PROJECT

Multi-tenant cybersecurity operations centre designed
as an open cloud service with machine learning elements

V20 – Creation of an online platform

KPB7 – popularization activities

type – information portal

submission month – M15

Funded by the European Union
NextGenerationEU

RECOVERY AND RESILIENCE PLAN

GOVERNMENT OFFICE OF THE SLOVAK REPUBLIC

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1 BASIC INFORMATION ABOUT THE ONLINE PLATFORM

The online platform is a website that was created within work package KPB7 with the aim of supporting popularization activities and the open sharing of the project results. The platform enables:

- sharing of the knowledge acquired,
- publication of datasets and software components,
- provision of access to awareness-raising documents and materials,
- organization of online activities aimed at disseminating results and knowledge in accordance with the principles of open science.

The platform is designed as an accessible, responsive web portal that serves as a central point for communication and for the transfer of the project outputs to both the professional and the general public.

1.1 Technology and hosting

The online platform is implemented in the form of a website created using the WordPress content management system. WordPress is one of the most widespread open-source content management systems (CMS), which makes it possible to manage website content flexibly without the need for advanced programming knowledge (Wordpress, 2025).

WordPress was chosen for several reasons:

- Simple content editing — the platform enables quick editing, publication and updating of awareness-raising materials, datasets and other documents throughout the duration of the project and after its completion.
- Flexibility and modularity — WordPress supports a wide range of add-ons and extensions (plugins), which makes it easy to customize functionality, for example for user management, event calendars or making files available for download.
- Security features — thanks to regular updates and an extensive community, WordPress is a stable and secure platform that is also suitable for projects funded from public sources.
- Support for responsive design — in accordance with the requirements of the Recovery Plan design manual, it was possible to prepare a layout template that displays correctly on both mobile devices and desktops.
- Low operating costs — as an open-source solution without licence fees, WordPress is a sustainable solution for the future operation of the platform as well.

The result is a clear, user-accessible and flexible website that ensures the effective distribution of the project results and knowledge within the popularization activities.

The website is currently hosted at BRAIN:IT, as the development team, under their domain. Migration to the UNIZA environment will be addressed in the future.

The website is available at: https://innosoc.brainit.tech/

2 DESCRIPTION OF THE WEBSITE DEVELOPMENT

The development of the website took place in several interconnected phases, with strict adherence to the principles of project management and modern software engineering. The development was carried out in accordance with the rules of the PRINCE2 methodology. (PRINCE2, 2025) The entire process was supported by the cooperation of experts from various fields, which ensured a comprehensive and high-quality result.

The project team consisted of:

- The web development team: made up of developers responsible for the technical implementation of the website, including the design of the software architecture, implementation of the backend and frontend parts, database integration, data security and performance optimization.
- The marketing department: their task was to prepare the graphic materials, visual identity and textual content of the website, based on information provided by the wider project team.
- The overall project team: it provided consultations, defined the content requirements, verified the correctness of the data and guaranteed that the final product would be in line with the project objectives.

2.1 Analysis and requirements definition phase

In the initial phase of development, the project team focused on a detailed mapping of the needs of the target users and of the technical requirements. Several workshops and consultations took place, at which the following were determined:

- the main functions and processes on the website,
- requirements for the user interface and its intuitiveness,
- security requirements in accordance with applicable standards,
- the structure of the content and navigation.

An important starting point for the design was respecting the visual identity according to the Recovery Plan design manual, which defined the mandatory colours, font and other graphic elements.

2.2 Solution design phase

On the basis of the approved requirements, the team prepared graphic designs of the user interface (UI), the information architecture (site map), as well as the design of the technical solution, including the database model and the structure of the server environment. In this phase, the following were taken into account:

- accessibility on various devices (responsive design),
- optimization of loading speed,
- options for future extension of functionalities.

After comments from the entire project team, the design was finalized and approved.

2.3 Implementation phase

After the designs had been approved, the actual development of the website began. The web development team implemented a solution based on the WordPress content management system, which enables efficient content management and simple administration.

As part of the implementation, structured sections were created for publishing the project outputs, including awareness-raising materials, datasets and software components, as well as information on the progress and results of the project.

An important part of the implementation was the contact form, which enables website visitors to establish communication with the project team. The website was designed with an emphasis on a clear structure, responsive design and compliance with the visual rules according to the design manual

In the meantime, the marketing department finalized the textual materials and visuals and provided them to the developers for integration into the system. All graphic elements were carefully adapted to meet the requirements of the design manual and the overall visual identity of the project.

The development was carried out iteratively – individual functions were tested already during implementation in order to ensure quality and minimize possible errors. (Scrum, 2025)

2.4 Testing and verification

After the technical implementation was completed, the website was deployed to a test environment (staging), where comprehensive testing took place:

- functional tests (correctness of functions),
- security tests (data protection, access rights),
- compatibility tests on various devices and browsers,
- performance tests (handling a larger number of users).

Subsequently, a final check of the content, structure and design was carried out by the entire project team, which verified:

- compliance with the project objectives,
- compliance with the content requirements and the correctness of the information,
- adherence to the visual rules of the design manual.

2.5 Deployment into production

After successful testing, the website was launched into production and made available to the target users. The launch also included operational monitoring so that any incidents could be detected quickly.

2.6 Operation, support and maintenance

The website continues to be managed so as to ensure:

- regular updating of the content and software components,
- protection against security threats,
- technical support for users,
- continuous optimization on the basis of feedback.

The project team also recommended evaluating user feedback and extending the functionalities in the future according to their needs.

3 DESCRIPTION OF THE WEBSITE

The website is divided into several basic sections (tabs), which enable visitors to navigate easily and access the individual content parts (Innosoc, 2025):

- Home – the landing page providing basic information about the project and a quick overview of its main activities and objectives.
- About the project – a section containing detailed information about the project, its focus, objectives, the entities involved and the schedule.
- Outputs – a part devoted to publishing the project results, including datasets, awareness-raising materials and software components created during the implementation of the project.
- Contact – a section with contact details and a contact form through which website visitors can establish communication with the project team.

This division contributes to the clarity of the website and makes it easier for users to access the required information and project outputs.

Each section of the INNOSOC project website is designed according to a uniform and clear structure, which guarantees a consistent user experience and supports intuitive navigation of the content.

A section always consists of three main parts:

- **Header or introductory part**
  - contains the section heading and, where applicable, a brief introductory text that quickly informs the visitor about the content of the section
  - performs a navigation and orientation function
- **Core**
  - represents the main content of the section, for example the project description, a list of outputs, detailed information on the objectives, publication activities or a contact form
  - is the most important part of the section, as it provides the user with the essential information
- **Footer or closing part**
  - follows on from the core of the section and often offers further interaction options, for example click-through buttons, links to related information, contact details or links to partner organizations
  - maintains visual uniformity and supports the interconnection between the sections of the website

This uniform structure contributes to the comprehensibility of the entire portal and ensures that the user can easily find their way when working with the platform.

3.1 Home section

The introductory part of the home page contains the project name “INNOSOC” placed in the upper left corner, which clearly identifies the platform and ensures a consistent visual identity of the project. Below the header there is a dominant introductory text describing the main objective of the project:

“*Multi-tenant cybersecurity operations centre designed as an open cloud service with machine learning elements*”

This text has a presentational and informative function, as it immediately explains to the visitor what the main idea and technological focus of the project are.

Below the text there is an “About the project” button, which is used to move quickly to more detailed information about the project and improves user orientation on the website.

The entire visual is supported by a modern graphic composition with striking colour areas (dark blue, red and light blue), which makes the website visually distinctive while remaining in line with the requirements of the design manual (Figure 1).

