CONFERENCE PROCEEDINGS

3RD INTERNATIONAL ACADEMIC CONFERENCE ON PLACES AND TECHNOLOGIES

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MILENA VUKMIROVIĆ
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PLACES AND TECHNOLOGIES 2016

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THE CONCEPT OF SMART ARCHITECTURE IN SERBIA – ONE BELGRADE EXPIRIENCE

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ABSTRACT

The concept of smart architecture has become quite accepted as one of the established standards in architectural design. Already long-established concept but also a platform of contemporary architecture which is necessary for further experimentation. The rapid development and use of computers and accompanying digitalization, primarily low-current, enabled the installation control and achieved more rational consumption and energy savings, while on the other hand, we have also controlled regimes and comfortable way of using space. Fields that open the concept of smart houses are much broader spectrum than it was originally thought. Smart House is not only architecture supported by modern technologies that performs energy saving, but more comfortable use than its own potential, only to allow users with limited needs, the elderly as well as to specific categories of patients in home care receive adequate, maximum comfortable and safe operating space. With the additional use of "e" technology, this space offers entirely new possibilities and forms of functioning in the cities. In addition to working from home, there is the option of doing business on the move, and all this through a new mapping of the city in terms of business and movement. This minimizes the need of public transport, introducing remote nursing care at specific categories and increase the safety of life. In Serbia, the concept of smart houses is primarily based on the use of novelty which, as it is, can help achieve quality and increase the value of real estate which has been offered as a product of smart architecture. Introduction smart technology is an expensive proposition for a richer environment, because as such must be supported by systemic reforms and interventions. The framework of this paper is a case study - one Serbian experience in the design and construction of residential and commercial building in Dobračina Street in Belgrade who joined the family of smart architecture.

Keywords: smart, arhitecture, technology, digitalization, installations

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ENERGY CRISIS AND CLIMATE CHANGE THROUGH THE PRISM OF A GLOBALIZED ARCHITECTURE

The energy crisis in the last quarter of the 20th century developed as a result of aggressive and rapidly increasing energy consumption on the one hand and recognizable process of "extinction" of individual energy sources on the other hand has led us into a position to think for a moment about your future. At the beginning of 21st century architecture objects are spending more than half of the world's resources, and 16 percent of the Earth's freshwater resources, 30-40 percent of all energy and 50 percent by weight of all raw materials extracted from the earth's surface. With energy buildings by architecture are spending half of the energy used in developed world, while a quarter of the consumption benefits of transport. Architecture is also responsible for 40-50 percent of the waste disposal in landfills and 20-30 percent of emissions in the formation of the greenhouse effect. Environmental issues affecting the architecture at all levels. One of the world's leading architects and novice green architecture Norman Foster (Norman Foster) finds that the architects "*cannot solve all the world's ecological problems, but we can design buildings to run at a fraction of current energy levels and we can influence transport patterns through urban planning.*" (Foster, 2003, 2).

Besides the ever-present energy crisis is an important process and worrying changes in the ozone layer of our planet Earth with the formation of the greenhouse effect, which led us to the adverse climatic changes and very uncertain future. It turned out to be that cooling systems which are an integral part of the architecture have an important influence in these changes again. Uncontrolled and arrogant attitude towards the building material in its manufacture and installation as well as later in comparison to the same after the demolition of us worked as professionals.

Modern architecture as a part of the modern age has a direct impact on the increase of energy consumption in the forefront of tonnage as a result of rapid population growth and development process which meets the needs for built space, while in the background its basic postulates incidence expressed through the maximum desirable glazing facade and roofing depletion, mainly represented flat roofs, are increasingly relying on artificial lighting and the operation of technological and installation systems. It became a unified no matter where we build - whether in the hot desert areas of Dubai or in the cold regions of Toronto.

