Zero waste Heat vessel towards relevant Energy savings also thanks to IT technologies



D 6.1 | ZHENIT Project Website

WP6 – Dissemination, Communication and Exploitation

Version 6.1.4 | September 2022

HORIZON-CL5-2021-D5-01-10

Clean and competitive solutions for all transport modes -Innovative on-board energy saving solutions



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List of Organizations

Parti	cipant Name	Short Name	Country	Logo
1	RINA Consulting Spa	RINA-C	Italy	RI
1.1	RINA Services Spa	RINA-S	Italy	•
2	Ethnicon Metsovion Polytechnion	NTUA	Greece	the second
3	Kyma as	KYMA	Norway	K Y M A
4	Fundacion tecnalia research & innovation	TECNALIA	Spain	
4.1	Universidad del pais vasco/ euskal herriko unibertsitatea	UPV/EHU	Spain	6 ,9
5	Anonimi naftiliaki eteria kritis (anek) s.a.	ANEK	Greece	WWW.anek.gr
6	Consiglio nazionale delle ricerche	CNR	Italy	Conde Nettone
6.1	Consorzio di ricerca per l'innovazione tecnologica, sicilia trasporti navali, commerciali e da diporto scarl	NAVTEC	Italy	Navtec
7	Sorption technologies gmbh	SORTECH	Germany	() Sorption
7.1	Sorption technologies srl	SORTIT	Italy	•7 Technologies
8	Bound 4 blue sl	B4B	Spain	bound 4blue
9	Encontech bv	ECT	Netherlands	
10	Gruppo sigla srl	SIGLA	Italy	Gruppo SGLA
11	The university of Birmingham	UoB	United kingdom	



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Abbreviation and Acronyms

Acronym	Description
RINA-C	RINA Consulting S.p.A.
WP	Work Package
WH	Waste - Heat
WHR	Waste - Heat Recovery
Μ	Month
HVAC	Heating, Ventilation and Air Conditioning



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Executive Summary

The ZHENIT Project aims to promote Waste Heat Recovery (WHR) as key and "ready-to-implement" solutions to achieve 2030 International Maritime Organisation and European Union targets for shipping sector decarbonization. ZHENIT goal is to fully untap "on-board WH potential" developing and validating WHR solutions at different temperature levels for different on-board services (cooling, power, desalination), in order to valorise heat in different vessel processes.

ZHENIT will strategically define a plan to boost WHR, and energy management onboards, providing clean energy solutions and "low emissions" ship services (e.g. desalinated water, power, on board Heating Ventilation and Air Conditioning systems etc.), with a significant impact already in the short-term.

The present document constitutes the Deliverable D6.1 "ZHENIT Project website", developed within Work Package (WP) 6, which gives an introduction of the structure of the project website, in its main sections and functions. The website is one of the fundamental tools that will be used during the entire duration of ZHENIT to communicate its objectives and goals, to disseminate the project results and to update news and events. It includes several technical documents and information; it is structured and organized to be easily accessible by a wide range of users, stakeholders, and other interested parties. Together with the social media profiles, the website is another relevant mean of dissemination and communication of the project aiming to achieve a wide audience (as one of the goals of WP6).



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1 Introduction

This deliverable was prepared in the framework of Work Package 6, and it is released at the end of September 2022 (M4) as public report to present the design, implementation and release of the ZHENIT website, one of the main communication channels of the project. Together with social media accounts and the newsletter delivery, the website is crucial to present within a unique identity the project to a mixed and non-technical audience, to disseminate the results and to give direct access to the public documents.

The whole ZHENIT external communication strategy is built upon the core concepts of the project:

- Waste Heat Recovery solutions;
- Decarbonisation;
- Low emission;
- Sustainable maritime transportation;
- Energy Management Services;
- ICT monitoring;
- Wingsail;
- Desalinisation.