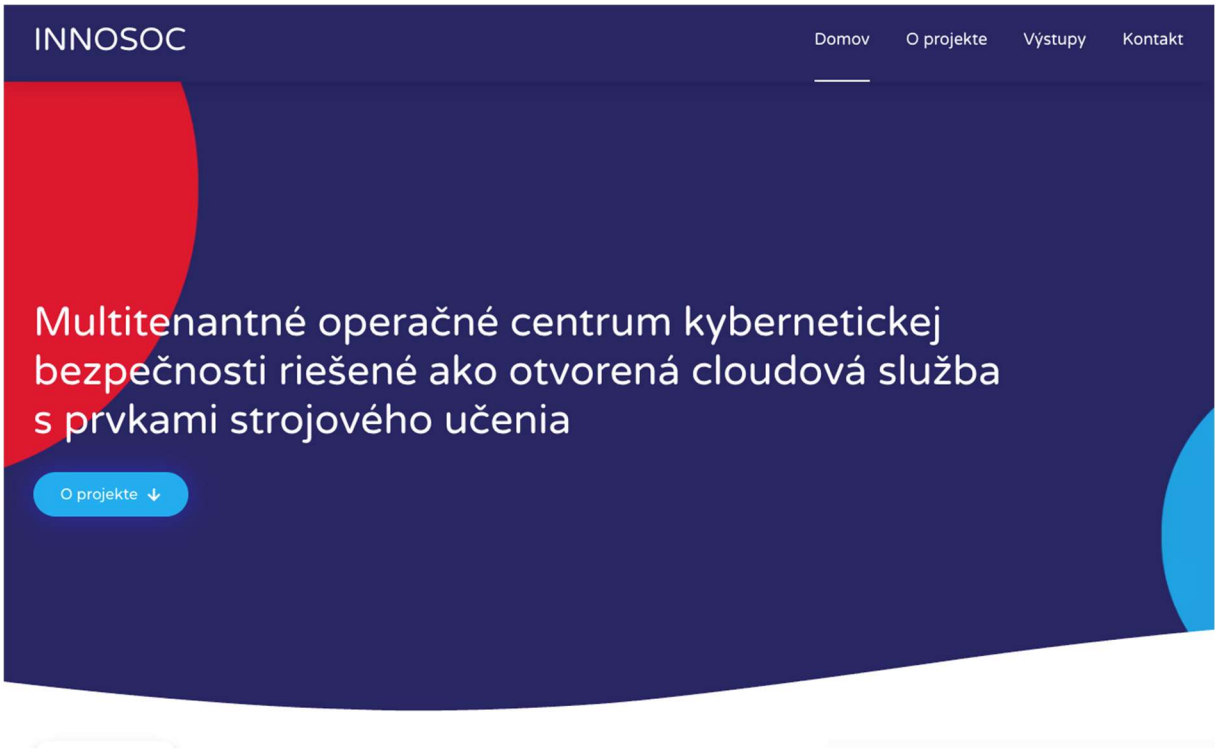


Figure 1. Introductory part of the home page with the main slogan of the INNOSOC project and a button to the About the project section. (innosoc.brainit.tech, 2025)

This part of the home page (Figure 2) contains logos and visuals that provide information on the financial support and the partners of the project. They include:

- the logo of the European Union with the NextGenerationEU designation,
- the Recovery Plan logo,
- the logo of the Government Office of the Slovak Republic,

which indicate that the project is funded from public resources and is at the same time carried out in accordance with the principles of the Recovery and Resilience Plan.

- Below these logos, two information blocks are clearly displayed:
- Project duration: states the project implementation period (April 2024 – March 2026),
- Partners: provides information on the entities involved (FRI UNIZA and BRAIN:IT).

This section (Figure 2) has an informative and presentational function, transparently declaring the funding and the involvement of the individual partners, which is a common requirement for projects supported from public sources.

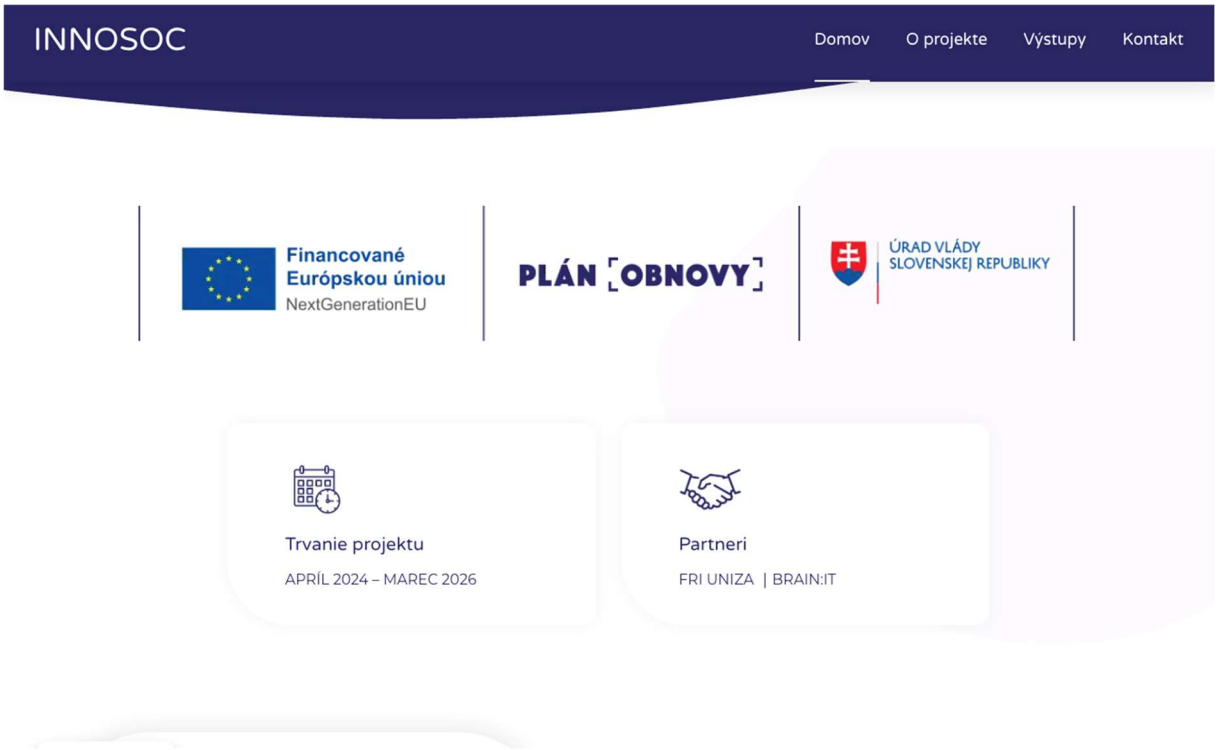


Figure 2. Section with the logos of the funding bodies, information on the project duration and the project partners on the home page. (innosoc.brainit.tech, 2025)

This part of the home page (Figure 3) presents the main objective of the INNOSOC project, namely the design of an open multi-tenant security operations centre (SOC) solution. The text is placed to the right of the illustrative graphic and describes that the solution will be provided as a flexible cloud or container service, complemented by modules for anomaly detection and prediction using machine learning and neural network technologies.

The illustration on the left-hand side supports the theme of cybersecurity and visually depicts the protection of data and communication, thereby reinforcing the message of the presented project objective.

The placement of this section on the home page is intended to immediately acquaint visitors with the main idea of the project and its technological contribution.