In front of us is a big question and architectural theory: generic architecture, or specific architecture? Generic architecture that has globalized its generic and trendy appearances, emulation and adopting the vocabulary of artistic and materialization, and also encouraged and supported branded technologies that form. And the world-renowned French architect Jean Nouvel (Jean Nouvel) concludes that there is " *a certain moment where we have to go a little deeper, to develop the specifics, develop diversity, we need to remember the beginning, we need to know who you are and what kind of future is built. This is the a method called "contextualization." But contextualization as a word is not enough. The context is not only constructed context.*" (Nouvel, 2006, 97). Globalization architecture has led to the fact that we have forgotten what our ancestors hvae left behind as a legacy - a traditional bioclimatic architecture that is consistent with the climate which has been developing both in terms of its rational use and energy consumption as well as the availability and late as possible reuse of the same building materials. We are in the modern age modern architecture swollen with new concepts of bioclimatic architecture, sustainable architecture, energy-efficient architecture, smart architecture and at the end of green architecture. These concepts make us even more modern, skillfully manipulating the postulates of "quiet architecture", have enabled us to be the trend that we are on the right track that leads to a brighter future. Do we have to extent something? "*Sustainability is a word that you can pretend you're all included*", and in the opinion of critics and theoreticians of architecture Kenneth Frampton (Kenneth Frampton) "*Sustainability is both cultural and technical undertaking.*" (Frampton, 2007, 21). Jean Nouvel (Jean Nouvel) is not giving up specificity and argues that "*we need to continue the discussion on the specifics, uniqueness of context and see what this means in terms of cultural evolution and global evolution.*" (Nouvel, 2006, 97). He concludes that this is

definitely a political problem. Globalized and generic architecture we have created a wide field of architecture that is not in accordance with the climate in which each of them occurs, even in this regard saving as it requires excessive and unjustifiable need for heating or cooling, or by using materials that are not in accordance with the environment and subsequent degradation.

Serbia is in Europe infamous record for energy consumption in its building fund. Middle consumption per square meter buildings is about 2.5 times higher than in northern Europe, while half of households consumes 340 kWh / m2 per year or 3 times more than in Western Europe. Chronic diseases, including respiratory diseases, are directly linked to significant pollution of the interior space. Serbia has an international obligation to save at least 9 per cent of gross final energy consumption by 2018, it plans to reduce carbon dioxide emissions by the same percent by 2030.

WITH TEHNOLOGY TO THE GREEN ARCHITECTURE

Architecture throughout its history developed with the help of technology and technical innovation, but on the other hand also influenced the development of these same technologies. Looking at the history of architecture through the development that occurred in the corresponding sequence of time as a slow, thorough and based on the experience of its architectural past, modern architecture course of history it seems accelerated and very revolutionary, because it really is. It is an acceptable betting world, as the renowned architect Richard Rogers (Richard Rodgers) said that the history of architecture „*should be regarded as the history of social and technical innovation, not styles and forms.*" (Rodgers, 1996, 8). In these processes occur mutual reactions to each other and run developed. Architecture in its existence is a broad platform on which the applicable range of different technologies, on the other hand, this same platform influences the development of these technologies that we develop. In architecture " *turning point in history when reaching ideas and technologies to meet made a step change, from caves to secure mobile huts, from the medieval walls and the roof to free the Renaissance dome of serious natural light to the modern synthetic materials.*" (Rodgers, 1996, 8). The steps changes do not happen often because the encounters of ideas and technology is happening at a time when the conditions for it. Today we live in a time where contemporary architecture, driven by the construction of modern technologies and backed by supporting technologies that are taken from other areas of human creativity, great strides enters the digital age to justify the ubiquity of digital technology and new way of life. Digital technologies are changing our personal lives at the global level because "*the message of each media and technology is to change the situation, speed or form that it brings to human relationships.*" (Mekluan, 1971, 42).

Transfer of technologies and taking over from other areas for contemporary architecture isn't strange because those technologies unexpectedly find their place in it and essentially affect its development. Developed for other areas of human creativity, such as. technology developed for NASA space programs, downloaded technologies open up new fields of architecture, even in some cases, a pop-up, such as High Tech architecture. New technology of materials that are not primarily construction, technology development, adhesives and compounds, expanded and supplemented with a selection of all forms of insulation are just some of the most influential. Not only this architecture, which finds refuge in technologies *"but in the meantime, a lot of businesses are actually looking at architecture as potential carrier of new technologies."* (Koolhaas, 2015).

