

Қазақстан Республикасы Оқу-ағарту министрінің
Жамбыл инновациялық жоғары колледжі



JAMBYL
INNOVATION
HIGH COLLEGE

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SDU University

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ДИПЛОМДЫҚ ЖҰМЫС

Тараз, 2024

Қазақстан Республикасы Оқу-ағарту министрінің
Жамбыл инновациялық жоғары колледжі

«Корғауға жіберілді»
«Ақпараттық технологиялар» ТӘК-нің менгерушісі
_____ Сагындық Н.
«___» ____ 20____

ДИПЛОМДЫҚ ЖҰМЫС

Тақырыбы: Көптілді оқыту платформасын дамыту және **ЖШИ**
жекелендірілген оқу жолдары
**Development of a Multilingual Educational Platform with AI Personalized
Learning Paths**

06130100-«Бағдарламалық қамтамасыз ету» мамандығы бойынша

Орындаған:

— тобының
білімалушысы

қолы

Білімалушының
аты-жөні, тегі

Орындаған:

— тобының
білімалушысы

қолы

Білімалушының
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Білімалушының
аты-жөні, тегі

Ғылыми жетекші:

ғылыми дәрежесі,
ғылыми атағы

қолы

Жетекшінің аты-жөні,
тегі

Норма бақылаушы:

қолы

Бақылаушының
аты-жөні, тегі

Тараз, 2024

Андатпа

«ВандализмOFF» – еліміздегі вандализммен күресуді мақсат еткен «Жаңа адамдар» қозғалысына кіретін топтардың бірі. «Жаңа адамдар» жастар қозғалысының жиыны барысында Мемлекет басшысы бірқатар өзекті мәселелерге, соның ішінде тұрмыстық зорлық-зомбылық, ойынға тәуелділік, вандализмге назар аударды. ВандализмOFF тобы қазіргі уақытта еліміздегі вандализм феноменін жену үшін белсенді жұмыс жасауда. Бұл бастаманың басты мақсаты – халық арасындағы ескірген көзқарастарды өзгертуіп, деструктивті ойдан арылту.

ВандализмOFF веб-сайты вандализмге қарсы құрестегі біздің қызметіміз туралы ақпаратты таратуға және жаңа қатысуышыларды тартуға арналған негізгі платформа ретінде қызмет етеді. Мұнда сіз біздің миссиямыз, стратегиялық мақсаттарымыз және біз өткізетін акциялардың егжей-тегжейлі сипаттамасы туралы барлық қажетті ақпаратты таба аласыз. Әрбір оқиға мен жетістік біздің жұмысымызды және қоғамға әсерін тереңірек түсінуге мүмкіндік беретін фотосуреттер мен бейнелер арқылы расталады. Сайттағы жаңалықтар бөліміне ерекше назар аударылады, онда топтың қызметі туралы соңғы жаңартулар, сондай-ақ алдағы оқигалар мен акциялар туралы ақпарат жарияланады. Бұл әрбір келушіге біздің істерімізден хабардар болуға және қажет болған жағдайда топтың іс-шараларына белсенді қатысуға мүмкіндік береді. Сонымен қатар, сайтта жаңа мүшелерге арналған бөлім бар, онда кез келген адам қалай ВандализмOFF-ке қосылу жайлы ақпарат біле алады. Бұл платформа жай ғана веб-сайт емес, ол пікірлестердің кездесу орны, мұнда әркім өз ойымен, ұсыныстарымен бөлісіп, талқылауларға белсенді қатыса алады.

Абстракт

"ВандализмOFF" это одна из групп в движении "Жаңа Адамдар", которая направлена бороться с вандализмом в нашей стране. В ходе заседания молодежного движения "Жаңа Адамдар" Глава Государства обратила внимание на ряд актуальных проблем, включая бытовое насилие, зависимость от азартных игр, а также вандализм. Группа "ВандализмOFF" на данный момент активно работает над преодолением явления вандализма в нашей стране. Основной целью данной инициативы является изменение устаревших взглядов среди населения и избавление от деструктивного мышления.

