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VISION OF IDVOR AS A SMART VILLAGE OF THE 21ST CENTURY

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Abstract

The increasing depopulation of rural areas throughout the EU is an alarm for finding sustainable solutions in the shortest possible time. Progressive and sustainable rural development is an important factor for the survival of villages of the Republic of Serbia, which would lead to sustainable revitalization of rural areas in the future. Using a case study specific to the Republic of Serbia, where rural areas make up a large part of the territory, integrated strategies and policies, using AI and smart systems, that would result in rural revitalization in the Republic of Serbia and across the EU are examined. The best practices of entrepreneurship, precision agriculture, solving social and legal issues, solving waste, as well as diversification of energy, tourism, etc. are considered. There are no fully realized smart villages in the Republic of Serbia. The contribution of this work would be a model of a specific village, on the example of which the implementation of the concept of a smart village could be continued, as a solution for depopulation, migration, lack of labor and the deterioration of the fertile land that the territory is abundant in. It represents a very important economic resource and the possibility of competitiveness and placement on the world market. Through the research, concrete suggestions of activities for which there is potential for development through the concept and context of the village of Idvor, which has various potentials, especially cultural-historical, agricultural, archaeological, etc., were offered.

Key words: *artificial intelligence (AI), Idvor, Republic of Serbia, smart village, sustainable rural development.*

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1. Introduction

Artificial intelligence (AI), a new revolution in history, is fundamentally changing societies, like all the previous ones. We will analyze the effects of AI on the possibilities of forming the future form and function of the village. By coordinating between urban planning, computer science and economics, within a legal framework, to control the application of AI, rural spaces can be turned into smart ones. There are entrenched assumptions that the urban population will increase according to the neoliberal practice of urban growth, due to the migration of people from the countryside to the cities in search of work, but AI overcomes some forms of human labor and tends to completely eradicate them as a necessity, and human labor is traditionally attracted people to the cities (Kassens-Noor & Hindze, 2020).

It is necessary to investigate the possibilities of applying the concept of a smart village at the level of a concrete example. The proposal of the future village concept model aims to strengthen readiness and cooperation for the application and acceptance of digital technologies. Possible limitations and obstacles are increasingly difficult and unprofitable agricultural activities, lack of education, as well as the lack of application of modern technological solutions.

1.1 Methods

Changes in rural areas carry risk, but they also encourage the local community to create guidelines for its sustainable development. Therefore, smart villages are primarily oriented towards the local population and their potential resources and needs. This paper is a part of a wider project within which the state of rural areas in the Republic of Serbia was analyzed on the example of several specific villages. The work deals with the research of the potential of the village Idvor in Vojvodina, as an opportunity to include that village in the network of smart villages, which are included in the wider project and program of the development of smart villages in the Republic of Serbia until 2030. The village Mošorin is included in the project, data was collected and it was determined to have potential. It is necessary to research on the basis of a comparative analysis the potentials of Idvor in Banat. Strengths, weaknesses, opportunities and risks were examined, on the basis of which the visions of the development of smart villages, with goals, priorities and frameworks, were defined.

Analysis of the current condition of rural areas, goals and visions are:

- Production and services with the help of digital technologies, AI and green sustainability, taking into account the ecological component.
- Infrastructure: traffic, communal, ICT, social, etc.
- Cultural, educational, entertainment, health, etc. connection through a sense of solidarity and belonging to the local community
- IT oases for digital nomads
- Digital agriculture and market
- Tourism (Borović et al., 2022)

It is necessary to make an assessment of the necessary means for the implementation of the goals. The methods used are the analysis of secondary sources of data, field recording of the situation, survey, interview, workshop, focus group. After the analysis of the current situation, a SWOT analysis and a strategic project of the concept of a smart village aligned with the higher strategic documents and development programs are carried out.

2. Results

Smart cities are defined as cities where information and communication technology (ICT) is combined with traditional infrastructure, coordinated and integrated using new digital technologies (Batty et al., 2012). In a similar way, we define smart villages that use new technologies to improve local challenges, focusing on the key potentials and strengths of a specific region in order to achieve sustainable development and the attractiveness of the area itself, according to the European Network for Rural Development – ENRD. Europe achieved its first concrete examples in 2017 (European Network for Rural Development. Thematic Group on Smart Villages, 2018), which are an inspiration for the Republic of Serbia. By analyzing specific local agriculture in the Balkan countries, it is concluded that the creation of smart villages would contribute to the growth of the quality of life, preservation and promotion of local values. Artificial intelligence is one of those increasingly influential factors, whose diverse spectrum of influence and consequences, in particular, must not be neglected (Xiaopeng, 2022).

A research project by, among others, Oxford University recently proved that about half of current occupations are sensitive to technical automation. If such automation were to be implemented, the inevitability would be the loss of jobs for many and thus the potential displacement of residents. The contemporary trend of shaping cities, especially global ones, is financing (Stojanović, Lošonc, 2017). However, the question arises, what would these cities look like if at least half of the professions were replaced by artificial intelligence. Smart villages represent alternatives to city life. Researches (Akhimien et al., 2018; Nikologianni et al., 2022) show that landscape, built environment and digital transformations can become the basis for a resilient future.

