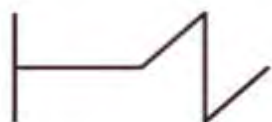


TEHNIČKI MUZEJ  
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TECHNICAL MUSEUM  
NIKOLA TESLA



Markita Franulić, TMNT, director  
Renovation of the Technical Museum Nikola Tesla and  
introduction of new contents  
MUT Conference, Zagreb, 20.10.2017.

**The H2020 project “CHEAP AND EFFICIENT  
APPLICATION OF RELIABLE GROUND SOURCE HEAT  
EXCHANGERS”  
2016-2017**

**TMNT – demonstration case**

In Cheap-GSHPs project, 6 real demonstration cases, in particularly notable cultural-historical buildings will be provided to test innovative solutions in cooperation with UNESCO.

The demonstration sites will be a concrete proof of the ability to integrate these technologies in cultural sites and will highlight how the innovative shallow geothermal heat exchangers applications may successfully overpass conservational constraints and barriers to geothermal power application in cultural sites.

## **The H2020 project “CHEAP AND EFFICIENT APPLICATION OF RELIABLE GROUND SOURCE HEAT EXCHANGERS”**

The Museum shall use the Cheap-GSHPs technology as part of its Sustainable Energy Education activities by highlighting how innovative geothermal power systems, also in the context of cultural buildings, may contribute to climate change mitigation policies.

# CHEAP drilling

## Reconstruction of the yard – 2017/18





# Hall A

- building renovation continues (City of Zagreb),
- the new permanent display concept will be created



- Ministry of Regional Development and EU Funds
- "Preparation and implementation of integrated development programs based on the restoration of cultural heritage"
- **Project name: Tesla's New Clothes - Museum of Science and Technology for the 21st Century - 10/2017 – 12/2019**
- Applicant: Technical Museum of Nikola Tesla, Zagreb
- Project Partner: City of Zagreb (without financial stake)
- Project type: A group of activities A - preparation of project documentation
- Total project value: cca 3.400.000 HRK, EFRR grant: 2.650.000 HRK
- The contract was signed October 5th 2017 (submitted in March 2016)  
Reconstruction of the yard and hall B

## OBJECTIVE OF THE PROGRAM IMPLEMENTATION

- Reconstruction and presentation of cultural heritage
- Introducing new content
- Increased employment
- The City of Zagreb gets a new, attractive location in which new cultural and tourist facilities and products will be developed



## EXPECTED RESULTS OF THE PHASE 1

Investment Category	Component	Documentation
<b>Cultural Heritage</b>	Reconstruction of Hall B and the yard	Current state documentation Conservation study Conceptual solution Conceptual project Geodetic and geotechnical elaboration Main project Execution project with costs Conceptual project of the permanent display projekt postava Execution project of the permanent display Museological study Feasibility study with cost and benefit analysis
<b>Science and Education</b>	Equipping the Multimedia Hall	
	Introducing new content / Creating new departments	
<b>Accommodation and food</b>	Construction and equipping of the cafe	
<b>Accessibility</b>	Increased Accessibility	
	Introduction of labels on Braille Writing Introduction of Wi-Fi Zone (free hot spot) Arranging part of the yard for parking of the buses	Marketing Plan
<b>Retail and crafts</b>	Introduction of a souvenir shop - Internet sales development - museum souvenirs production	
<b>Promotion and Visibility</b>	Promotion of Tesla's New Clothes - Museum of Science and Technology for the 21st Century	





## RENOVATION OF THE YARD

It covers an area of 4,000 m<sup>2</sup>: 60% of the yard area in the function of traffic and communication, 40% in function of the exhibition space.