Actually, the aim of D6.1 is to give an overview of the website characteristics and structure, first, to illustrate the sections and to provide the fundamental tools necessary to monitor the efficacy of the communication strategy adopted.

The present document is divided in chapters, listed as follows:

- Chapter 1: Introduction;
- Chapter 2: Website characteristics;
- Chapter 3: Supplementary information;
- Chapter 4: Conclusion.

The website will be released in October 2022 (M5) by RINA Consulting (RINA-C), and it will be constantly updated. The ZHENIT social media channels were opened in July 2022 (M2), and they are managed by RINA-C during the whole project duration and after the project conclusion.



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2 Website Characteristics

2.1 URL, technical details and objectives

The ZHENIT website is accessible on http://www.zhenit.eu. The RINA Consulting (RINA-C) as the project coordinator, in charge of managing the website preparation, has registered this URL name and reserved the URL for 5 years. Since all the promotion, communication and dissemination will be centred around the brand name ZHENIT, it was crucial to secure this easy-to-find URL.

The website was set up in static HTML programming language, which makes it responsive.

The ZHENIT website, is designed and maintained by RINA-C, with the following purposes:

- To elucidate capabilities and benefits provided by the ZHENIT strategies to audiences beyond the project's communities, comprising the media and the public, to raise awareness and to achieve societal acceptance, releasing the project's results through all of the website's features;
- To present the ZHENIT Consortium and the role of each partner within the project ambition;
- To giving public access to project's results included in scientific articles, reports, and other relevant dissemination material, to the academic and industrial community;
- To guarantee the exploitation of the results of the project;
- To attract stakeholders (ports, event organizers, industrial manufacturers) potentially interested in creating strategic partnerships and stimulate interaction with the consortium.

2.2 Website management tools

The site is developed in HTML static programming language in collaboration with JavaScript on Azure Static Web App. It is fully responsive and adapts to all screen analyses of any device.

2.3 Project visual identity

A common project logo has been designed by RINA-C according to the consortium approval to allow a unique public image/branding for the project. The logo allows the public to identify easily ZHENIT thus



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ensuring visibility and recognition. For this reason, it is fundamental to include the project logo on the website in all the sections and banner to make ZHENIT clearly visible by, for example, repeating it in the upper banner of every pages. ZHENIT adopts a captivating project logo as a common project and graphical visual identity to attract external users and increase interest on the website's content (Figure 2.1).



Figure 2.1: ZHENIT Project Logo

The logo well represents the project by reporting a navigating vessel which is producing vapor. The colours of the logo, thus red and blue, give an idea of the temperature directly linked to the WHR solutions developed to reach the goals of ZHENIT. Actually, by maximizing the WHR, the vessels may reduce the emissions making the maritime transport more environmentally sustainable.

2.4 Structure

ZHENIT website has been designed with the following structure, by creating specific sections to facilitate the navigation (Figure 2.2).



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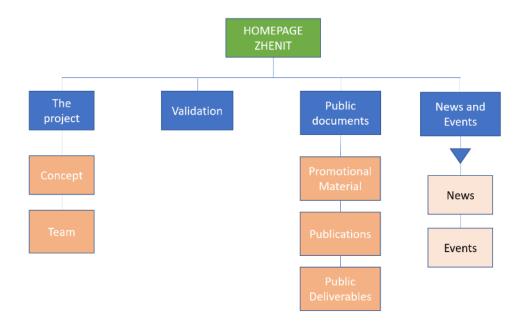


Figure 2.2: ZHENIT Website Map

- "The Project":
 - "Concept" section gives an overview of the project innovations and technical developments;
 - "Team" presents who are the players involved in the project developments.
- "Validation":
 - Section that simplifies the ZHENIT project innovations during the validation campaign.
- "Public Documents":
 - Divided in multiple subsections to organize the public documents which will be realised during the project lifetime, comprising also the updated promotional material, publications and official reports.
- "News and Events":
 - Section that will collect separately the most relevant news and past/future events of the ZHENIT project.