2.1 The proposal of the future village concept model in the Republic of Serbia

The specific village Mošorin in Vojvodina has 2750 inhabitants, 469 children and this year 2 first classes, 50000 liters of milk are produced per day, while the state of the livestock fund is 18220 head, which was significantly reduced in previous years, but is now stabilized. Many Serbian greats Svetozar Miletić, Isidora Sekulić and others were born in Mošorin. The previous research determined that there is a potential for the inclusion of Mošorin in the program of development of smart villages in the Republic of Serbia.

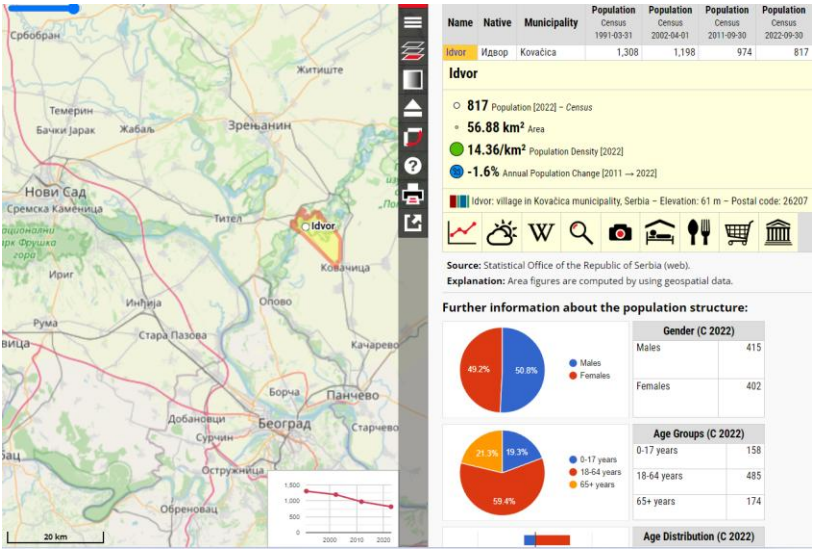

Figure 1: Spatial position of the village Idvor and equal distance from Belgrade and Novi Sad

The village Idvor has 817 inhabitants, 262 young people under the age of 29. However, this village has great potential in culture and tourism. World great, scientist - physicist Mihajlo Pupin was born in Idvor. There are archeological sites in this area dating back to the time of the Avars, and the achievements of many later historical periods chronologically have their remains. However, the most significant are the native complex of Mihajlo Pupin, which includes his birthplace, the museum collection in the old building of the elementary school where Pupin went to, now a museum, a people's home, and the church where he was baptized. Idvor belongs to the municipality of Kovačica, where the Gallery of Naive Art is located, which was declared by UNESCO to be the world center of the publishing activity of naïve painting. In addition to the elements necessary for the development of a smart village, which we found in the example of Mošorin, in Idvor there is an emphasis on Mihajlo Pupin's legacy.

Smart solutions should be represented in all rural areas. The "Pilot project for the development of smart villages in the RS, Idvor and Mošorin" will be implemented.

Project assignment:

1. Situation analysis 2. Vision 3. Objectives and priorities 4. Examples of good practice 5. Action plan 6. Risk analysis

Expected results:

- visions, goals and priorities of smart villages in the Republic of Serbia
- development projects
- a presentation of project details with all activities, actors of implementation, required time, finances, and potential sources

3. Discussion

Balkan villages, although structurally completely neglected, still have a very high untapped potential that can create great added value. German Foundation Heinrich-Böll commissioned a study on this topic: "The pitfalls of change: sustainable agriculture as a path to prosperity for the Western Balkans". In our region specifically, smart villages would imply the upgrading of traditional agricultural practices with new technological solutions. The circular economy would imply improvements in energy efficiency and recycling, then a significantly higher share of energy obtained from renewable sources, but also the use of modern information and IT tools for easier upgrading of knowledge and better productivity (UN-Habitat, 2022).

In an ideal scenario, connecting renewable energy sources with ecological agriculture would also lead to an increase in value in the food production process. Ecological production has a number of economic advantages in comparison to conventional conventional production. Organic matter in the soil is particularly important for water retention in the soil. It certainly helps in mitigating the consequences of floods, which have already become a regular natural disaster in the Balkans. That is why the villages have an advantage over the cities in this respect. By establishing short supply chains, solidarity exchange groups and encouraging the community supported agriculture model, the purchase of produced agricultural products would be ensured.

4. Conclusions

It is necessary to make the villages desirable and to revive the village in terms of personnel, which then becomes even more desirable for life, the socio-economic cycle is started and cultural, sports and other activities can be built on it. The European strategy for broadband internet in rural areas is the first step on this long road. Digitization can support sustainable development in open spaces and help positive landscape correlations with climate change.

All the previous facts prove that AI will displace people far from the cities, because the new industrial or technological revolution will once again, as it happened throughout history, replace jobs. None of the possible new ways of life require cities, but rather human interaction and access to nature. Cheap labor will initially prevent the mass introduction of AI in cities. There are claims that AI will turn metropolises into ghost towns which will depend on the level of AI adoption, policies and unpredictable events like COVID-19, wars etc. (Cugurullo et al., 2023).

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