Guide more explicit. And if we want to go deeper into the content analysis

of the text, we can find even more obvious parallels with the Guide, such as the identification of savings (of a financial nature) with sustainability [41].

Because of its size/financial and other potential, Budapest may be able to formulate its strategic objectives perhaps more freely than the municipalities just described. Therefore, instead of relying on the Guide's methodology, the Smart Budapest. Smart City Framework Strategy is based on its own interpretation of a smart city in line with contemporary international standards. The document clearly suggests that the smart city approach, based on various smart technologies and aimed at improving the efficiency and convenience of urban services as well as reducing disruption and accidents, is an outdated concept and instead offers an alternative that focuses on people and a liveable urban environment with the aim of improving the quality of urban life. This does not, of course, deny the importance of the use of digital technologies in the smart city, but complements it with a more resource-conscious approach, thus making the concept of sustainability an integral part of its smart city framework strategy [42]. The Focus Areas listed here are broadly in line with the six smart city characteristics proposed by Giffinger and his co-authors and also included in the Guide (cf. Table 1) However, the change from '*smart governance*' to '*proactive urban governance*' and from '*smart environment*' to '*sustainable resources*' is a clear sign of a shift towards a greater emphasis on the concept of the smart sustainable city.

The situation is even clearer when the 11 principles of the framework strategy are taken into account. Without exception, the key concepts highlighted by that the authors - such as efficient, collaborative, environmentally aware, value preserving and value creating, flexible, forward-looking, in solidarity, creative, visionary, secure, transparent - also reflect the social turnaround in the smart city approach (showing signs of the progressive city leaders-driven Smart City Phase 2.0 and perhaps the result of the citizens-led Smart City Phase 3.0).

A deeper understanding of the standardization can be facilitated by the presentation of the smart city pilot project in Monor, which has been running since 2017. The Government of Hungary decided to develop Monor, a town of 18 384 inhabitants in Pest County, into a smart city at about the same time as the Guide was published. According to the Government Decision No. 2040/2017 (XII. 27.), development of the smart city functionality of Monor (the '*smart city pilot project of Monor*') was decided in order to '*disseminate smart city technology in Hungary*', which essentially prepares the dissemination of a '*standardized*' central platform service at the national level. The core of the platform service is the creation of a smart city central service environment, including a municipal geospatial information platform, a municipal building management system, a municipal mobile application and the introduction of a city card system [43]. The envisaged central platform service explains why it was necessary to require (or at least strongly recommend) that integrated settlement development strategies, which are key to medium-term development, should also be based on the Lechner Knowledge Centre's standardized Guide. However, already in 2017, it was not the most fortunate to identify the technologies of a foreseen central platform service with the smart city. The period since then - and the changes in the smart city discourse articulated at

Table 1: Six characteristics of the smart cities according to [2], [38] and [42]

Giffinger et al 2007	Guide 2017	Budapest 2019
smart governance	smart governance	proactive urban governance
smart people	smart people	smart people
smart economy	smart economy	smart economy
smart environment	smart environment	sustainable resources
smart mobility	smart mobility	smart mobility
smart living	smart living conditions	smart quality of life

EU level - have confirmed the need to complement the technology-focused smart city approach of the Guide. In the following, we briefly review the possible implications of these recent challenges for the Hungarian smart city discourse.

3.3 The present

Since the second half of the 2010s, there has been a clear shift in the European Union's urban development efforts from technology-centred smart cities towards smart sustainable cities, reflecting a social and/or ecological turn in urban development. While the new paradigm may preserve the concept of the smart city through smart (but not necessarily digital) solutions defined as tools for sustainability, the focus is no longer on smartness. The changes already clearly visible in the Amsterdam Pact have accelerated with the preparations for the 2021-2027 programming period. For example, the New Leipzig Charter, adopted in 2020, clearly states that '*digitalization is a major transformative, cross-sectoral trend affecting all dimensions of sustainable urban development*' [44], i.e. despite its undoubted importance, it is only a tool. In the same year, in line with the fact that the cohesion policy has already earmarked 8% of the ERDF resources for sustainable urban development in the current programming period, [45] the Commission's Directorate General for Regional and Urban Policy (DG REGIO) and the Joint Research Centre (JRC) published a specific methodological handbook for municipalities [46] aiming to make the most effective use of these grants. The shift of emphasis at EU level has of course not left the Hungarian development policy discourse untouched. Government Decree No. 256/2021 (V. 18.) Article 69 (1) called on Hungarian municipalities to prepare sustainable urban development strategies in line with Regulation (EU) No. 2021/1058 of the European Parliament and of the Council. And in July 2021, the Regional Development Programmes Managing Authority under the Ministry of Finance published its Methodological Manual for Sustainable Urban Development Strategies 2021-2027 (hereafter: Manual), [47] based on the EU's handbook. However, sustainable urban development strategies are primarily intended to improve the efficiency of the planning process in order to draw down EU funds as efficiently as possible, not to replace the integrated settlement development strategies. On this basis, the coexistence of the Guide and the Manual could be a feature of the present era. In what follows, I will try to show, through a concrete example, that such coexistence could lead in the near future to a symbiosis, to the emergence of the concept of the smart sustainable city within the Hungarian smart discourse.

