

LASER VALLEY

LAND OF LIGHTS

International Competition
Măgurele - România

LASER VALLEY — LAND OF LIGHTS

International Ideas Competition

COMPETITION BOARD

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Ministry of National
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INTERNATIONAL IDEAS COMPETITION

1. TOPIC

In the autumn of 1949, the Romanian Academy founded its Institute for Physics in Bucharest. The Institute was spearheaded by the towering figure of Horia Hulubei (1896–1972), a member of both the French and Romanian Academies, who had studied under Jean Perrin and Marie Curie.

Seven years later, in 1956, the Institute split into two separate entities: the Bucharest Institute for Physics (Institutul de Fizică din București/IFB), located within the School of Physics, and the Institute for Atomic Physics (Institutul de Fizică Atomică/IFA), located within the town of Măgurele. It is within IFA that Romanian scientists designed and developed, under the guidance of Horia Hulubei, their first electronic computer. It became a prominent achievement within the entire Soviet bloc.

As time passed, this research tradition expanded dramatically. Hence, in 1962, IFA introduced the first Romanian laser. A few years later, it spearheaded the introduction of nuclear energetics in Romania. Shortly afterwards, in 1974, the radioisotope production centre and the nuclear waste processing and storage facility became operational. By that time, IFA was incorporated within the Central Institute for Physics (Institutul Central de Fizică/ICEFIZ), an organisation that governed the entire Romanian scientific and industrial output in the field of physics.

Subsequently, new specialisations rapidly emerged: materials technology; nuclear reactors; radiation technology; space sciences; earth physics, seismology, etc. Hence, during the 1970s, new

and modern departments came into existence, such as the Tandem Accelerator, the Centre for Radioisotope Production and the Centre for Nuclear Medicine, as well as the Radioactive Waste Processing Unit (STDR).

Concomitantly, construction began on the Măgurele Platform, which aimed at socially integrating students of the Faculty of Physics and researchers of different generations, who chose not only to work in Măgurele, but also to live there.

After the fall of the communist regime, IFA replaced ICEFIZ and incorporated the following institutes: the Institute for Materials Physics and Technology (IFTM); the Institute for Physics and Technology of Radiation Devices (IFTAR); the Institute for Gravity and Space Sciences (IGSS); the Institute for Optoelectronics (IOEL); the Institute for Earth Physics and Seismology (CFPS), as well as other research facilities from around the country.

In 1996, IFIN was renamed the Horia Hulubei National Institute for Research and Development in Physics and Nuclear Engineering (IFIN — HH), a designation it still holds today. Four years later, in 2000, a multipurpose high-dose gamma-ray irradiator (IRASM) went into operation.

A remarkable development occurred in 2001, when IFIN — HH developed the Centre for Interdisciplinary Research and Applications (IDRANAP), which soon became a reputed centre of excellence, duly endorsed by the European Commission. IDRANAP specialises in the application of nuclear methods within the fields of environmental pollutants, biology, the medical sciences and materials science.

Capitalising upon this rich history and upon Romania’s accession to the European Union, IFIN — HH carried out a major investment project, entitled Infrastructure Development for Frontier Research in Nuclear Physics and Related Fields (IFIN — DIC), which ran between 2009 and 2013. Concomitantly, the year of 2012 saw the implementation of Extreme Light Infrastructure — Nuclear Physics Project (ELI — NP), the most important investment in research infrastructure throughout the country’s history.

ELI — NP represents the Romanian pillar of the pan-European distributed research infrastructure

ELI (<http://www.eli-np.ro/about-eli.php>). It will consist of two major state-of-the-art scientific instruments: A very high intensity laser system and a very intense brilliant gamma beam system.

As a Research Centre of a European stature that challenges the frontiers of science and technology in fundamental and applied research, ELI — NP is expected to bring significant advances in the basic sciences — from lasers and nuclear physics to astrophysics — as well as major breakthroughs in the application of societal interests within the material and life sciences.

It is expected that ELI — NP will attract more than 1,000 Romanian and international researchers, thereby transforming the town of Măgurele area into a prominent international hub for the scientific community.

The Laser Valley — Land of Lights International Ideas Competition therefore aims to capitalise upon this privileged situation, by seeking direction for developing the larger Măgurele area, stretching from Bucharest, in the north, to the river Argeş, in the south.