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In Figure 2.3, the ZHENIT website header is presented. In this upper bar, the project's logo appears on the left and the links to the sections are on the right side.

The project validation public documents news and events

Figure 2.3: ZHENIT website header

In Figure 2.4, the website footer is reported with all the references that are fundamentals for the funded project to be compliant with art.17 and annex 5 of the grant agreement, i.e., "communication, dissemination and visibility", showing the European flag and the acknowledgement. Furthermore, within this part, the direct link to the ZHENIT social media, Twitter and LinkedIn, is present, as well as the "newsletter" and "contact" buttons. Here, the viewer has the possibility to explore the website privacy policy, cookie policy and the disclaimer containing the terms of use.



Figure 2.4: ZHENIT website footer

In Figure 2.5, it is reported the automatic pop-up banner to inform the user that the website use cookies and to access directly to the cookies and privacy policy of the website (direct link to the policies pages).







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In the following paragraphs a detailed analysis of each website section is presented, starting from the "Home" page.

2.4.1 Homepage

The home page of the ZHENIT website provides a summary of the project's key objectives, concept and vision and serves as the entry point for users. The primary purpose of the home page is to provide the basic information around the project to let the users get a quick grasp of what the project is about and become attracted to navigate through the rest of the sections to learn more about the project.

Three key messages have been reported:

- Decarbonisation of the maritime transport via waste heat recovery;
- ZHENIT straight forward to boost zero waste heat solutions by coupling it with innovative ICT monitoring;
- Energy Management solutions, thermal energy storage and a hybrid propulsion system will be developed to reduce pollutants in harbour area and in open sea.

All of them, as shown in Figure 2.6, are presented using appealing images to attract immediately the visitors and keep them engaged with ZHENIT website. The homepage will soon be enriched through a promotional video, such as one-minute long animations, showing the main concept of ZHENIT.



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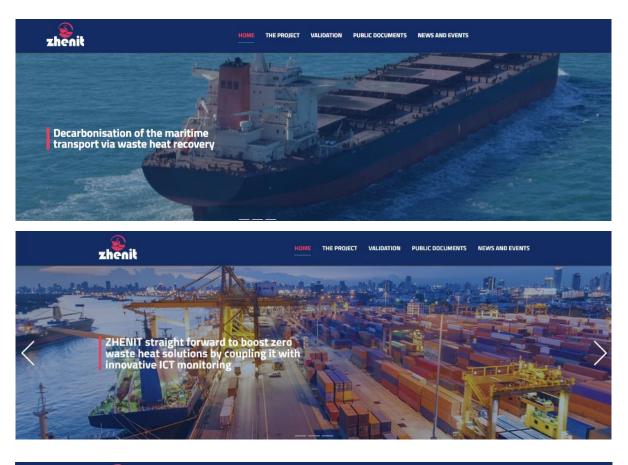




Figure 2.6: ZHENIT Home page slider and key messages

During the navigation through the homepage a synthesis of the main project data can be viewed, thanks to the explicative boxes that easily attract the users' attention, followed by a progress bar with the representation of the time evolution of the project, currently at M4 (Figure 2.7).



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Figure 2.7: ZHENIT numbers and progress bar

Moreover, within the home page it is possible to directly request to subscribe to the project newsletter (Figure 2.8). By clicking the button "Subscribe" a direct mail with a request can be sent to the ZHENIT newsletter mailbox.



2.4.2 Section "The Project – Concept"

To access to "The Project", the user can visit the "Concept" section or select the "Team" page as these have been distinguished.



Figure 2.9: Selection of "The Project - Concept" page



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Considering the "Concept" page, a short introduction to the section is presented to help the user to understand the technical aspect of the innovations adopted during the project development (Figure 2.10).