Smart City Strategy of Debrecen was adopted on 2 July 2020 by the General Assembly of Debrecen. The strategy itself combines the expectations of the Guide and the (smart) sustainable city of the 2021-2027 programming period. On the one hand, this is reflected in the Strategy's explicit reference to Government Decree No. 314/2012 (XI. 8.) and the Smart City concept of the Guide. On the other hand, however, there are also references to the new EU cohesion policy and the Smart City objectives that are linked to it, which shifts the focus from the technologies for the implementation of Debrecen Smart City to its overall purpose (improving urban well-being and quality of life. Consequently, although the strategy is still strongly technology-centred, it now considers a 'sustainable green approach' and 'innovative technologies' together as criteria for a smart city. In addition, the impact of the social turn of the smart city is clearly present in the text, too: the places highlighting the importance of education, research, creativity and the promotion and improvement of business, civil and social relations clearly show this [48]. But perhaps even more revealing is the fact that the Digital Debrecen focus area - included in the 3 (Intelligent Transport, Sustainable Energy, Digital Debrecen) focus areas of Debrecen Smart City - is identified with '*digital literacy in a broader sense*' [49], and social inclusion, which can be paralleled with the involvement of the population, the faster dissemination of projects and solutions as well as community building, is presented as a kind of horizontal area cutting across all above-mentioned focus areas [50].

The coexistence of the Guide and the EU discourse focusing on smart sustainable cities could therefore lead to an up-to-date interpretation of the smart city that goes beyond the primacy of smart solutions in the technological sense. This direction can also be confirmed by the approach of the Manual, Chapter 3.4.3 of which assumes that '*the ultimate goal of the digital transformation of cities is to increase the efficiency of city operation and maintenance in the interests of the satisfaction, quality of life and well-being of the local population*' [51]. In other words, the document now links the various smart solutions to the main objective of the municipal system as a whole (which is the 'well-being' of the local population), opening the way to a broader understanding of innovative, but not necessarily digital smart solutions, tools for a sustainable urban ecosystem. Of course, this smart sustainable city will not acquire its true meaning at the level of the self-definitions we are considering, but in the concrete planning practices of the future. The primary lesson of our investigations is that the Hungarian smart city discourse may have only recently reached a stage where local actors can safely embark on this task.

4 CONCLUSION

Our study used the methodological tool of discourse analysis to describe and evaluate some of the characteristic features of the process of institutionalization of the smart city concept in Hungary. We have seen that the dominant role in the construction process of the meaning 'smart city' has always been played by higher levels of development policy, and that the shift towards a social and/or ecological approach has been rather difficult to trickle down to lower levels of development policy. In the European Union's interpretation of the smart city, there was a clear shift towards a social and ecological approach in the mid-2010s, but even in 2017, Hungarian development policy at the level of national government still focused on a technology-centred smart city concept. Smart city definitions in local development documents have mostly adapted passively to the Guide of the Lechner Knowledge Centre, echoing the meaning of the smart city envisaged at the level of national government. The only counter-example is Budapest, which, given its size/financial and other potential, was able to formulate its strategic goals more freely than the previous ones. However, it seems that the shift towards the smart sustainable city, which will gain more ground in the European Union in the 2021-2027 programming period, may generate fundamental changes in the approach of the Hungarian development policy discourse, as pointed out by self-definition of Debrecen Smart City as well as the Methodological Manual of Regional Development Programmes Managing Authority. As a continuation of the research, it may be worthwhile to review the sustainable urban development strategies being prepared for the 2021-2027 programming period, in order to answer the question: has the Hungarian smart city discourse really reached the level of the 'smart sustainable city' lately?

ACKNOWLEDGMENTS

TKP2021-NKTA-51 has been implemented with the support provided by the Ministry of Culture and Innovation of Hungary from the National Research, Development and Innovation Fund, financed under the TKP2021-NKTA funding scheme.

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