2. COMPETITION BACKGROUND

The Laser Valley — Land of Lights International Ideas Competition is an initiative led by the Romanian Ministry for National Education and Scientific Research, with the support of the ‘Ion Mincu’ University of Architecture and Urban Planning and the Technical University of Civil Engineering in Bucharest.

Between March 18th and September 5th 2016, national and international interdisciplinary teams of students, early graduates and young researchers are invited to innovate and compete in illustrating the Laser Valley — Land of Lights urban development vision. Consortia between Universities and Research Centres are strongly encouraged to participate.

Aim of the competition is to illustrate the Laser Valley — Land of Lights vision for the year 2035: A dynamic and open research ecosystem, thriving within a prime built environment, that is both interesting and efficient. A place for living, for having fun, for learning, a centre for science, for research, and an innovation, business and mobility core.

The 2035 urban development vision for the Laser Valley — Land of Lights competition will encompass the entire area between Bucharest, in the northern part, and the Argeş River, in the southern part, thereby including the Municipality of Măgurele, the Mihăileşti Lake and the 1 Decembrie Port on the Argeş River.

For the exact contours of the competition area, please consult the geo-referenced map comprising the intervention areas. Please note that the contours depicted on the map represent the following entities:

- The administrative boundary of the Măgurele Local Administrative Area (LAU 2);
- Its direct hinterland, which connects Măgurele to Bucharest and the Argeş River;
- The 1 Decembrie Port on the Argeş River and its surrounding area.

Taking into account the currently unsustainable development path of the Măgurele area, as well as the inherent potential of the ELI — NP Project to correct it, the 2035 urban development vision rests upon the following three ideas:

1. Research and technology become the main drivers of local and regional development;
2. The research environment exerts its influence upon local development, thereby resolving the tension between the antiquated built environment and the new one;

3. The Laser Valley spatial concept integrates the green open spaces and capitalises upon the privileged location the town of Măgurele holds in relation to Bucharest.

This urban development vision is set against the current regional and urban context of the competition area.

3.1 The Regional Context

Geographically, the Municipality of Măgurele is located in the south-western part of Bucharest, at a distance of about six kilometres (44° 23' 41" N and 26° 3' 58" E). Its northern part is crossed by the Bucharest Ring Road, while its southern part is crossed by the DJ401A County Road, which runs somewhat parallel to the Bucharest Ring Road, thereby connecting Măgurele to the municipalities of Jilava and Vidra, in the east, and to the municipalities of Bragadiru and Bolintin-Vale in the west.

Two rivers run south of the town, namely the Ciorogârla and the Sabar. In addition, the Argeş River flows further down the south. Together, they form an intricate system of green open spaces, agricultural lands and protected wooded areas. They should therefore be given careful consideration within each proposal.

This aspect deserves particular attention, as the climate of the region is characterised by hot and dry summers and by cold winters. The average yearly temperature in July rises to 22.5 °C, while the average temperature in January drops to – 2.5 °C. The average yearly temperature is 10.5 °C, accompanied by an average yearly rainfall of 550 mm.

3.2 The Urban Context

The Local Administrative Unit (LAU 2) of Măgurele spans a total area of 4515.85 ha, divided into 4017.00 ha of built-up area and 498.85 ha of unincorporated area. It comprises the town of Măgurele, as well as four other villages: Vârteju, Alunişu, Pruni and Dumitrana. The exact contours of the Măgurele Local Administrative Unit appear within the geo-referenced map comprising the intervention areas.

Demographically, the Municipality of Măgurele displays the following profile: During the 1990s and the early 2000s, the total population hovered around the threshold of 8,000 inhabitants. After the mid 2000s, the population began growing slowly, until it reached the threshold of 10,077 inhabitants in January 2015.

Part of this growth is due to in-migration from Bucharest, a process that has started some time during the early 2000s and continues to this day. Considering the current economic development path of Bucharest, as well as the ELI — NP project, this process is likely to gain momentum in the near future, as the municipality becomes an international hub for the scientific community.

The structure of the three main age groups is similar to other parts of the Ilfov County, the region which acts as the direct hinterland for Bucharest: In 2015, the population aged 0 – 14 amounted to 14.8% of the total population, the population aged 15 – 64, to 71.7%, and the population aged 65+, to 13.5%, respectively. This gives a total dependency ratio of 39.6%.