**1st phase: 2017/18, funding of the City of Zagreb: infrastructure and surface reconstruction;** the planned introduction of the Wi-Fi zone has been achieved

**2nd phase: EU funds: project documentation + realization**

**a) The theme park of renewable energy**

The goal is to create a kind of city attraction related to science, technology and ecological concepts

- Arrangement of museum yard implies the arrangement of an entertaining and educational park with exhibits that are mobile and entertaining and for whose use or experience it is not necessary to visit the Museum
- Selection through a public tender, which will provide art-technical installations for the establishment of a theme park
- It will serve as an incentive for educating visitors about renewable energy sources in the permanent exhibition

**b) Horticultural arrangements**





























## Hall B - reinforced concrete structure

Foundations, "B" columns, ceiling construction in ground floor "B" and entrance staircase from the yard on the 1st floor of the hall "B – are made of reinforced concrete structure (different from the hall A)

“The ceiling structure in the hall "B" - is a rectangular reinforced concrete ceiling of 75 cm high, of which the pressure plate is 13 cm thick and the ribs are 100 cm long and the ribs are laid longitudinally in the direction of east and west On the lines of the outer columns and on the line of the middle pillars, there are strong longitudinal beams of 50/120 cm (outer) and 5005 cm (inner) dimensions. All of these elements are in good condition, show no signs of loss of good initial properties, and are suitable for further use”.

Architect - conservator Mr. M. Perušić, 2005

## HALL B RENOVATION

- Infrastructure renovation of the hall "B" covers 754 m<sup>2</sup> on the ground floor and 1,952 m<sup>2</sup> on the upper floor.
- Prerequisite is the new storage – common for several museums, the Hall V .....?

### Includes:

- **Reconstruction and presentation of cultural heritage**
- **New permanent display and content**
- **New infrastructure and services**
- Increased **quality of visits and inclusiveness** by arranging a visitor service and access for disabled people



## HALL B RENOVATION

- Infrastructure will be adapted to include elevator and adaptation of the exhibition space **for people with disabilities.**
- Contribution to **social inclusion** will be facilitated through interpretative legends adapted to blind and partially sighted people.
- Infrastructure adapted for introduction of a **Family Friendly Standard**, including breastfeeding space, and child feeding space.



## Introducing new content - new permanent display

The number and scope of themes increases, enriching the museum content, Exhibiting a large part of the museum objects that are not now presented.

### a) Communications – 650 m<sup>2</sup>

The new department will include museum objects from a number of collections and areas: writing, computer technology, telecommunications, radio and TV ...

The activity includes the creation of the concept of the new permanent exhibition, the setting up of technical and pedagogical standards, the equipping of a new department with modern technology and the education of employees.

## Introducing new content - new permanent display

### b) *Made in Croatia* – 450 m<sup>2</sup>

A permanent exhibition with a historical cross section and present products and concepts. The setting would be conceived in a way to show who and what in Croatia's science and technology has contributed to the world heritage. In the identity of Europe and the world, Croatia has a small, but relatively valuable contribution

### c) **Section of new inventions** – 300 m<sup>2</sup>

The introduction of new content (subjects) in cooperation with the academic sector, civil society associations, citizens, the private sector and the Croatian Association of Innovators. In the section of new inventions, technical innovations of Croatian innovators would be exhibited and the setup will change. Presentation materials with the use of modern multimedia equipment would be available in 3 languages.



**Renovation and equipping the exhibition hall – 400 m<sup>2</sup>**

**New space for educational programs - 250 m<sup>2</sup>**

Extending the Educational Role of the Museum and in the context of the name of Nikola Tesla that the Museum carries, which is to encourage learning through research

**Equipping the multipurpose hall**

**New information desk and wardrobe**

**Construction of sanitary nodes** - in the new permanent exhibition area and exhibition and multimedia hall (with the introduction of a toilet for the disabled).

## **Souvenir shop - 40 m<sup>2</sup>**

Expanding cooperation with artists, designers, craftsmen and creative industries is planned to create new or increase the number of souvenirs that will be sold in the souvenir shop and via the internet store

## **Construction and equipping of the cafe - 110 m<sup>2</sup>**

Designed + food and beverage offerings based on local manufacturers' offer as well as creating a specific offer for the purpose of interacting with visitors (Tesla menu)

## **Increasing access to TMNT**

As part of the adaptation of the Museum and the setting for people with special needs and disabilities, labels in the permanent exhibition on the Braille letter are planned.

The introduction of a free Wi-Fi zone in the entire Museum.

A part of the yard will be arranged for the parking of buses to be served by a group of visitors.