Figure 3. Section on the home page describing the main objective of the INNOSOC project with an illustrative cybersecurity graphic. (innosoc.brainit.tech, 2025)

This part of the home page (Figure 4) presents the individual sub-objectives of the project, which are key to achieving the main aim of INNOSOC. They are clearly arranged in the form of visual boxes with icons and a short textual description:

- Design of a technological solution — for operating a SOC service using virtualized solutions at TRL3 level,
- Design of an intelligent system — focused on monitoring technological resources and services,
- Design of the architecture — of the innovative elastic INNOSOC service as an integration of open solutions and components,
- Design of suitable algorithms — for the application of deep neural networks and machine learning in the detection and prediction of security and operational anomalies,
- Creation of a platform for sharing — the knowledge acquired in the spirit of open science and the dissemination of project results.

In the upper right part there is a “More info about the project” button, which redirects the visitor to a more detailed description of the project objectives in the next section. This visual and content form makes it easier for the user to quickly find their way around the main areas addressed by the project.

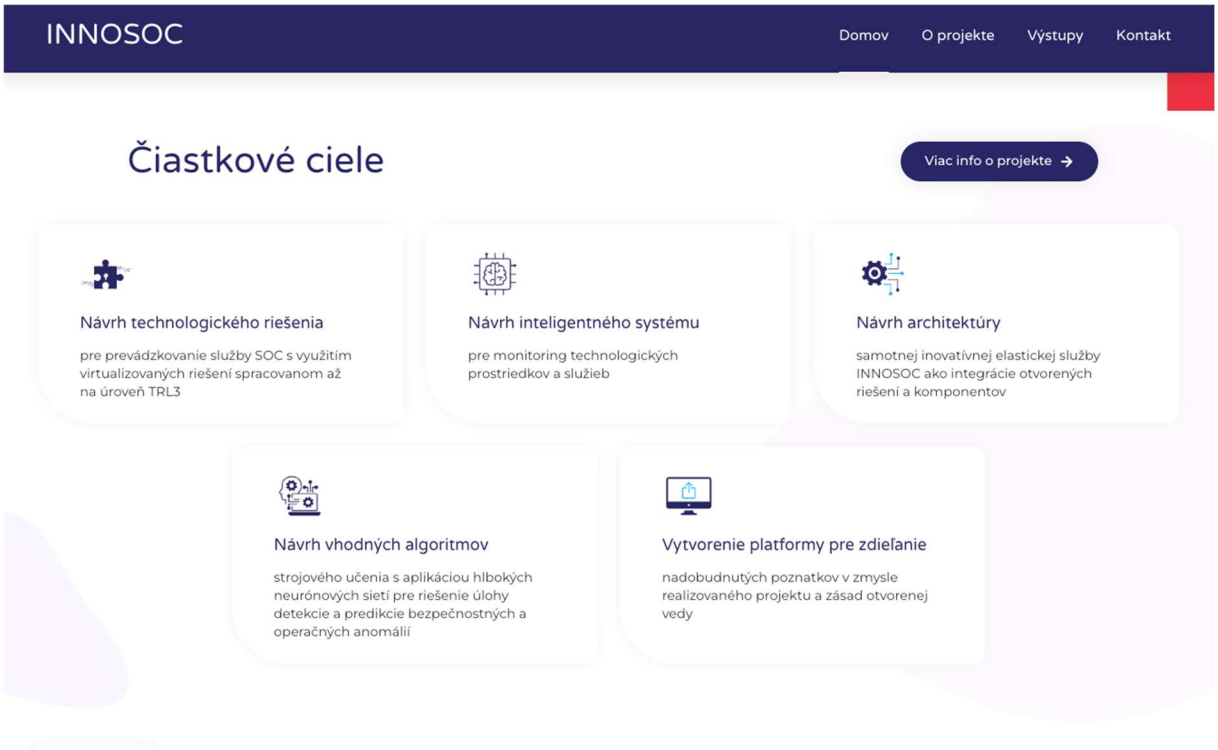


Figure 4. Presentation of the sub-objectives of the INNOSOC project on the home page, including a link to detailed information. (innosoc.brainit.tech, 2025)

This part of the home page (Figure 5) explains the broader social and technological context that justifies the implementation of the INNOSOC project and at the same time describes its expected benefits. The section is divided into two text areas:

Growing demands on cybersecurity: points to the problems of micro, small and medium-sized enterprises and smaller public administration institutions, which often lack sufficient financial and staff capacities to ensure high-quality cybersecurity services. The text emphasizes the need for affordable protection solutions in compliance with cybersecurity laws and the forthcoming NIS2 directive.

What INNOSOC will bring: explains that the project offers an innovative cloud solution of the SOC (Security Operating Center) type, which will enable organizations to improve cybersecurity through automation and the use of deep machine learning (Deep Machine Learning).

This section plays an important role in briefly and clearly explaining to visitors why the project was created and what added value it will bring to the target groups.

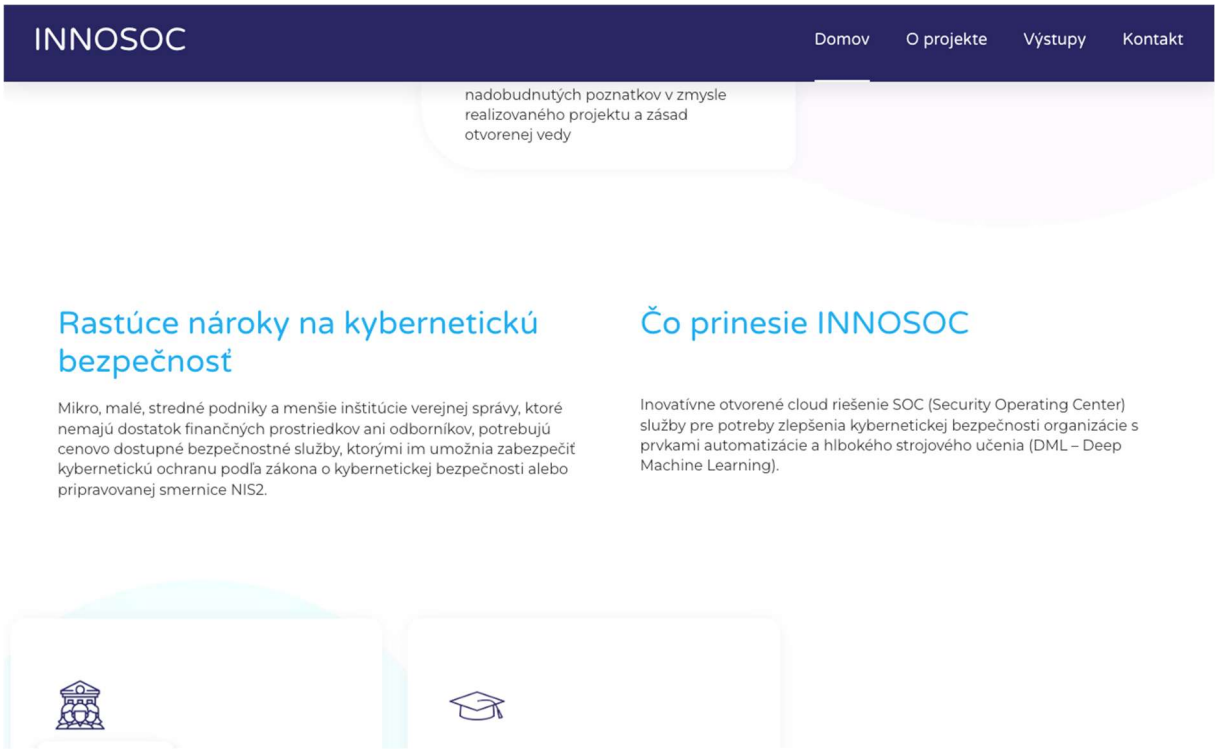


Figure 5. Section of the home page explaining the context of growing demands on cybersecurity and the benefits of the INNOSOC project. (innosoc.brainit.tech, 2025)

This part of the home page (Figure 6) provides information on the target groups that can benefit from the outputs and results of the INNOSOC project. They are displayed in clear icon boxes with descriptions of the individual groups, specifically:

- smaller public and state administration institutions,
- educational and research institutions,
- micro, small and medium-sized enterprises and organizations,
- non-profit organizations and civic associations,
- end users and the wider public,
- the professional community as well as the general public.