"In every time a new technology is born prior to acceptance of the value of its reflexes on the basis of needs and requirements for a new one. It is a simultaneous process in which it previously, paradoxically, is the source, condition and the reason for appearance, every new." (Maksimovic, 2008, 114). The technology is recognized permanent enlarged with new demands that we create the illusion of constant need for growth, progress and development. *"In doing so, it is not just practical habits in the use of resources, exchange of goods and communication, but also in the way of thinking, creating and evaluating newly created value."* (Maksimovic, 2008, 114-115). New information technologies in different spheres of life have led to changes that can be completely

defined as the information revolution. If the machine is a form of metaphors of early modernism, the computer today took the metaphor of the modern era.

Realizing that we are in a vicious circle of problems of global proportions are constantly globalizing architecture we create, which is in its start energy is irrational and destructive, contextual gaudy and often repulsive in its manifestation, climate and location illogical because it does not respect the specific location at which it is generated, we began to rely on the new technology. *"Sustainability is a word that has become fashionable in the last decade. However, sustainability is not a matter of fashion, but of survival."* (Foster, 2003, 2) concludes Norman Foster (Norman Foster). In accordance with the overall sustainability of our planet we have created a theory, philosophy and wrote postulate "bioclimatic architecture", "intelligent architecture", "passive architecture", "energy-efficient architecture" and finally "green architecture". Using available technology, we started to create and develop "the newly appointed architecture." in a number of the aforementioned architecture green architecture actually represents the representative of all the mentioned since in his philosophy and principles covering the essential postulate of all: the use of alternative energy sources, energy efficiency, reuse of materials and careful siting. Referring to green architecture and we do not notice that primarily look back into the past and the beginnings of the formation of traditional bioclimatic architecture confirmed that carefully located, logically and unmistakably in line with nature and the environment, the materials used for its existence and determined to save the climate. A similar statement has Norman Foster (Norman Foster): *"While we frequently explore the newest technologies to find appropriate solutions, we alos frequently seek inspiration from forgotten traditions: the use of natural ventilation, or finding ways to reflect natural light into an interior space, for example."* (Foster, 2003, 2). The difference compared to the tradition, from which we began again to teach the modern trends in architecture extent, because in front of us as a profession is a quantitative problem of large numbers when it comes to today's needs for architecture. Another important difference is a matter of comfort with time reaches the growing requirements and levels which we aspire.

DIGITAL ERA OF SMART ARCHITECTURE

With the advent of new technology is accelerating on one side and the increase of human possibilities on the other side. "*Therefore the impact of modern technology in architecture is not only at the level at which this technology appears directly but its impact occurs, in an indirect way, through new experiences of the entity and changes in the understanding of phenomena in the world. This is affected by the experience of using new forms communication and changes in everyday life that they bring.*" (Maksimovic, 2008, 115). "This global emergence of new technologies, experience over the man as a user who accepts the changes, accept new ways of thinking and creative expression. The digital age in architecture is received on fertile ground and completely familiarized how the digitized approach to the design and the implementation of digitization in architecture. "*The way we architects look at the digital is simplistic, because we see the digital simply as a domain that enables us a greater position and that ultimately – in the form of 3D printing for instance – may offer us a return to unfettered creativity*" (Koolhaas, 2015) is the position of the founders of OMA bureau and acclaimed architect Rem Koolhaas (Rem Koolhaas). The question is where is the limit at which stops smart architecture and starting green. Smart architecture is architecture which dynamically adjusts to changes in climate and the use or the needs and requirements of the owner or user of the house, and that the realization of these dynamic changes in energy leads only where, when and how much is needed and it is architecture that can be operated from where we want. Green architecture is architecture with ideal internal conditions of comfort, with minimal negative environmental impact in terms of building materials and architecture and functioning with maximum energy efficiency. *"Smart buildings enable green buildings, and green buildings are invariably smarter."* (Andric, 2012).