**Renovation of TMNT Hall V building  
for the introduction of new contents and revitalization of the area  
(OPKK-SC 6e2)**













ZGRADA POSLOVNE NAMJENE  
ZAGREB, TRATINSKA 2

**PRESJEK A-A**  
**ZONE SANACIJE**  
**M 1:100**

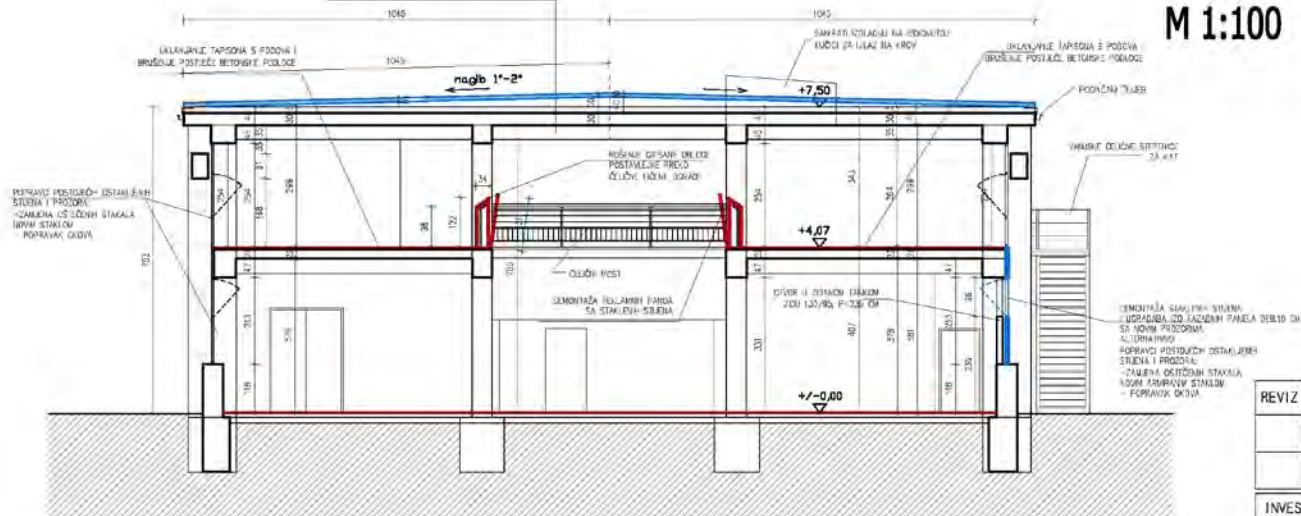
SARAJEVO KROVA NA TILIFACIJI U JETNOJ OD VARIJANTU

L. VÄELJÄRVA – OSNOVNA

SARAJEVO GULELO KROVA NA YAHIN DA SE ZACHITANUJI SVA POSTOJED  
SEMIJA, A PO DOLJEKIM PROMENI SE POSTAVLJA PIV DILATACIJA ZAPOSLENIM TERICA  
POTRBNO ODGOVORJE KROVNE KONSTRUKCIJE NA PIV DILATACIJE RADI SUSLANJA TE  
TERAKIJA DILATACIJE IMTVA, NA POSLEDICU IMTAPRIMO SE POSTAVLJA TIMO DILATACIJA,  
SA ZASTITOM DILATACIJE TE ZAVRSHI SVI PIV VARNOSTI TRAKOM  
PO RUHU SE SVODI POSTOJEĆIM IMENI PROPU, POSTOJEĆA LAMARJA SE ZABRANJA,  
A PROMENOM SE DEMONTIRA I PROMENOM MONTRA

L. G. DELANEY

SAKLADIŠA SANO IZ OBAJ DVOJICATAK BIVANJSKOJ  
LEPIONOM UZ PRETHODNO DAVANJE KONTAKTIRANJE  
MIDANJE SUDAJA DO BETA, PLOČE, KROVNE GLAVICANE BETA,  
GRADJE TERNIO ZLOUČAJE I ZASTITE ZLOUČAJE, ZAVRŠNE SLOJ  
LEPIONOM I P SLOJA SE ZAVRŠIO DO KLEJLO POKRŠNE KROVA.  
DAVANE SLOJ SA MINERALNI VOSPOJU  
POSTEPIJA INJAKA SE ZADRAVA, A CROMOBAN SE BIVANJSKI  
PONOVIO MONIRA