On the right-hand side there is a prominent textual question “Who will benefit from the project outputs?”, which serves as a motivational element and draws visitors’ attention to the importance and benefits of the project for various target groups. Below it there is a “Project outputs” button, which leads to a more detailed overview of the outputs in the relevant section of the website.

This part supports informing and engaging a wide range of stakeholders, thereby contributing to awareness-raising and the openness of the project.

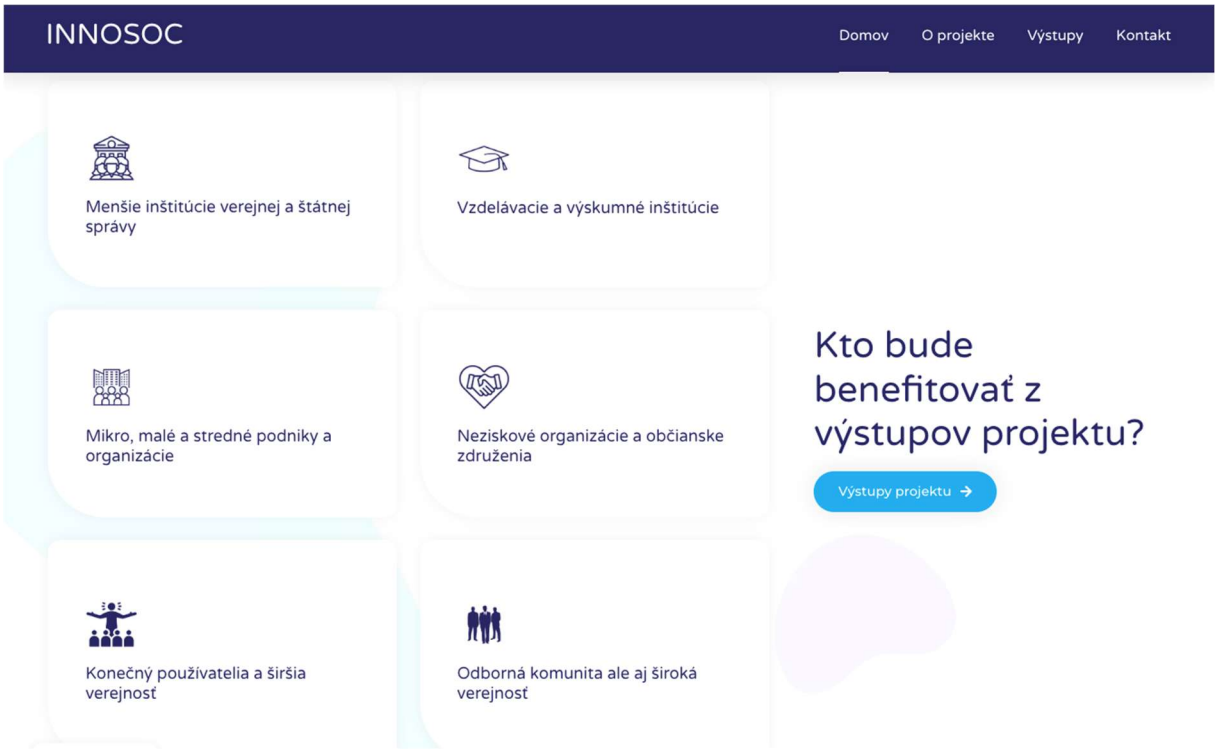


Figure 6. Section of the home page presenting the target groups of the INNOSOC project that can make use of its results. (innosoc.brainit.tech, 2025)

In this part of the home page (Figure 7), the user learns that all relevant partial outputs of the project will gradually be published on the platform. The section contains the heading “Partial outputs” together with a short description:

“Final reports, reports from experiments and testing, guides and updated complete project documentation.”

This clearly communicates to the visitor what kind of documents and information will be available on the platform. On the right there is a “Find out more” button, which leads to a more detailed overview of the outputs in a separate section.

Below this block, the logos of the project partners are displayed in the footer of the website:

- University of Žilina — Faculty of Management Science and Informatics
- Brain:IT

as well as standard links to personal data protection, the cookie policy and copyright information about the website operator.

This part of the website serves as an informational and orientation element that directs the user to the complete project outputs while reinforcing the transparency of the funding and the accountability of the partners.

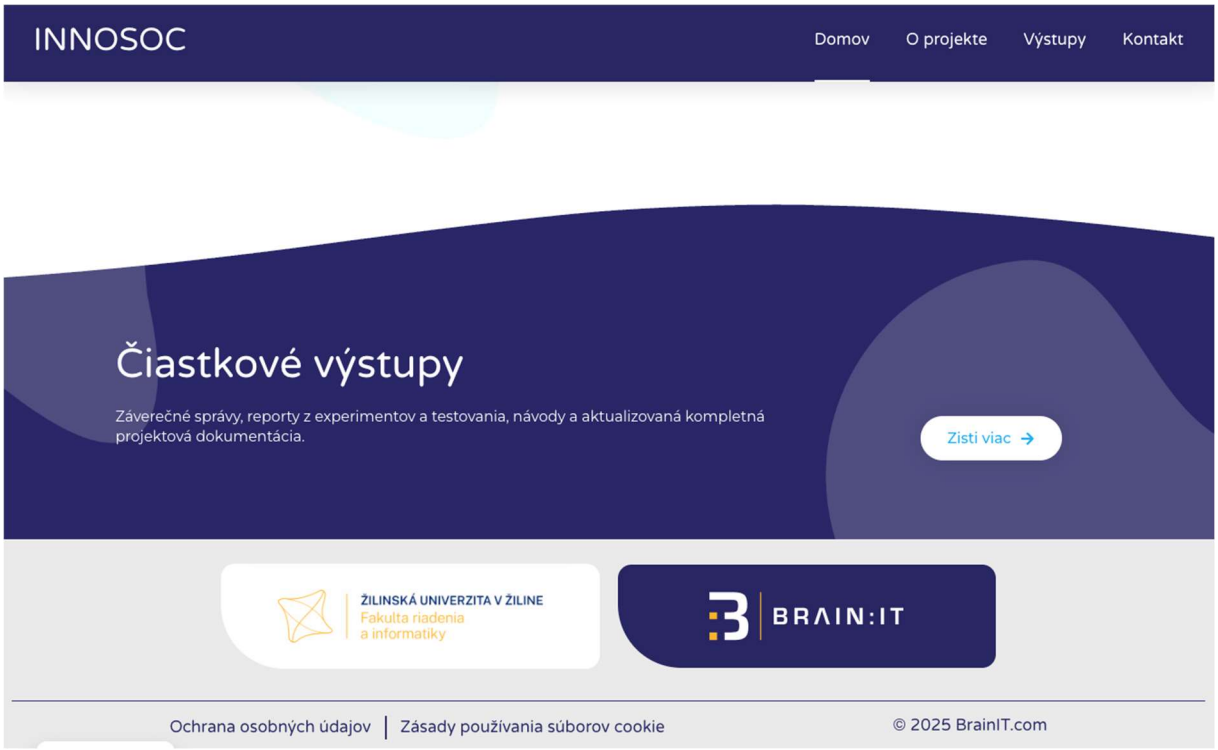


Figure 7. Section of the home page with an overview of the partial outputs of the project and the footer with partner logos and links to legal information. (innosoc.brainit.tech, 2025)

3.2 About the project section

This introductory part of the About the project section (Figure 8) presents the name of the section and repeats the main description of the INNOSOC project: “Multi-tenant cybersecurity operations centre designed as an open cloud service with machine learning elements.”