From an economic perspective, the Municipality of Măgurele harbours the potential of becoming the centre of a high-technology cluster, as it displays an exceptional concentration of high value added economic activities. In addition, the Municipality of Măgurele seems to have carved itself a prominent role within the supply chains for pharmaceuticals. Furthermore, the area around Măgurele acts as one of the main suppliers of agricultural produce for Bucharest.

3.3 Current Trends

Building upon existing analyses and projections, the following development trends manifest themselves within the Măgurele area:

1. Current demographic projections for the Municipality of Măgurele propose a total population of around 15,000 inhabitants for the year 2025, building upon both vital statistics and the process of in-migration from Bucharest. Please note, however, that these projections do not take into account the impact of the ELI — NP Project. Depending on the capacity of the municipality to capitalise upon the project, the proposed figure might change;

2. The problem of urban sprawl has become poignantly manifest: The population density within the Municipality of Măgurele has plummeted to 250 inhabitants/km2 in 2015. This is a direct consequence of an unsustainable expansion of the built-up area, amounting to some 331%, which is expected to tax the municipality for years to come;

3. The environmental impact within the entire area seems to be on the rise. This observation is especially valid when considering the critical infrastructure of the water supply and sewerage systems. The problem reveals itself when assessing the quality of groundwater. Hence, the shallow aquifer, which supports the entire domestic water consumption within the rural areas surrounding the Municipality of Măgurele, is of a poor quality, being contaminated with organic substances.

4. MAIN CHALLENGES

Taking into account these trends, each competition entry has to address the following challenges:

- 1. **To design a highly efficient, compact and resilient urban form**, in response to current urban sprawling processes;
- 2. **To envision an integrated transport system for the entire area**, which explicitly favours public transportation and soft mobility;
- 3. **To carefully design and locate amenities**, so that they stimulate a dynamic interplay between research, education and entrepreneurship;
- 4. **To plan a comprehensive system of regional and urban parks** that link municipalities with the three rivers flowing through the region. The proposed system has to fit seamlessly with the proposed network of public spaces;
- 5. **To capitalise upon the connection between Bucharest and the Danube**, through the Bucharest – Danube Canal and the Port of 1 Decembrie on the Argeş River.

In addition, competitors are asked to produce a clear timeframe for the implementation of their proposal.

Please note that the five challenges outlined above can be addressed in two different types of proposals:

- 1. Proposals for **the entire competition area**, as depicted within the geo-referenced map comprising the intervention areas;
- 2. Proposals that concentrate upon **particular sectors within the competition area**.

5. DESIGN CRITERIA

Each solution should be creative, consistent and should set high design standards, while at the same time adapting to the local and regional context described above. Competitors have to opt for one of the two different types of proposals described above, i.e. proposals covering the entire competition area or proposals focusing upon particular sectors within the competition area. Furthermore, competitors are free to elaborate upon any proposals, as long as they meet the following design criteria:

5.1 Urban Planning and Design

- Increase the efficiency and the resilience of the built environment;
- Improve mobility, by introducing a rich variety of urban and regional transport systems;
- Improve the quality of public spaces, with the primary goal of encouraging social interaction;
- Integrate the network of public spaces within a coherent and diverse system of regional parks;

5.2 Economic Stimulation

- Introduce various economic activities and mixed use areas, in order to generate new job op-

portunities for different income and age groups, while observing the principle of equal employment opportunities;

- Identify high-value areas, based on location or on the possibility of accommodating new uses, without adversely impacting upon the residential units or the living conditions of the inhabitants;
- Consider various place-bound solutions for technology and knowledge transfers.

5.3 Social Integration

- Promote social diversity and address the needs for disabled people;
- Envisage solutions that offer communities the opportunity to participate in a wide range of activities.

5.4 Environmental Improvement

- Achieve environmental sustainability within a reasonable time horizon;
- Improve the microclimate through green solutions;
- Promote the use of local, natural materials, passive solar design and climate-suitable design methods.

5.5 Governance and Partnership

- Introduce academic and social responsibility whereby students, recent graduates and academia provide technical knowhow to local and central authorities as well as communities.

6. DEADLINES

The competition runs according to the following schedule:

Official Design Brief Launch	March 18th, 2016
Registration and Submissions	September 1st to 5th, 2016
Shortlisted Entries	September 13th, 2016
Announcing the Winners	September 20th, 2016
Award Ceremony and Exhibition	Beginning of October — The exact dates will be announced on the official website of the competition.

7. HOW TO PARTICIPATE

The competition is open to both national and international interdisciplinary teams of students, early graduates and young researchers.