Figure 2.10: "Concept" Introduction banner

Following the introductory text, a descriptive and schematic panel has been included to identify the main technologies that will be developed during the project evolution, as clearly visible in Figure 2.11.

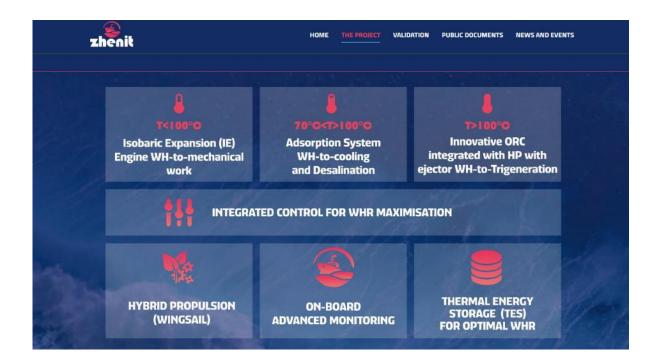


Figure 2.11: "Concept" schematic panel



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2.4.3 Section "The Project – Team"

To access the section "Team", as visible in Figure 2.12, the user must move to "The Project" button and select the second option.

In this section, it is visible as first instance, the map with the geographical distribution of all the ZHENIT Consortium members, with their relative logo (Figure 2.13).



Figure 2.12: Selection of "The Project - Team" page







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Scrolling the page, a short description of each partner is reported including a "partner profile" displayed for each member of the consortium, with the following information: logo linked directly to the partner's website, short description of the organisation and relative role in the project (Figure 2.14).



RINA CONSULTING

RINA provides a wide range of services across the Energy&Mobility, Marine, Certification, Infrastructure & Real Estate and Industry sectors. With net revenues in 2021 of 533 million Euros, over 4,400 employees and 200 offices in 70 countries worldwide, RINA is a member of key international organizations and an important contributor to the development of new legislative standards. RINA Consulting is the administrative and financial coordinator the project and it is in charge of taking care about Communication & Dissemination actions along the whole project duration. Furthermore, thanks to the contribution of RINA Services the studies on regulatory aspects will be proformed. RINA is also responsible for the results exploitation.

NTUA

The National Technical University of Athens (NTUA) is the oldest and most prestigious technological educational institution in Greece and has contributed unceasingly to the country's scientific, technical & economic development since its foundation in 1836. A TUA is divided into nine academic Schools, eight engaging in engineering sciences and one in general sciences. The Laboratory of Steam Boilers and Thermal Plants (LSBTP) and Laboratory of Thermal Processes (LTP) belong to the Thermal Engineering Department of the School of Mechanical Engineering. The laboratories have wide experience and are active for over 30 years in the field of thermal energy conversion technologies, focusing among other topics on energy efficiency assessment and evaluation, energy savings in industrial processes and power plants, process simulation/optimisation and development and experimental testing of small-scale heat pump units, Organic Rankine Cycle (ORC) systems and cooling cycles for multigeneration. In 2HENIT, NTUA is responsible for the development of an innovative cascade ORC – ejector integrated heat pump for the utilization of weste heat recovery at two temperature levels (130–150°C) and **«**OC° for the production of electrical power, heating and cooling, Furthermore, NTUA coordinates activities related to dynamic simulation/control and monitoring of the ZHENIT solutions, being primarily responsible for their dynamic modelling.





кума

Kyma AS is a specialist in the field of manufacturing and development of products for marine performance monitoring. Kyma delivers high quality products for performance monitoring to all types of vessels. Our products represent state of the art technology, and quality assurance is a continuous and necessary process for efficient production and development of new products.

Kyma takes care about the development of the monitoring platform for La Naumon and of the WHR soluti Furthermore, it complies with the on-board waste heat monitoring from the present engines.