Displaying this information at the beginning of the About the project section has a presentational function and maintains consistency of communication with visitors, as the same description also appears on the home page. This reinforces the memorability of the project and its main mission.

The graphic design with a dark blue background and large white text ensures sufficient contrast and good legibility, which is in line with the design manual.



Figure 8. Introductory part of the About the project section with the presentation slogan and a basic description of the INNOSOC project. (innosoc.brainit.tech, 2025)

This part of the About the project section (Figure 9) contains detailed data on the project itself and its background. On the left-hand side, the key project parameters are clearly displayed in separate boxes:

- Call code: 09I05-03-V02
- Investment name: Investment 5 — Research and innovation for the digitalization of the economy
- Component name: 9 — More effective management and strengthening of the funding of research, development and innovation of the Recovery and Resilience Plan of the Slovak Republic
- Project code: 09I05-03-V02-00010
- Place of implementation: Žilina
- Implementation period: 04/2024 – 03/2026

On the right-hand side there is a block headed Project objective, which explains the main focus of the solution. The INNOSOC project is oriented towards industrial applied research in the field of cloud technologies and cybersecurity, reflecting the needs of digitalization and the market demand for the availability of modern IT services and experts.

The description further emphasizes that the objective is to create a flexible and open multi-tenant SOC solution as a cloud service, which will be suitable for commercial deployment as well as for supporting practical education and research.

This overview provides visitors with a comprehensive picture of the essence, scope and ambitions of the project.

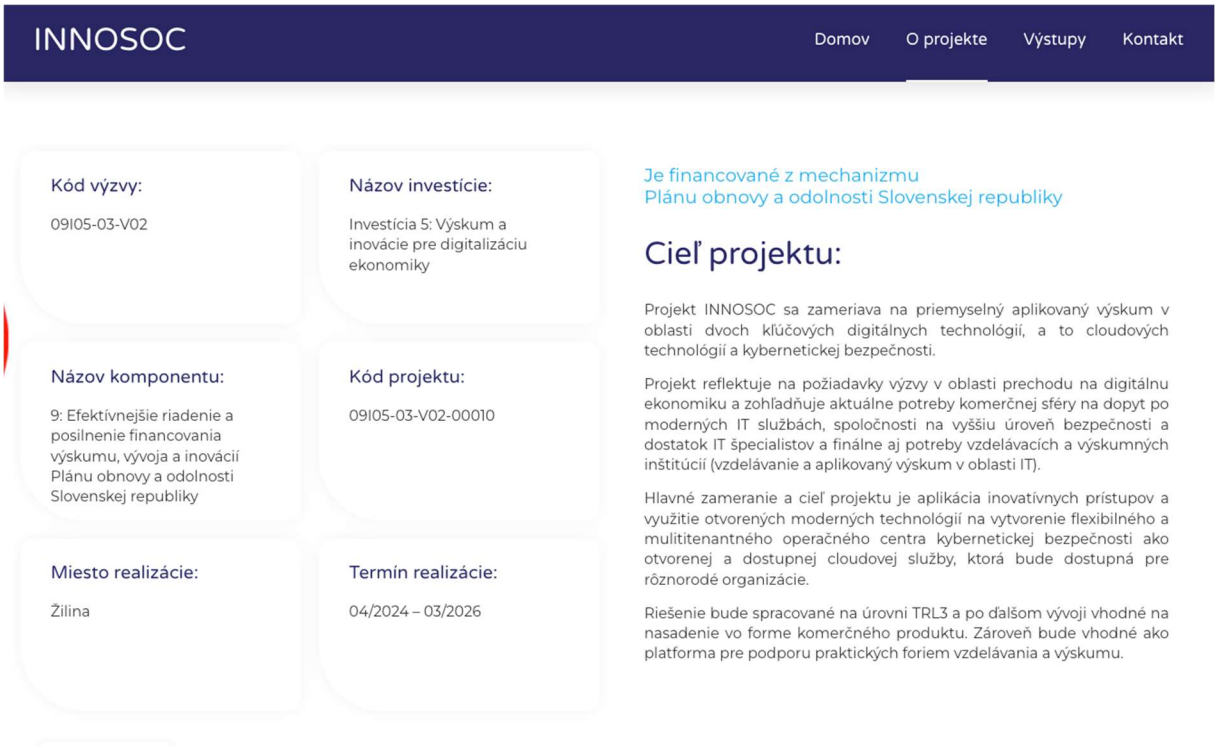


Figure 9. The About the project section with detailed data on the INNOSOC project and a description of its main objectives. (innosoc.brainit.tech, 2025)

At the end of the About the project section (Figure 10), the logos of the funding and managing institutions of the project are displayed again, specifically:

- European Union — NextGenerationEU,
- Recovery Plan,
- Government Office of the Slovak Republic.

These logos serve as visual confirmation of the financial and organizational support of the project in accordance with the mandatory public relations elements of projects supported from the Recovery Plan.

Below this block there is a transitional part leading to the outputs section. It contains the heading “Partial outputs”, which briefly informs that final reports, experimental reports, guides and other documentation will be available on the website. On the right there is a “Find out more” button, which allows the user to click through to more detailed content on the project outputs.

This section follows smoothly on from the content of the previous parts and leads the user to further exploration of the available project results.