Веб-сайт "ВандализмOFF" служит ключевой площадкой для распространения информации о нашей деятельности в борьбе против вандализма и привлечения новых участников. Здесь вы найдете всю необходимую информацию о нашей миссии, стратегических целях и подробные описания акций, которые мы проводим. Каждое событие и достижение подкреплены фото- и видеоматериалами, что позволяет глубже понять нашу работу и влияние на общество. Особое внимание на сайте удалено разделу новостей, где публикуются последние обновления о деятельности группы, а также информация о предстоящих мероприятиях и акциях. Это дает возможность каждому посетителю быть в курсе наших дел и при необходимости активно включиться в деятельность группы. Кроме того, сайт содержит раздел для новых участников, где каждый может узнать, как присоединиться к "ВандализмOFF". Эта платформа — не просто сайт, это место встречи единомышленников, где каждый может поделиться идеями, предложениями и активно участвовать в обсуждениях.

Abstract

“VandalismOFF” is one of the groups in the “Zhana Adamdar” movement, which aims to fight vandalism in our country. During the meeting of the Zhana Adamdar youth movement, the Head of State drew attention to a number of pressing problems, including domestic violence, gambling addiction, and vandalism. The VandalismOFF group is currently actively working to overcome the phenomenon of vandalism in our country. The main goal of this initiative is to change outdated attitudes among the population and get rid of destructive thinking.

The VandalismOFF website serves as a key platform for disseminating information about our activities in the fight against vandalism and attracting new participants. Here you will find all the necessary information about our mission, strategic goals and detailed descriptions of the promotions that we carry out. Every event and achievement is supported by photographs and videos, allowing for a deeper understanding of our work and impact on society. Particular attention is paid to the news section on the site, where the latest updates about the group’s activities are published, as well as information about upcoming events and promotions. This allows each visitor to be aware of our affairs and, if necessary, actively participate in the activities of the group. In addition, the site contains a section for new members, where anyone can learn how to join VandalismOFF. This platform is not just a website, it is a meeting place for like-minded people, where everyone can share ideas, suggestions and actively participate in discussions.

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Introduction

1.1 Motivation

In today's world, where public spaces are arenas for diverse interactions, the importance of preserving cultural and civic values cannot be overstated. Vandalism is not just an act of destruction, it signals deeper societal issues such as alienation, disregard for communal norms, and a lack of civic responsibility. The "VandalismOFF" project is designed not only to combat instances of vandalism but also to foster a culture of respect and care towards public spaces. We aim to inspire society to actively participate in protecting and restoring our shared cultural and urban heritage. During a session of the youth movement "Zhanga Adamdar," the Head of State emphasized the importance of addressing a range of pressing issues, including domestic violence, gambling addiction, vandalism, non-compliance with laws at all levels, preservation of natural resources, and maintenance of quality urban infrastructure. We are all purposefully striving to build a new Kazakhstan where everything starts with individual responsibility for one's actions. It's time to change outdated thinking and stop waiting—it's time to act. We must call on everyone to realize that acts of vandalism harm not others but each of us, as all damages are repaired at the expense of our own taxes.

1.2 Aims and Objectives

Our primary goal is to rectify the fault in thinking and change outdated attitudes that lead to acts of vandalism. Many people are not even aware of the frequency of such incidents and their consequences. Conversations with vandals often reveal that they lack concrete reasons for their actions; the most common excuse is a bad mood or a desire to vent anger. This highlights the need for a change in culture and accountability among our citizens. We must call on people to take active steps to create an improved and comfortable environment, recognizing that we are the source of the discomfort around us.

The primary objective of our project is to create a comfortable web platform designed to disseminate information about vandalism and our efforts to curb it.

On the website, every visitor will be able to find extensive information about the consequences of vandalism, methods of its prevention, and how everyone can contribute to the fight against this phenomenon. We call on citizens to actively participate in community life, support and develop a culture of respect for public property. Our events, educational campaigns, and interactive initiatives are designed to motivate residents to participate in improving the quality of life in their city and to foster a responsible attitude towards the environment. Through our website, we plan not only to inform but also to create an environment for sharing experiences and successful practices, which will help everyone realize their role in creating a safe and attractive urban space.

Research

2.1 Analysis of the Vandalism Issue

Vandalism generates significant negative impacts on urban environments and cultural heritage, affecting public safety and requiring substantial costs for the restoration of damaged property. Studying the causes and motivations behind such behavior, as well as its impact, will help develop more effective strategies for prevention and combat.