TECNALIA

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ANEK LINES



ANEK LINES is activated for more than a half of a century in the passenger shipping sector, performing itineraries in the Aegean and the Adriatic seas. Group's fleet consists of 8 vessels offering high quality services both at Greek damestic routes as well as at the routes connecting Greece with taly. ANEK is involved in ZHENIT project as an end-user, representing and identifying Ro-Pax vessels' specifications, characteristics and requirements, under the scope of the potential adaptation of the project's solutions and outcomes aiming at reducing vessels' primary energy need towards the ambitious goal of zero-WH vessels in the passenger shipping sector.

CNR ITAE

The Institute for Advanced Energy Technologies (CNR ITAE) was established by the Italian National Council of Research and has long proven experience in the development and penetration of technologies related to energy saving, low polluting energy production, renewable energy sources, hydrogen and fuel cells in Italy and Europe since the 80's. CNR ITAE will be in charge for the development and testing of the adsorption cooling + desalination unit. Furthermore, it will focus on the modelling activity, KPIs definition and support to the validation campaign.





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Zero waste Heat vessel towards relevant Energy savings also thanks to IT technologies

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SORPTION TECHNOLOGIES



Surption Technologies develops, manufactures and sells adsorption chillers. Furthermore, we are involved in R&D projects on advanced applications of adsorption technology, such as heat & cold storage, dehumidification and desalination. The company is head -quartered in Freiburg, Germany and has an R&D and Sales Center in Rovereto, Italy and a production facility in Zywiec, Poland. Sorption Technologies cooperates with CNR (Italy) on the development of innovative waste heat recovery technologies for desalination and acoling provide by sorption process. This process is able to valorise low-to-medium temperature energy (e.g. 60-80 °C). Sorption Technologies develops and produces this adsorption desalination and cooling machine able to prove its reliability in operation onboard of a boat. Where a proper operation of the system under the fluctuations of the vessel will be tested. It is a thermally driven technology, where the driving source will be the waste heat available from the engine of the vessel itself.

ENCONTECH

O ENCONTECH B.V.

Encontech B.V. is a high-tech, spinoff company of the University of Twente (the Netherlands) established in 2008. The core business of Encontech is the research and development of externally heated engines and compression chemical reactors. During last 18 years the company founders conducted extensive R&D in the area of externally heated engines. Innovative technology for conversion of low-temperature heat into usable energy, known as Isobaric Expansion (IE) technology, was developed. The innovation consists of a closed thermal cycle engine which eliminates the main problem of low-temperature heat engines (DRC; therma-electric, etc) – a high cost.

In ZHENIT project an IE engine for converting waste heat of a diesel engine (exhaust, supercharger and/or cooling water) into usable energy will be developed. This will result in 2-3 % of fuel saving (1.6-1.7 % of engine's power output) and associated emissions depending on the diesel engine operation regime.



SIGLA

Gruppo SIGLA Srl, established in 1990 in Genova (Italy), is an Italian SME consisting of more than 70 specialists with high technical expertise and experience in the field of ICT. Gruppo SIGLA provides IT solutions, covering the entire lifecycle, from the analysis of the customer requirements to the implementation of feasibility studies, from the design (hardware and software) to the integration and configuration of the systems, from the development of "software dedicated applications" to their installation and delivery to the end users. Main activity of Gruppo Sigla arl (SIGLA) in ZHENIT is the transposition of the outputs of all WH-to-X solutions, plus the wing-sail, TES and RES towards a single configurable control platform, which will handle the operation of the integrated system to be tested at both TECNAUA Lab and in the La Nauron vessel.