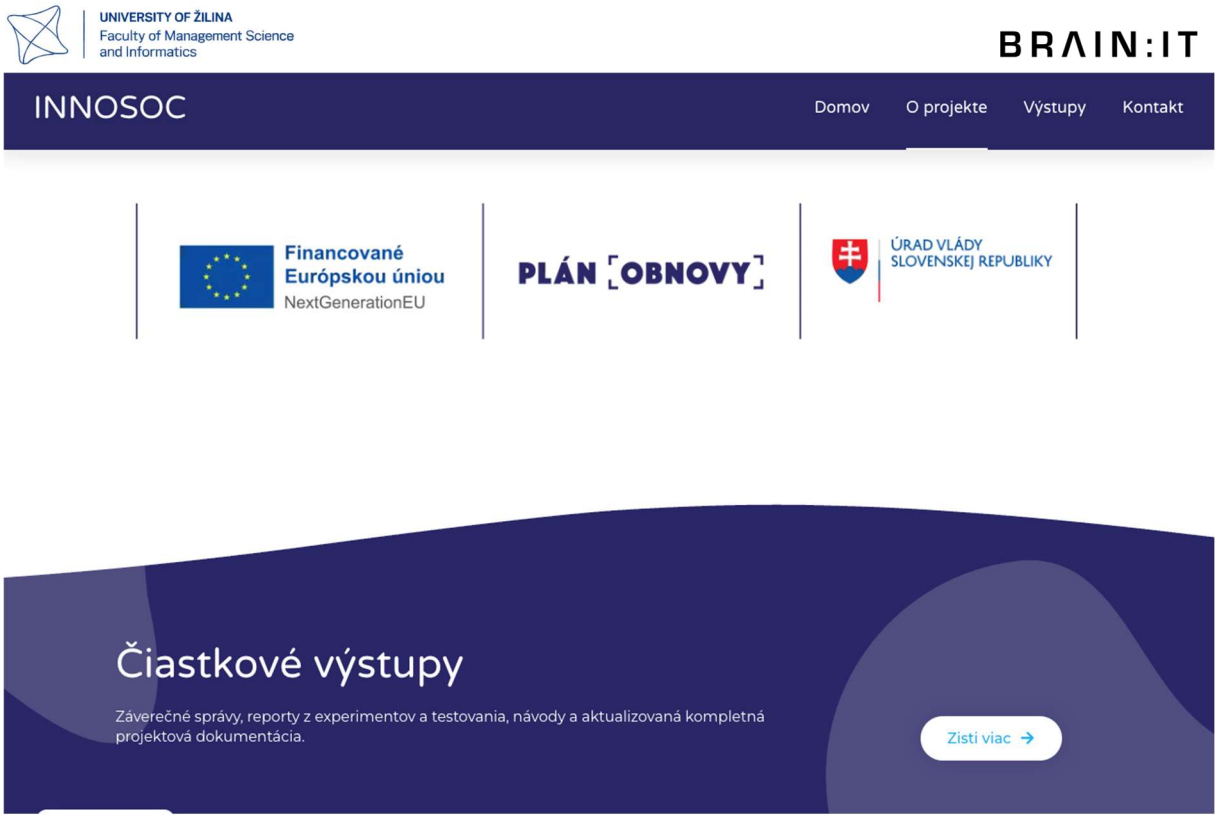


Figure 10. Closing part of the About the project section with the logos of the funding bodies and an introduction to the partial outputs section. (innosoc.brainit.tech, 2025)

The last part of this section is the footer (Figure 11), which is a standard element of the website that is displayed consistently on all subpages of the portal. It contains:

- the logo of the University of Žilina — Faculty of Management Science and Informatics,
- the logo of the partner Brain:IT,
- links to personal data protection and the cookie policy,
- copyright information © 2025 BrainIT.com.

This part of the website has an orientation and informative role — it ensures the transparency of the project and provides visitors with the mandatory legal information in accordance with legislation. At the same time, it maintains a uniform visual style across the entire website.

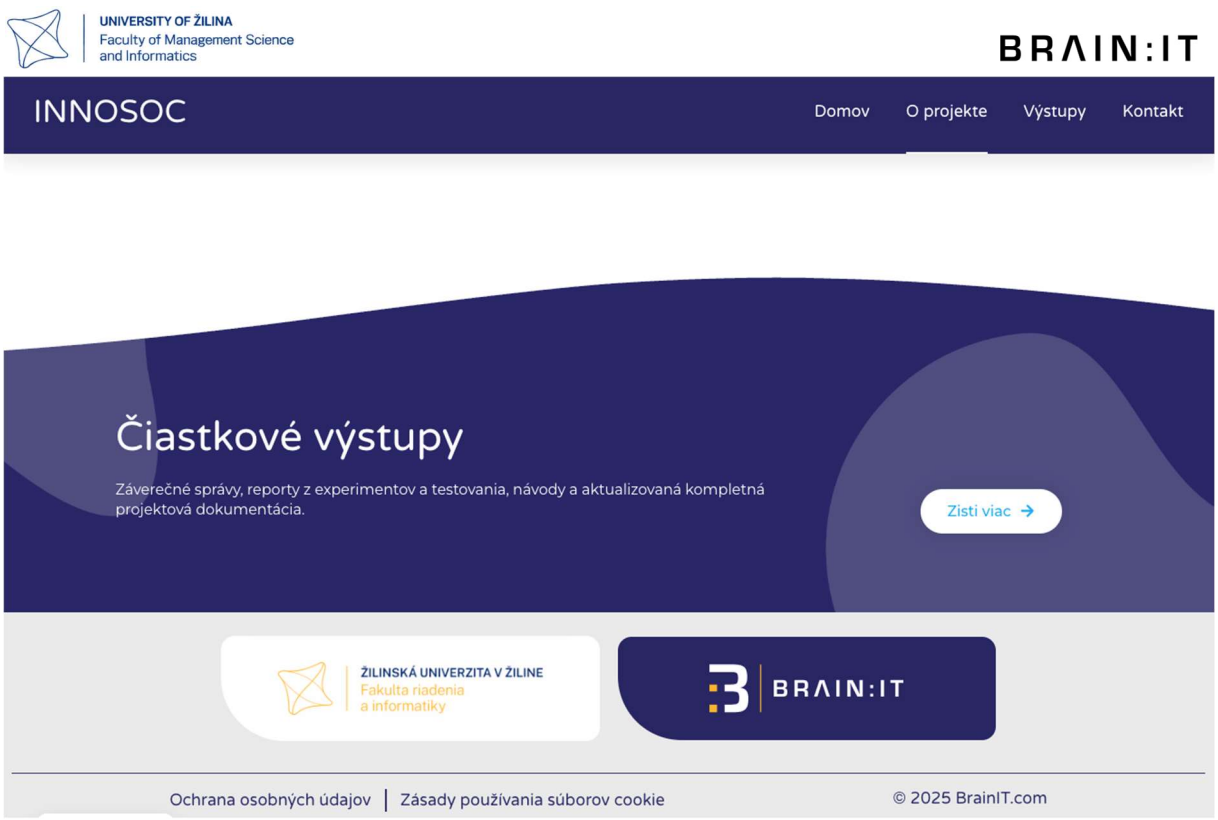


Figure 11. Website footer of the About the project section with partner logos and legal links. (innosoc.brainit.tech, 2025)

3.3 Outputs section

The introductory part of the Outputs section (Figure 12) presents its main purpose — making the documentation and results of the INNOSOC project accessible. It contains the prominent heading “Outputs” and a short description: “Project documentation, reports from experiments and testing, guides and final reports on the INNOSOC project.”

This section has an orientation function and informs visitors that this is where they will be able to find all the key materials created during the implementation of the project, including final and partial reports, guides or the results of the verification of solutions.

The dark blue colour area with white text ensures consistency with the overall visual style of the portal and reinforces its graphic identity.



Figure 12. Introductory part of the Outputs section with a description of the content and focus of this part of the website. (innosoc.brainit.tech, 2025)

This part of the Outputs section (Figure 13) provides visitors with a clear list of the categories in which the individual project results and documents will be published. The categories are displayed in the form of dark blue buttons with white text and an arrow indicating that they are links to more detailed content.

The section contains selected blocks based on the work packages, with several outputs and supporting documents within each work package:

- Design of the virtual solution
  - V1: result of the analysis of available solutions
  - V2: list of defined criteria
  - V3: description of the selected solution meeting the set criteria
- Design of the SOCAaS service
  - V4: result of the analysis of suitable components
  - V5: list of defined criteria
  - V6: description of the dashboards, monitoring and reporting system
- Design of ML algorithms
  - V7: result of the analysis of suitable algorithms
  - V8: list of defined criteria
  - V9: description of the selected algorithm meeting the set criteria
- Solution architecture
  - V10: list of functional and non-functional requirements
  - V11: business architecture
  - V12: technological architecture
  - V13: DNR – detailed design of the solution together with annexes
- Implementation of the solution
  - V14: functional infrastructure
  - V15: software components

  - V16: functional PoC
  - V17: test results and evaluation
- Publication outputs
  - V18: published indexed articles in journals
  - V19: contributions to conferences, proceedings
- Popularization activities
  - V20: creation of an online platform
  - V21: available online awareness-raising materials and outputs
  - V22: popularization activities carried out
- Project documentation
  - V23: updated project justification
  - V24: updated logical framework of the project
  - V25: updated tools for monitoring objectives and deadlines
  - V26: updated budget drawdown
  - V27: risk register
  - V28: interim project report
- Final report
  - V29: final project report

By the end of June 2025, the following outputs were published on the website according to the schedule: V1, V2, V3, V4, V5, V6, V7, V8, V10, V11, V18, V19, V20, V21, V23, V24, V25, V26, V27, V28.