There are no entry fees to enter the competition. Please note that the official competition language is English.

All entries will be submitted in digital format only. All relevant information pertaining to the registration and submission procedure will be published on the competition website www.laservalleycompetition.ro on September 1st, 2016.

Between September 1st and 5th (23.59, Bucharest time, GMT+2), each team will have to upload the entries online, in the dedicated area of the official website of the competition, www.laservalleycompetition.ro. The registration of the teams will take place when submitting the final entries.

8. SUBMISSION REQUIREMENTS

Submissions will be made in a digital format only. The team leader should make the final submission on behalf of the team.

Each team will have to submit the following two plates:

- PLATE 1:** Image or Visual (rendering, collage, sketch, etc.), depicting the main concept of the proposal;
- PLATE 2:** Master Plan or Urban Layout for the entire competition area or the sectors considered within the competition area. For details, please consult Sections 3, 4 and 5 of this design brief.

The competition will provide an online submission form that will require each team to fill in the following:

1. A valid e-mail address;
2. Information required to display the project on-line:
 - 2.1. An entry title (size: a maximum of 100 characters, including spaces and punctuation marks);
 - 2.2. The authors' names and affiliations;
 - 2.3. A description of the project (size: between 1500 and 8000 characters including spaces and punctuation marks);
 - 2.4. A cover image JPEG format, 1200 x 630 pixels. This should be a representative image of the project. It should be a single image, not a collage, and should not contain any text or writing. Please note that when publishing the project on the website, the organizers might choose to use a different image. The image must not contain information that would identify the authors;

- 2.5. Up to twenty images, in JPEG format. The maximum image width or height is 2048 pixels. The images must not contain information that would identify the authors;

3. Information required to display the project in print:

- 3.1. Two vertical panels of 4134 x 5906 pixels, TIFF format saved with LZW compression. A rectangle of 177 x 60 pixels in the top right corner of each panel should be left blank as it is reserved for the use of the competition organisers. The organisers will print the panels of the shortlisted entries on 70 x 100 cm boards. The panels must not contain information that would identify the authors.

Important Notice: The image formats and dimensions and the text length limits are mandatory and enforced by the on-line platform. Non-conforming entries will be rejected on the spot and an explanatory message will be displayed.

9. OWNERSHIP OF ENTRIES AND PUBLICATION RIGHTS

Once submitted, all entries become the property of the Ministry of National Education and Scientific Research. The Ministry reserves the right to publish or use the entries in any way, with proper acknowledgment of the authors.

At the end of the competition, the organiser will exhibit the selected proposals in the town of Măgurele, Romania.

The organiser also intends to compile a booklet based on the selected proposals. The booklet will be available in print format and it will also be downloadable online.

10. COMPETITION ADVISORY BOARD

The competition advisory board comprises planning professionals from the 'Ion Mincu' University of Architecture and Urban Planning in Bucharest.

Questions concerning the design brief will be collated, and clarifications on various matters will be displayed on the official page of the competition, in the Question and Answer window.

The advisory board will only communicate electronically. Any questions pertaining to the competition should be addressed to the following e-mail address:

laservalleycompetition@gmail.com

11. THE JURY

The Jury for the competition is comprised of internationally acclaimed professionals, both from Romania and from abroad. All Jury Members are kindly volunteering their expertise and time. The Members of the Jury are:

1. **Gülsün SAĞLAMER**, Professor of Architecture at Istanbul Technical University (ITU), Executive Committee Member of the International Association of University Presidents (IAUP); President of the Community of Mediterranean Universities (CMU);
2. **Leen van DUIN**, Professor of architectural design at the Delft University of Technology, School of Architecture;
3. **Dan HANGANU**; Professor, University of Montréal, Montréal, Professor, McGill University, Montréal; Honorary Member of the Romanian Academy;
4. **James HORAN**, Professor Emeritus, Ireland's representative on the Architecture Sub-Group advising the European Commission on architectural education and the Professional Qualification's Directive;

5. **Emil Barbu POPESCU**, Professor, President of the “Ion Mincu” University of Architecture and Urban Planning, Bucharest.
6. **Constantin SPIRIDONIDIS**, Professor, School of Architecture, Aristotle University of Thessaloniki.