## RUŠENJE

GRADENJE, SANACIJA,  
POPRAVAK

REVIZ	DATUM	OPIS

INVESTITOR:  
TEHNIČKI MUZEJ  
ZAGREB, SAVSKA CESTA 18

GRADEVINA: SANACIJA POSTOJEĆE  
ZGRADE POSLOVNE NAMJENE

**SADRŽAJ:**

**PRESJEK A-A**  
**ZONE SANACIJE**

DATUM: 07.2015.

MJERILDO: 1:100

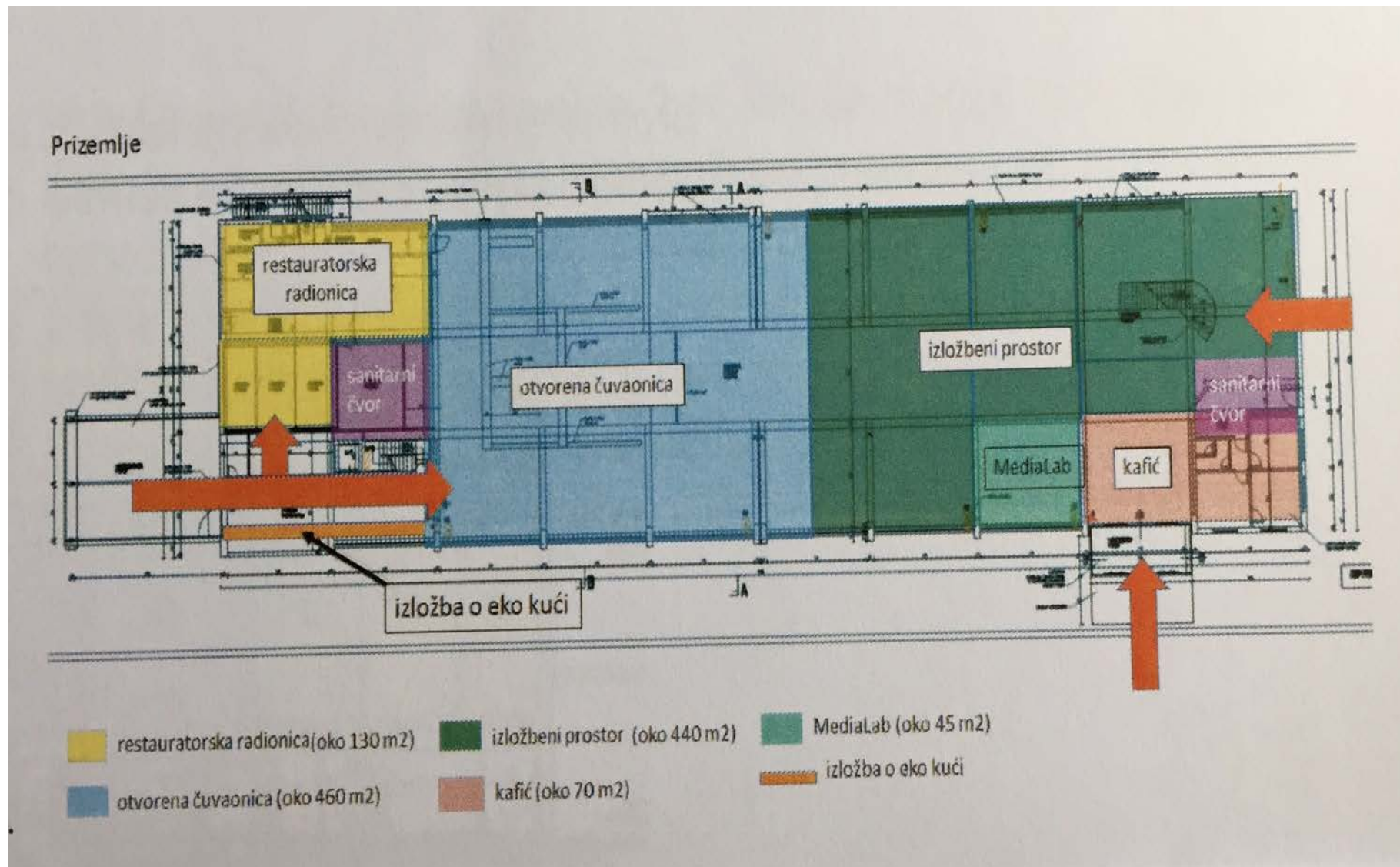
- The program is included in the **Indicative List of Urban Agglomeration Zagreb** as one of the measures that contributes to the achievement of the Development Priority 3.4. - rebuilding brownfield locations
- Estimated amount of **co-financing from EU funds: 4.500.000 HRK (600.000,00 Eur)**
- The warehouse building that the Museum built in the late 1960s for the purpose of future expansion was **neglected and out of function** due to poor construction status and obsolete and dysfunctional infrastructure. The building is located in a triangle between the two railway lines and Tratinska Street, in the wider city center, but **in a zone without any public services.**