This visual form enables visitors to quickly find the specific type of output they are interested in and click through to the relevant details. This supports transparency and facilitates access to all relevant materials created within the project.



Figure 13. Overview of the categories of project outputs in the form of navigation buttons in the Outputs section. (innosoc.brainit.tech, 2025)

This closing part of the Outputs section (Figure 14) serves as a call to interaction for those interested in the INNOSOC project. It contains the heading “Write to us”, which invites the visitor to contact the project team in the event of questions or suggestions concerning the published outputs. The supporting text “Are you interested in the INNOSOC project?” provides a clear motive and indication that feedback or questions are welcome.

It includes a prominent “Contact” button, which links to the contact form or contact details. This element helps to maintain transparency and open communication with the public, partners or the professional community wishing to respond to the project outputs.

In terms of design, this part remains in line with the visual style of the entire website, thus following smoothly on from the previous parts of the Outputs section.

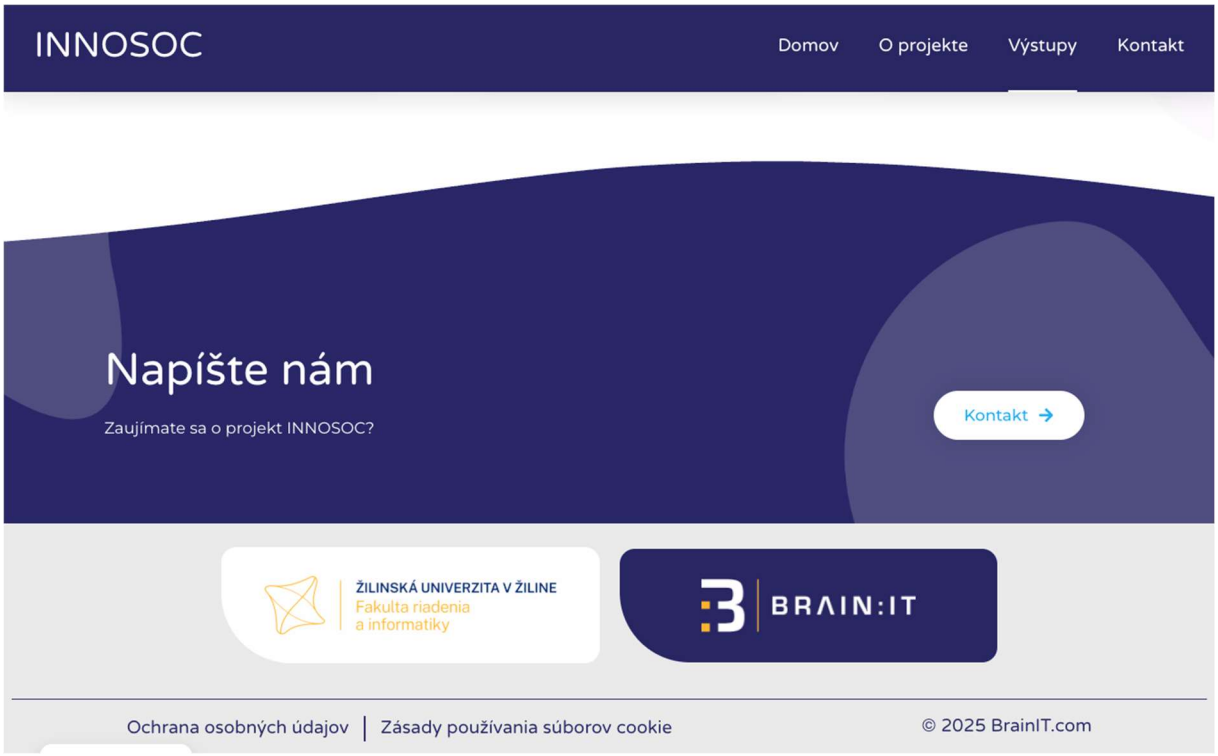


Figure 14. Closing part of the Outputs section with a call to contact the project team. (innosoc.brainit.tech, 2025)

3.4 Contact section

This introductory part of the Contact section (Figure 15) serves to clearly mark the place on the website where visitors to the INNOSOC project can find information for direct contact with the project team. It contains a simple and clear heading “Contact”, which provides immediate orientation.

In terms of design, the section is created in line with the visual identity of the entire website – using a dark blue background and understated typography, which makes it look professional and consistent with the other parts of the platform.

This part prepares the visitor for the display of the contact details or the form, which are usually located further down the page.

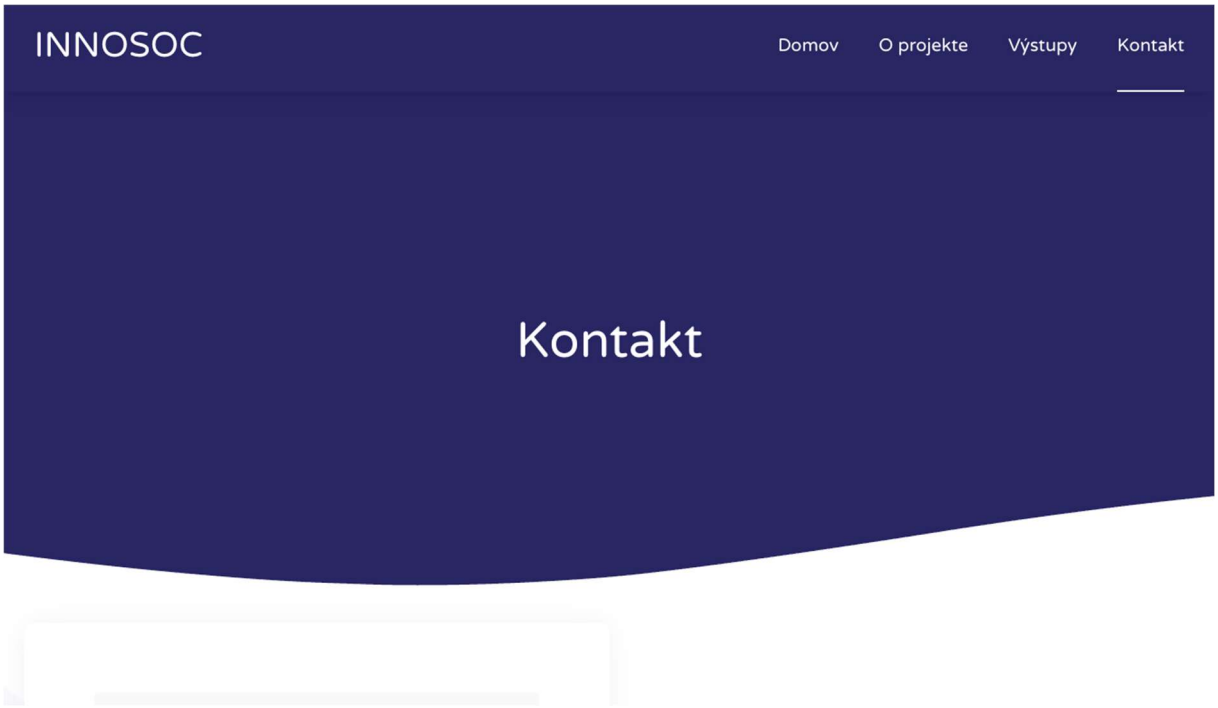


Figure 15. Introductory part of the Contact section with the main heading. (innosoc.brainit.tech, 2025)

This part (Figure 16) contains an interactive contact form that enables visitors to send a message to the INNOSOC project team simply and quickly; it leads to the e-mail address innosoc@uniza.sk, which forwards the received e-mails to several people within both the UNIZA and the BRAIN:IT teams. The form contains basic fields for entering the first name and surname, telephone, e-mail and the message itself. Mandatory fields are marked with an asterisk.