12. SELECTION PROCESS AND EVALUATION CRITERIA

In selecting the winners, the submitted proposals will be assessed on the following criteria:

1. Ability to articulate creativity with innovative ideas. Due to address different urban scales, the evaluation will be based on the concept, the idea and the approach to solving the challenges described within the design brief;
2. The overall concept and how well it responds to the competition aims, design criteria, and how the project interacts and integrates with the actual context and particular conditions of the area in question;
3. Originality and novelty in the use of sustainability concepts, including environmental and social initiatives, economic activities, etc.;
4. Ability to integrate various partners in the urban development process;
5. Quality of the design solutions. Please note that submissions will not be judged on the basis of the technology used in producing them. Hence, various forms of graphical representations are acceptable, as long as they convey the solution clearly;
6. Clarity and quality of the presentation materials;
7. Clear communication of key aspects of the design approach.

13. COMPETITION TOOLKIT

All the necessary information regarding the competition is available on the official website of the competition: www.laservalleycompetition.ro.

Each team will be provided with an information pack, which is comprised of the following components:

1. A PDF file with the official competition design brief;
2. A set of pictures from the proposed area, with their location marked on a plan;
3. A geo-referenced TIFF file with the entire competition area;
4. A geo-referenced TIFF file with the main intervention areas, proposed by the organiser of the competition.

14. NOTIFICATION OF WINNERS

The entries enlisted in the shortlist will be announced on the 15th September, 2016 on the official website of the competition — www.laservalleycompetition.ro

Following the jury deliberations, the final results will be officially announced on September 20th, and will be published on the official website of the competition.

Winners and runners-up will also be notified by e-mail.

15. AWARDS

The Jury will select from the submitted projects a total of 9 finalists, which will receive the following awards: three main prizes, 3 sponsored prizes and 3 special mentions.

The finalists will be officially awarded at the beginning of October within the final exhibition, which will take place in Măgurele, Romania. Finalists are kindly invited to present their proposals within this exhibition, and are encouraged to promote their ideas with the help of any visual media they see fit (e.g. renderings, models, animations, etc.).

The Winning Team will be awarded **6,000 euros**. The first runner-up will be awarded **4,500 euros** and the third place will be awarded with **3,500 euros**. Each one of the three sponsored prizes will amount to **2,000 euros**.

The awards amount to a total of **20,000 euros**. Certificates of participation will be issued by the organiser.

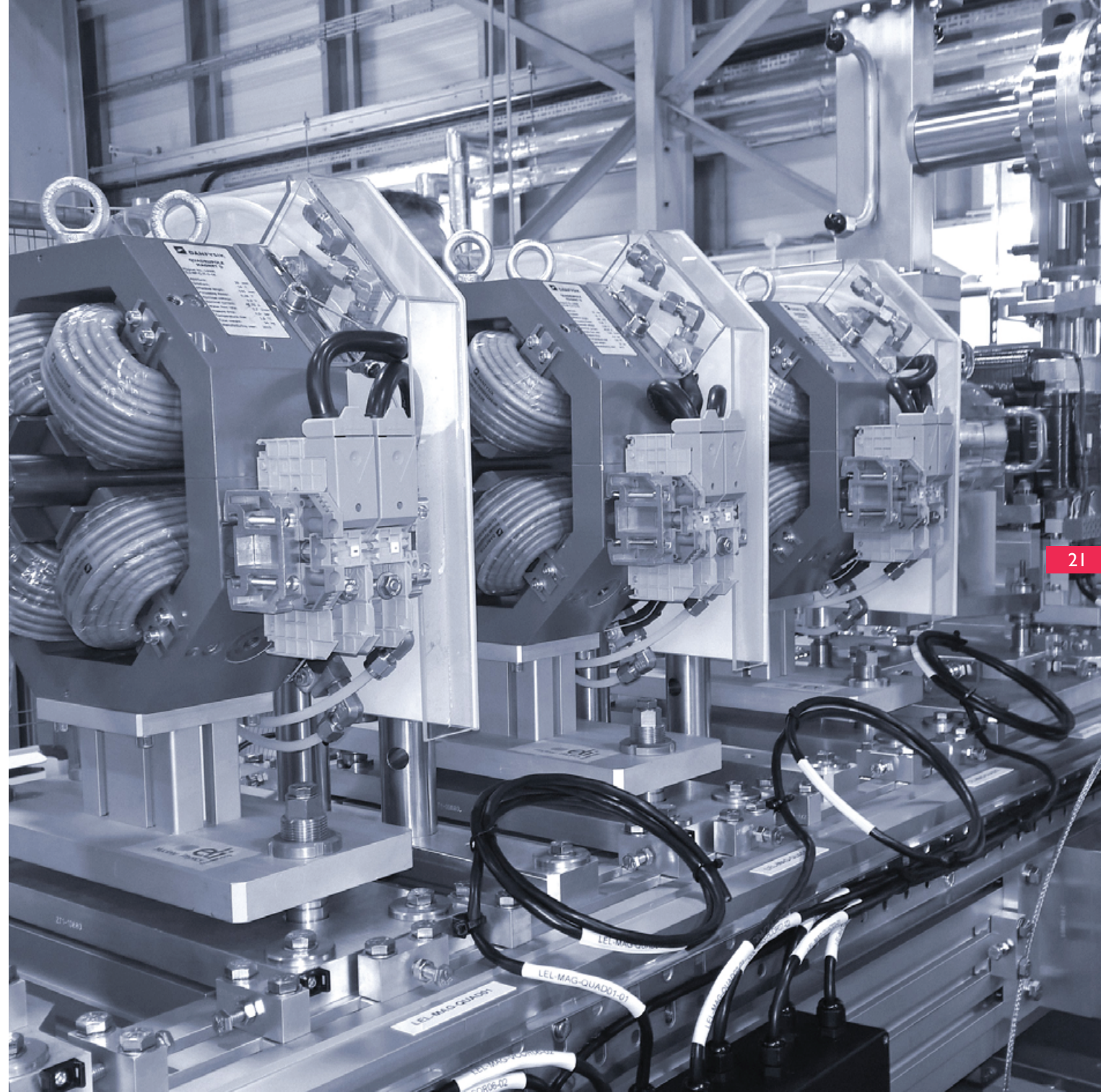
16. OBLIGATIONS, DISCLAIMER AND EXCLUSION