The creation of the "VandalismOFF" web platform is a key step in our strategy to fight vandalism. The website will enable our team to disseminate important information, attract public attention, and mobilize citizens to participate in our initiatives. It will serve as a hub for publishing updates about the group's activities, upcoming events, and initiatives, allowing every visitor to stay informed about our efforts and, if necessary, actively engage in our actions. Additionally, the site includes a section for new members, where anyone can learn how to join VandalismOFF. This platform is not just a website; it is a meeting place for like-minded individuals.

Many of us dream of living in a comfortable environment, but do not realize that we can be the source of discomfort ourselves. Not only acts of vandalism but also ignoring such acts is considered a serious issue. A recent survey revealed that many would not stop vandals from destroying a bus stop. This indicates an indifferent attitude towards public places and the infrastructure of the city. This indifference allows vandals to cause damage that is subsequently repaired at the expense of taxpayers.

If we want to live in a beautiful and comfortable city, we need to start with ourselves. Everyone must take responsibility for their actions. Immediately after new infrastructure objects appear, many people begin to damage and destroy them. It is crucial to understand that we are damaging our own property and causing harm to ourselves. Through our website, we plan not only to inform but also to create an environment for sharing experiences and successful practices, which will help everyone realize their role in creating a safe and attractive urban space. In the last six months alone, more than a thousand incidents of vandalism have been recorded in our country, leading to 120 administrative cases and the preparation

of 1,244 reports. Despite the country's development and societal progress, acts of vandalism continue to increase, demanding immediate and thoughtful response.

2.2 Review of Existing Solutions and Competitive Analysis

Despite the global prevalence of vandalism, responses in Kazakhstan remain insufficient. Unlike some countries where community and government efforts are well-coordinated, Kazakhstan shows a relative indifference towards a systematic resolution of the vandalism issue. This highlights the urgent need for initiatives like VandalismOFF.

On our website, which will serve as the main tool of our work, we aim not only to inform and educate the public but also to actively engage citizens in transforming their attitudes towards public property. While the site itself will not directly combat vandals, it is designed to change public consciousness. Our goal is not only to punish vandals but to change outdated views and behavioral stereotypes of all participants in public life. There are enough laws against vandals that bring no benefit, as vandalism does not cease. Offenders might spend a short time in jail or pay a fine, but this does not mean they realize their guilt, which is what truly needs to be addressed.

Furthermore, we found no websites with similar themes in Kazakhstan, indicating a lack of direct competition. However, this also underscores the significance and novelty of our project, which opens new opportunities for civic participation and enlightenment. The VandalismOFF web platform will become not just an information resource but also a symbol of active civic stance, calling for responsibility and respect for public values.

2.3 Potential for Implementation and Innovative Approaches

Activists from the VandalismOFF team will conduct numerous research cases aimed at psychologically impacting the public to change attitudes towards vandalism. The main task of the website is to inform about these activities, disseminate the results of our research, and announce upcoming events.

The VandalismOFF The website will become a platform for sharing experiences and successful practices, attracting more citizens to actively participate in community life and support a culture of respect for public VandalismOFF website plays a key role in this process by providing a platform to highlight all our actions. It not only informs the public about upcoming events and campaigns but also serves as a hub for attracting new participants and volunteers. The site helps

us share success stories and methods of combating vandalism, creating a model for emulation and inspiring citizens to take active steps.

Additionally, the website offers every visitor the opportunity to actively participate in the life of the group, propose ideas, or become part of our initiatives. Engaging everyone willing to contribute to creating a more cultured and safe urban environment is one of our key goals. The VandalismOFF platform is not just an information resource; it is a tool for social change, calling for civic responsibility and cultural education of the society.

2.4 Design Development

The design of the website significantly influences user engagement and retention. Given our focus on countering vandalism, we opted for a vibrant and compelling design. This choice not only delivers the information but also drives action. The design was developed internally with a focus on clarity and ease of access.

In an ideal scenario, we would have analyzed competitors and similar initiatives for better insights; however, the uniqueness of our project in Kazakhstan led us to rely on user surveys and feedback.