It also includes a checkbox to confirm consent to the processing of personal data, which ensures compliance with personal data protection legislation (e.g. GDPR).

In terms of design, the form is clean, clear and intuitive, making it easier for visitors to contact the project team and to engage actively in communication about the project.

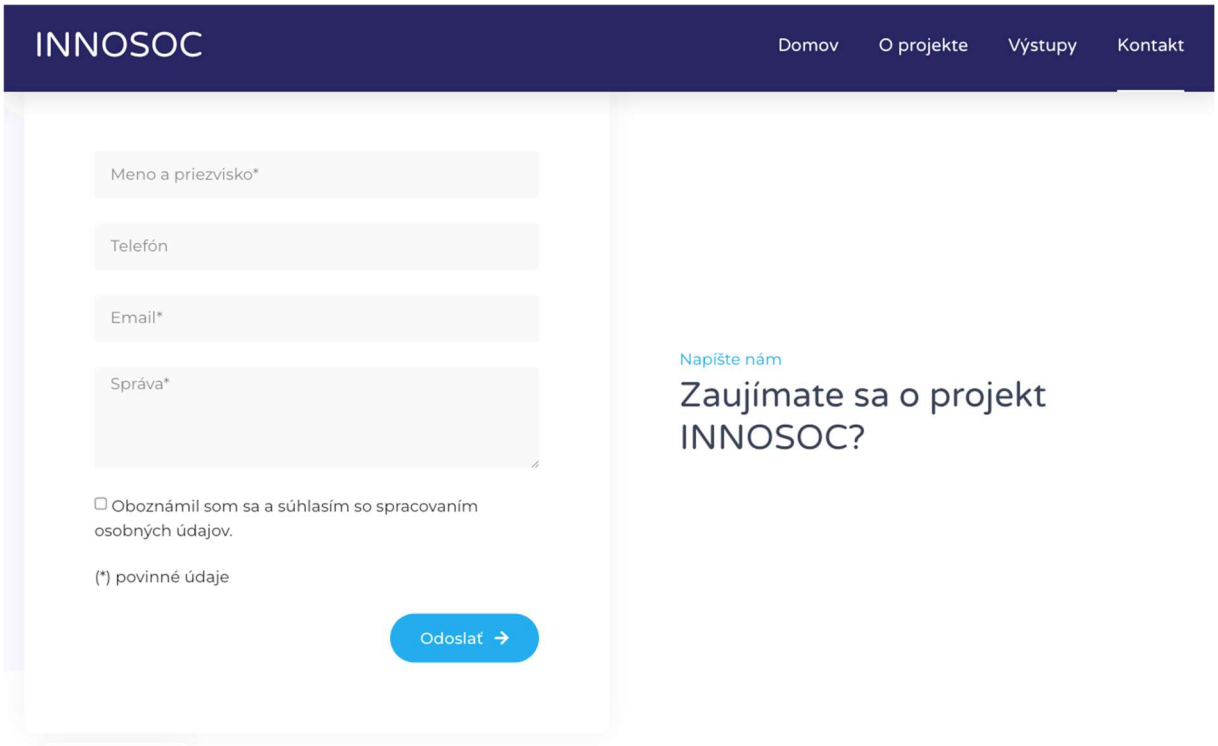


Figure 16. Contact form enabling visitors to send questions or suggestions regarding the project. (innosoc.brainit.tech, 2025)

This closing part of the Outputs section (Figure 17) summarizes the main objective of this section – to provide visitors with access to final reports, experimental reports, guides and updated complete project documentation. The text “Partial outputs” and the accompanying description clearly inform about the nature of the materials that will gradually be published through this section.

The prominent “Find out more” button allows visitors to click through to more detailed content with specific documents and outputs of the project.

The bottom part also contains the logos of the partners (University of Žilina, BRAIN:IT), which underline the cooperation on and support for the project. The graphic design is in line with the visual identity of the website, with clean lines and modern colours.

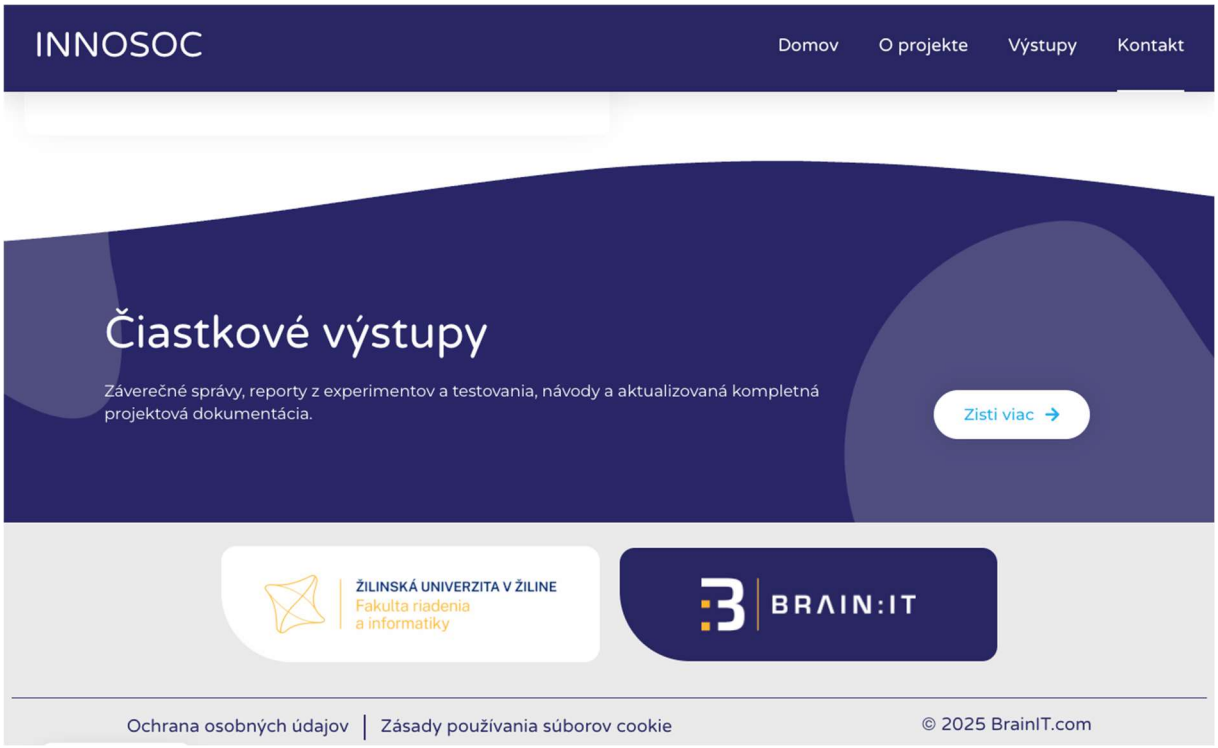


Figure 17. Closing part of the Outputs section with a button for displaying details and with the logos of the project partners. (innosoc.brainit.tech, 2025)

LIST OF SOURCES

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