The concept of smart architecture to this day has become quite accepted as one of the established standards in architectural design. This concept for a long time hasn't been new in modern architecture although it is still the medium on which the platform as possible and above all necessary to continue experimentation and development. The rapid development and use of computers and accompanying digitization primarily of low voltage installations is allowed on one side installation control and thus achieve rational consumption and energy savings, while on the other hand controlled regimes and comfortable way of using space. Fields that open concept of smart homes are much broader spectrum than it was initially thought to be. Smart House is not only architecture supported by modern technologies that perform energy saving, more comfortable and more comfortable use than its potential to allow users with limited needs, the elderly category and category specific to home care patients receive adequate maximum comfortable and safe operating space. This "digital promoted" the use of space with an extra "e" technologies and concepts to entirely new possibilities and forms of functioning in the cities. At the global level are open to new business opportunities at home, purchases from home, conducting banking and other financial transactions from home or doing business on the move, which is expressed through a new mapping of the city in terms of performance and movement. In this way we can minimize the needs of public transport, remote nursing care at specific categories, or remote monitoring and security of life. Rem Koolhaas-built (Rem Koolhaas) states that there is "*a potentially sinister dimension to, before you know it, being surrounded by a house full of sensors that can follow you on the moment of entry, to the moment you set your bedroom temperature, to the moment you set your likely return to your house.*" (Koolhaas, 2015). Wolf Stinnes, Solutions Architect for Special Projects, Dimension Data Middle East and Africa, says about intelligence in the building that "*the green building predicates an integrated design approach, and the resultant holistic assessment of technologies is the transformational agent that enables this vision, with connectivity as the critical attribute it creates. In this context, connectivity can be thought of as the ability to facilitate interaction among devices and systems to enable new services.*" (Andric, 2012)."*It creates", says Rem Kulhas (Rem Koolhaas), "unhealthy knowledge of your personal behaviour preferences.*" (Koolhaas, 2015).

Smart architecture is primarily a matter of installation of automatic control solutions. It makes the architecture more frugal, more comfortable, richer in terms of the formation of different scenarios prepared in the system installation of heating, cooling and lighting system, audio, video systems and ultimately controlled and safer system intrusion and fire protection. For the architectural profession sense of the architecture of developing technology and offering solutions that significantly affect the usefulness and functionality of that same architecture. The spatial and conceptual terms do not affect the way we design until via a smart center architecture that we do not want our architecture translate the philosophy of green architecture. We think that the revolution of smart technologies across the widest application in urban public spaces and infrastructure routes, which will put functioning city to a higher level.

In Serbia, the concept of smart architecture primarily based on the implementation of smart technology that increases the level of comfort and achieve a high quality of architecture which leads primarily to increased property values, which thus offers the concept of smart architecture. Smart Technologies seeks to achieving the best possible marketing architecture that is expressed through the greater comfort of future users and security subsystems burglary and fire protection. Saving energy is a priority, although the real results expected from her savings after a few years. A complete system of introducing smart technologies is an expensive proposition for the rich middle because as such it must be assisted systemic reforms and interventions.

THE CONCEPT OF SMART ARCHITECTURE IN SERBIA - ONE BELGRADE EXPERIENCE

The backbone of this paper is a case study - one Serbian experience in the design and construction of residential and commercial building in Dobračina Street in Belgrade who joined the family of smart architecture. **Exclusive residential building** called **INFINITY** is set as a building

in which there are no restrictions as far as the requirements of its users concerned. The author, main designer of this building is professor Miodrag Mirkovic architect, designer and co-author is assistant professor Dragan Marčetić who is also an architect and the author of the automatic control facility is Prof. Dr. Dragan Lazic.

Infinity consists of six residential and commercial apartments from the second to the seventh floor. Each of them occupies an entire floor except apartment on the top floor, which has two floors. We performed a complete integration of air conditioning, lighting, blinds, audio video equipment and technical facilities KNX / EIB technology. INFINITY building is equipped with the latest electronic, electrical and electromechanical systems that are integrated into a single management system or "Building Management System" based on the KNX / EIB standard. This solution for the management of the facility provides exceptional comfort with the rational use of energy, greater security and easier maintenance.

KNX / EIB system is a modern and reliable "Building Management System" that allows effective control and integration of multiple systems into a single management system.

In the INFINITY building Management System combines:

- lighting
- window curtains and blinds
- HVAC system (heating, ventilation, air conditioning and refrigeration)
- audio / video system
- visualization and access through the local area networks and internet
- intrusion, fire alarm system and video surveillance

Appliance is a high quality and refined design was created as a result of many years of experience in industrial and home control systems, major world producers GIRA, SIEMENS, REVOX and Philips PRONTO.