Jury members, advisory board members or any other persons involved in the organisation process are not allowed to participate in this competition.

The organising committee will not be responsible for delay or for breaking any of the conditions mentioned in the sections above. This includes the mention of the names of the participants on any of the submitted boards.

17. ADDITIONAL INFORMATION

Further information and materials are available on the official website of the competition — **www.laservalleycompetition.ro**.





COLLECTIVE HOUSING - MĂGURELE NORTH

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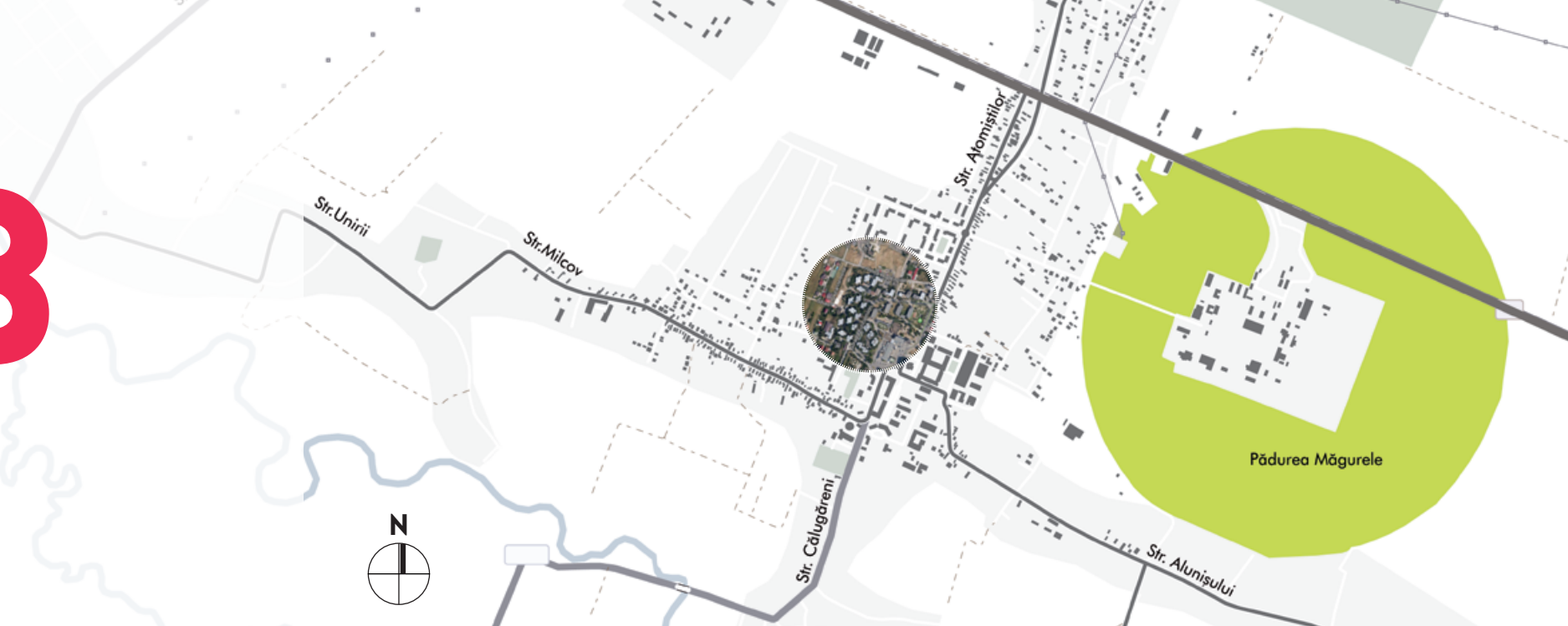
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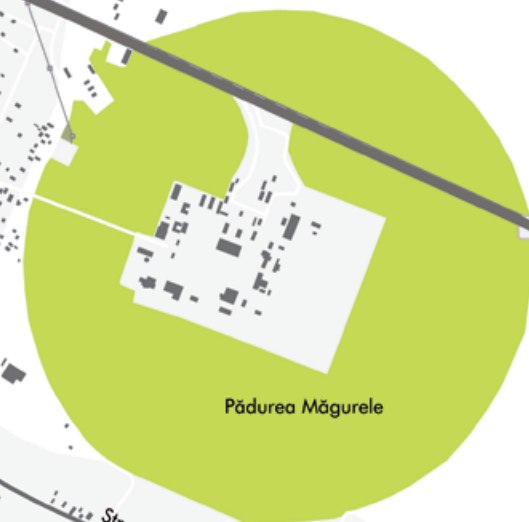
MĂGURELE CENTRE