BOUND4BLUE

bound4blue develops automated wind-assisted propulsion systems as a turnkey solution for all shipowners and shipping companies seeking to reduce fuel costs and polluting emissions. bound4blue's cSALE 9x4tem is an efficient and validated solution for saving fuel and emissions, completely autonomous, with low cost, low maintenance and easy installation onboard. The company, founded in 2014 with a vocation clearly focused on the renewable energy sector in the maritime field, has its headquarters in Cantabria (ES) and offices in Barcelona and Singapore. During 2021, the company installed its cSALE 9xstem on two ships and has signed additional agreements with other shipowners to install the system on their fleets starting in 2022. bound4blue's participation in the project will focus on the hybridization of waste heat recovery systems with our eSALE technology.

boundyblue

UNIVERSITY OF BIRMINGHAM



Founded in 1900, the University is one of the leading research-based universities in the United Kingdom. The last UK Research Excellence Framework in 2014 confirmed that 87% of the University's research has global reach, meaning it is recognised internationally in terms of its originality, significance and rigour. The University of Birmingham is a partner in the ZHENIT project through Dr Adriano Sciacovelli's research group based at the School of Chemical Engineering and Birmingham Centre for Energy Storage (BCES). The principal role of the University of Birmingham will be i) techno-economic modelling and optimization toward zero waste heat vessels. This role covers the simulation of WH-to-X and TES solutions for on-board applications and the development of a framework for thermo-economic analysis of the technologies, ii) Development of on-board thermal energy storage (TES) with phase change materials. This part includes the development and performance test of the lab-scale TES at the UoB facility, which is followed by establishing the knowledge to scale up the TES for on-board integration.







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2.4.4 Section "Validation"

By moving to the "Validation" page, it is clearly visible the short description of the page like in Figure 2.15. this sub-page the structure of the ZHENIT workplan reported and visualized with an infographic.

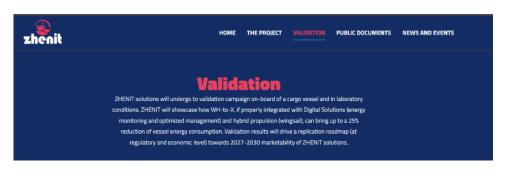


Figure 2.15: "Validation" section introduction

By scrolling down the page, an infographic representing the planned roadmap of the ZHENIT project is report to guide the user throughout the project developmental aspects (Figure 2.16).

en				
2		zhenit		<u>zhenit</u>
	- Design and realization of WH-to-X technologies - WH and Energy audit Tools	194 20 - Validation Campaign - Business Model, Environomics Analysis	2.0 20 - Further Replicability Studies - WH-to-X technologies at TRL9 and further integrability with on-board systems - Ligher Scale Demonstration on board	28 2030 Targeting «Zero WH vessel» ready to sail integrating digital solutions too
BUSINESS	- Cost analysis for preliminary market value setup - Stakeholders Workshops - Analusis of the EU Standards	- Business Model Agreement (Partners as Licentiatary Provider) - Extra EU replicability Analysis	Identification of first vessel for refitting and agreement with Icentiatary, consulting engineering services for feasibility studies and scale up (Royalties Agreed)	Promotion of ZHENIT Vessels among shipping Stakeholders and in the identified EU markets
	Inductrial Manufacturer Laboratory tertu (TRL4)	laboratory and la Naumon verrel campaign (TRL5-6)	Further Demonstration and Rormative Analysis (TR17-8)	

Figure 2.16: "Validation" ZHENIT roadmap



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2.4.5 Section "Public Documents"

The section "Public Documents" has been included in order to support the user to deepen the knowledge of the project. Actually, in this page it is possible to download the ZHENIT public material (Figure 2.17). The section includes the following sub-sections:

- Promotional Material: in this block all the promotional materials (e.g., brochure, poster, public presentation, and video, etc.) will be shared and made available for downloading;
- Publications: in this block all the scientific publications released by the consortium's partners will be shared and the related files will be available for the download every time they will be approved and available;
- Public Deliverables: in this block all the public deliverables and reports of the ZHENIT project will be uploaded after the approval from the EC and the related files will be available for the download.