Lighting controlled by this system comes to the fore by creating light scenes and effects that can be easily created and easily referenced. All the ideas of the designer or investor, about the management of light, can be realized, but more importantly, that during the operation are completely redefined, and that when it does not carry out any changes in electrical installations - all changes to the program type are reduced to simple and short-term rescheduling system. **Window drapes and blinds** are controlled in a similar way as bright or together with lighting and air conditioning integrated into the predefined scene, which can easily be changed according to the wishes of members. **HVAC system** consists of floor and wall heating and cooling and ventilation system that needs enriched air from the air chamber. "Building Management System" sets optimal control of heating, ventilation and climatization by two criterions - comfort and energy savings. Preset Modes have been set but it is possible to control the temperature in each room separately. **Audio / video system** is also part of the installation with powerful smart remote controls Philips Pronto and multi-zone audio system REVOX. Four remote controls, for the living, bedroom and two children's rooms, via a local wireless network control all audio and video devices and lights, blinds and temperature in the room. It is also used for calling scenes, show images from IP cameras and view content from the internet service for news and weather. Living room, dining room and kitchen are one musical area, bedroom with bathroom and children's rooms each have two audio zones. Use REVOX audio server can be in all areas independently play music. One push of a button "Party" and in all areas of sound is synchronized in time which is practically impossible to perform classic audio / video equipment. Controlling sound and choice of songs and radio stations as possible using PRONTO remote control GIRA wall controllers, touch screen, iPhone, PC. **Visualization** for wall touch screen, PRONTO remote controls and PC laptops is custom made for this facility. An intuitive graphical interface provides a rapid movement of the object in space and pretty good control of all functions. Enables access via internet so monitoring and control is possible from any place on the planet. The security system

is integrated in the house INFINITY includes: burglar and fire alarm system, flood detection, video surveillance and alarm system.

CONCLUSIONS

Smart architecture has become our present and future. She is deeply applied in modern architecture at different levels and forms. System implementation is primarily a matter of decisions and investments in architecture, but also a precondition that we are in line with the times and new needs. New needs are not only expressed in the comfort of this architecture, but also in the green thinking at the same architecture. Contemporary circumstances in which we find ourselves as we are determined to think and create digitized and smart, smart and green, because we live in the 21st century, where each of us in his pocket holds a smart phone, through which at any moment we can inform the global climate change and the state of energy in world markets.

REFERENCES

Book:

Maksimović, Milan. 2008. *Arhitektura i*. Beograd: Arhitektonski fakultet Univerziteta u Beogradu.

Mekluan,Maršal. 1971. *Poznavanje opštila: čovekovih produžetaka*. Beograd: Prosveta.

Rogers, Richard. 1996. *Arhitektura: Modernistički pogled/Richard Rogers*. Beograd: Kologram, edicija Keystone.

Journal article:

Frampton, Kenneth. 2007. "Identity comes from political consensus" *ORIS Magazine for architecture and culture*, Volume IX, Number 46: 4-29.

Nouvel, Jean and Michelin, Nicolas. 2006. "Generic or specific architecture?" *ORIS Magazine for architecture and culture*, Volume VIII, Number 38: 80-97.

Internet source:

Google. 2015. "Koolhaas, Rem: *"Smart home technologies "potentially sinister" smart home technologies"*, de zeen magazine. 27. 05. 2015., Accessed January 8, 2016. http://www.dezeen.com/2015/05/27/rem-koolhaas-interview-technology-smart-systems-peoples-eagerness-sacrifice-privacy-totally-astonishing/

Google. 2012. "Andric, Mia: *Smart Buildings*: "The architecture of tomorrow, today", 2012. Accessed January 8, 2016.
https://www.dimensiondata.com/en-AF/Downloadable%20Documents/The%20Architecture%20of%20Tomorrow,%20Today%20Latest%20Thinking%20MEA.pdf

Google. 2003. "Architecture and Sustainability Norman Foster 2003." Accessed January 8, 2016.

http://www.fosterandpartners.com/media/546486/essay13.pdf