The aim of the program is to build a building to house:

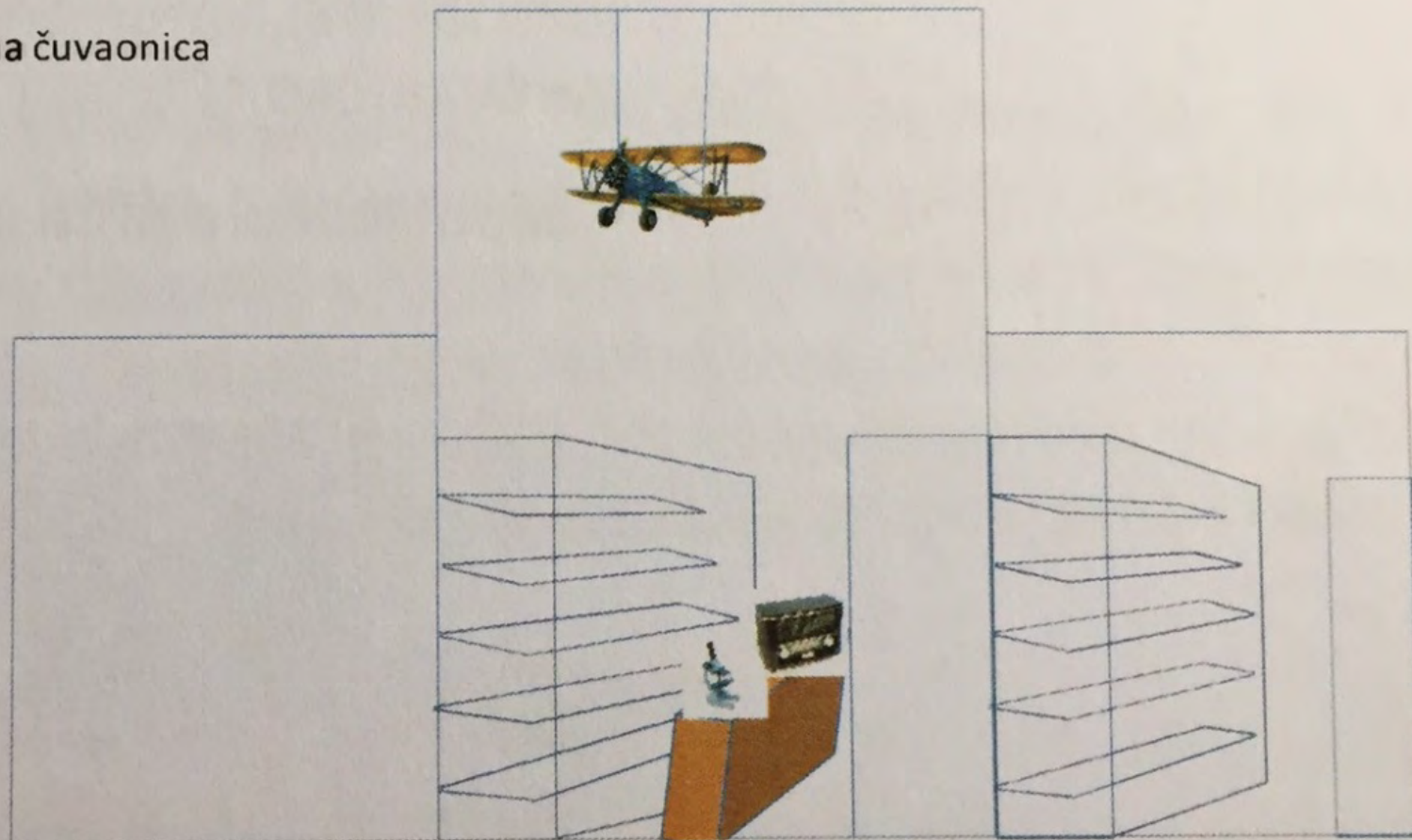
- **an open depot of museum material,**
  - **restoration-preparation workshop,**
  - **space for education,**
  - **Medialab - Innovative Laboratory,**
  - **exhibition space**
  - **coffee shop.**
- 
- The museum exhibits only a part of the material in its permanent exhibition, and a large number of interesting and attractive items are inaccessible to the public. They are also stored in inadequate microclimatic conditions and in the premises of the Museum that are planned to be arranged as exhibition spaces. The project will make this part of the objects available as a special attraction of the Museum (view behind the scenes).
  - The attractive exhibition area will further contribute to the revival of this neglected part of the city.