2.4.1 Colors

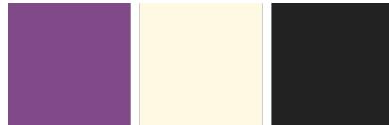


Figure 2.1: Colors

The colors we use for the website design play a crucial role in the visual perception and communication of our project's core message. The primary colors of our website are purple and beige, as these are the colors of the VandalismOFF team.

Purple symbolizes creativity, inspiration, and wisdom. It is intended to attract attention and stimulate users to actively participate in our events. Purple is also associated with transformation and change, which perfectly aligns with our goal of changing societal attitudes toward vandalism.

Beige, in turn, symbolizes stability, calmness, and reliability. It helps create a sense of comfort and trust, which is very important for engaging people in our initiative. Beige also serves as a neutral background that highlights the brightness and energy of purple, creating a harmonious and balanced design.

These colors not only reflect the identity of our team but also help establish an emotional connection with users, motivating them to take action and support our mission.

2.4.2 Format

We decided to choose a long-scroll format for our website because it is convenient for users who visit the site to learn about our team and activities. This format allows us to present information sequentially and in stages, making it more understandable and accessible. Users can quickly get an overview of our activities by simply scrolling down the page.

On the main page, we feature the key sections: information about the team, our goals, case studies, and news. This allows visitors to see all the key information at a glance and quickly familiarize themselves with our projects. For more detailed information, each section has the option to navigate to a separate page where users can learn more and get additional details.

Additionally, the long-scroll format helps reduce the load on users, as they can see all the information in one place without needing to repeatedly navigate between pages. This improves the user experience and makes site navigation simpler and more intuitive.

This approach also allows us to use visual elements and animations more effectively, making the site more engaging and interesting for visitors. This format enhances information perception and engages users more deeply in our projects

2.4.3 Effective Beginning

We decided to use video on the homepage of our website to make it more appealing and impactful for visitors. Considering that our site represents activists fighting against acts of vandalism, it was important for us to create an atmosphere of dynamism and determination that could capture attention and inspire action.

Placing a video background on the homepage allows viewers to see our team in action and feel the atmosphere surrounding our movement. This not only makes the site more engaging for visitors but also helps them better understand the goals and efforts of our organization.

The impactful video background creates a first impression of the website and provides a glimpse into the essence of our movement, emphasizing its significance and relevance. This helps establish an emotional connection with the audience and motivates them to collaborate and support our initiatives.

2.4.4 Blocks

The screenshot shows the 'About Us' section of the VandalismOFF website. At the top left is a bold header 'КТО МЫ?'. Below it is a sub-header '— КРАТКОЕ ЗНАКОМСТВО С НАШЕЙ КОМАНДОЙ'. A detailed paragraph describes the team's mission to combat vandalism and promote respect for public spaces. At the bottom left is a blue 'Больше' button. To the right are four photographs: three people in team shirts, a purple poster with 'VANDALISM OFF', a display board for a project, and two people interacting with a wall.

Figure 2.2: About Us

Immediately following the homepage, which greets visitors with an eye-catching video background, we have placed the "About Us" section. This placement is intentional, as one of the first questions that interest visitors is who we are. Positioning this section right after the homepage allows users to quickly find answers, enhancing their experience by making navigation intuitive.

The design of the "About Us" section is crafted to be highly readable and user-friendly while maintaining a stylish appearance that aligns with the overall aesthetics of the site. We have employed consistent styles for headers and sub-headers throughout the site to ensure visual tranquility and coherence. To add variety and dynamics to the presentation, the section also features photos of our team, making the content feel more personal and engaging.

Additionally, at the bottom of the section, there is a "Learn More" button that directs users to a page with more detailed information about our activities and projects. This allows interested visitors to delve deeper into our work without overwhelming the main section with excessive details.

This approach not only facilitates an effective presentation of information but also enhances user interaction, emphasizing our openness and willingness to share.