Public documents	
Promotional Material	
E ZHENIT BROCHURE	
Publications	
Publications and Official Public Reports of ZHENIT will be uploaded in the coming months as this Horizon Europe project is at its beginning phase.	
AVAILABLE SOON	
Public Deliverables	

AVAILABLE SOON

Figure 2.17: "Public documents" section



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2.4.6 Section "News and Events"

The section "News and Events" has been included to share directly with the ZHENIT audience and visitors the information regarding the latest news (e.g. press releases from partners, interviews and articles in magazines and journals, etc.) and events, both internal (e.g. consortium meetings, working groups meetings, etc.) and external (e.g. dissemination events, stakeholders workshop webinars, learning programme, etc.). The news can be distinguished with respect to the events blocks, thanks to an identification label on the top of each box and to a different colour code: news is tagged in red, while the events appear in light blue.

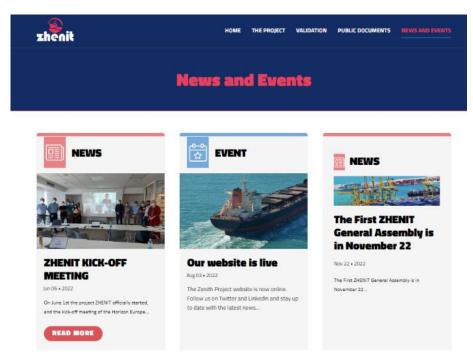


Figure 2.18: "News and Events" section

2.5 Supplementary information

2.5.1 Website's visits tracking systems

One of the most important aspects while managing a project website, or a website in general, is the tracking of the visits to have a clear view of the communication and digital marketing strategy adopted. As the actual situation that is affecting the European country in terms of legal advocacy of Google Inc. to treat the personal data while tracking the users' visits through Google Analytics tool, we are still



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evaluating the best option for that purpose (<u>https://www.garanteprivacy.it/home/docweb/-/docweb-</u> <u>display/docweb/9782874</u>).

Google Analytics in its latest version (v4) can be freely used to track the traffic and user behaviours. Data collected, processed and stored by Google Analytics ("Google Analytics data") are several: location, demographics, language, device, user behaviour, etc (Figure 2.19).

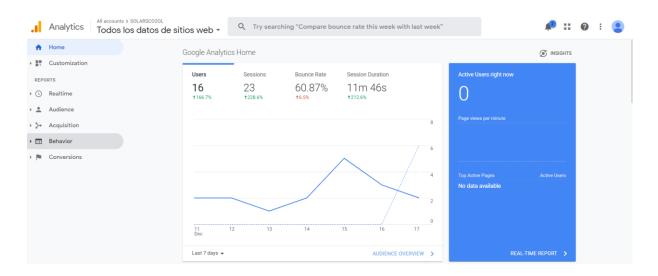


Figure 2.19: an example of Google Analytics interface

According to Google, data should be kept confidential and anonymized, however this is still under legal inspection.

To solve this issue, there is still the possibility to install a tracking tool which stores the anonymized data in Europe and that is compliant with our national privacy authority. This system is "*Matomo*", which offers several additional analyses by paying an annual charge. During the coming months, the consortium will go through the situation to find which solution is the most safe and compliant for the ZHENIT visitors.

2.5.2 Updates

The ZHENIT Project website will be updated regularly to reflect the current state of the project's progress. The website will continue to be updated for the entire duration of the project as well as at least two years after its completion.



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3 Conclusion

The ZHENIT website, with its structure, content and graphic design, constitutes the basis for an impactful website that attracts many users and will be the main communication channel for the project duration.

The website is effectively connected to all the other social media accounts of the project to guarantee an interactive and fruitful project communication. RINA-C will regularly update the pages of the website knowing its structure and how it has been developed, upload relevant material and publish new items (such as news and public deliverables) as well as external events and project events.

The communication strategy developed by RINA-C envisions a continuous monitoring of the website traffic and evaluation of the stakeholders' engagement, to ensure a maximum outreach potential for the project communication and dissemination.



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