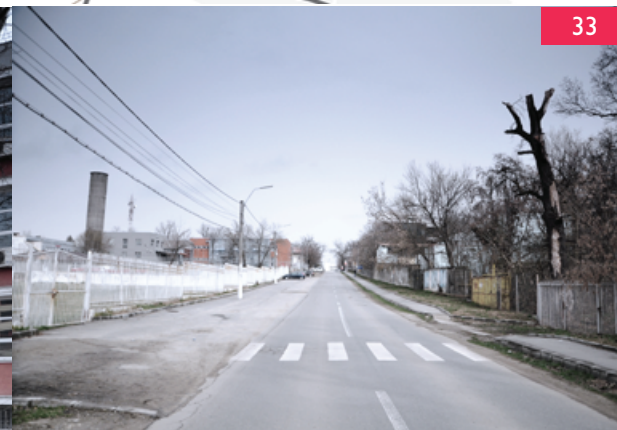
COLLECTIVE AND STUDENT HOUSING
MĂGURELE CENTRE



INDIVIDUAL HOUSING - MĂGURELE SOUTH-WEST



RESEARCH INSTITUTES - MĂGURELE SOUTH



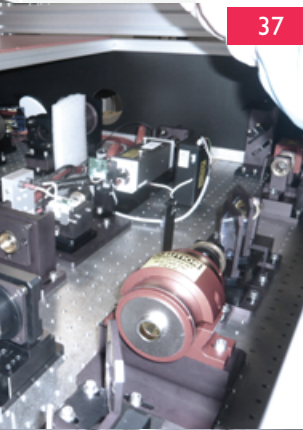
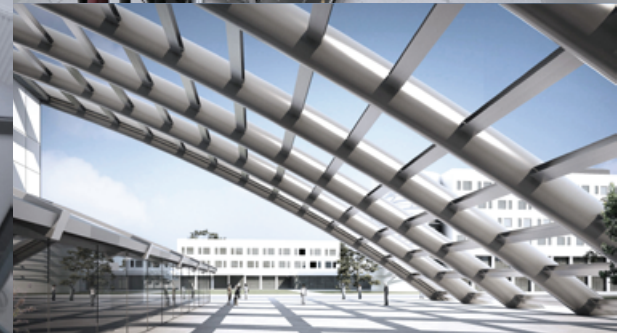
THE FACULTY OF PHYSICS OF THE UNIVERSITY
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