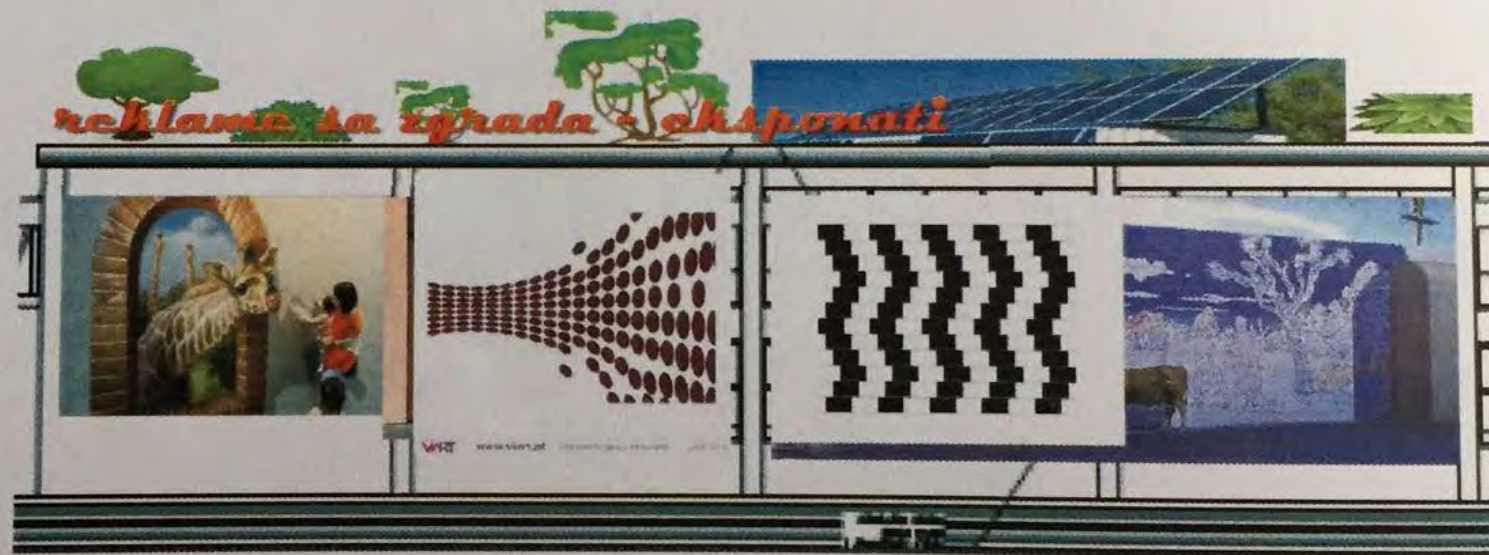
# CONCEPT OF THE PURPOSE OF THE HALL V (Želimir Laszlo, 2016)



## Otvorena čuvaonica











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