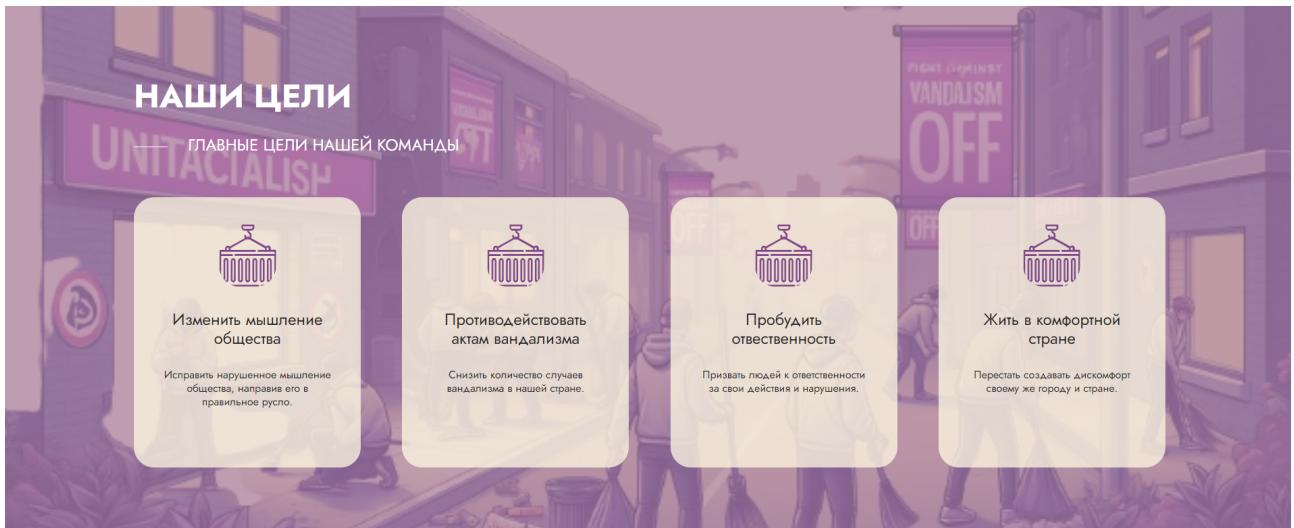


Figure 2.3: Our Goals

Following the "About Us" section, we introduce the "Goals" block, which serves a crucial function in articulating the objectives of our team. Clearly defining and displaying our goals is essential, as it helps align the expectations of our visitors with the mission of our organization. This section is designed to provide users with a clear and immediate understanding of our primary objectives, facilitating an instant connection with the core values and aims of our team.

The design of this section utilizes simple, card-style elements that are both visually appealing and informative. Each card is accompanied by an icon that symbolically represents the goal it describes, providing an intuitive visual cue that enhances comprehension. The background of this section features a thematic photograph that not only resonates with the overall theme of the website but also complements the site's color scheme, reinforcing the aesthetic coherence of the design.

Additionally, the layout is crafted to ensure that the information is accessible and engaging. The use of whitespace around the cards amplifies focus on the content, while subtle animations on hover add an interactive element that encourages engagement. By integrating design principles that prioritize clarity and user interaction, we create an inviting space for visitors to explore the aspirations and motivations driving our team.

In sum, this section is meticulously designed not just to inform but to inspire, employing visual storytelling techniques that resonate deeply with the viewers and foster a stronger connection with the community we serve. Each design choice, from the imagery to the interactive elements, is made with the goal of making our mission clear and engaging for every visitor.

УКРАСИЛИ ОСТАНОВКУ В ЦЕНТРЕ ГОРОДА

— ПОЧЕМУ ВЫ ДОЛЖНЫ ВСТУПИТЬ ИМЕННО В НАШУ КОМАНДУ

Вы замечали, что как только в городе появляются какие-то классные объекты инфраструктуры, например, стоянки и уютные остановки, то обязательно найдется тот, кто её разобьёт, что-то нарисует или обгадит? Например, если верить прошлогодней статистике, в Казахстане зафиксировано более тысячи актов вандализма и составлено 1244 протокола в отношении нарушителей. Это не просто цифры. Это тревожный показатель отношения казахстанцев к общественному имуществу, которое мы все вместе должны изменить. Все, что есть за его порогом — это тоже наше. Это все мое, а мое помять нельзя. Весь Казахстан - моя зона ответственности».

Figure 2.4: Cases

Following the "Goals" section, we introduce the "Our Cases" block, which we deem essential for showcasing the outcomes of our work. To present our projects, we opted for a slider format as it facilitates easy viewing and will accommodate an increasing number of cases over time. Each case is accompanied by a video and descriptive text, making the information accessible and straightforward.

In designing this section, our focus was on readability and user-friendliness. The slider navigation is intuitively designed, and each slide is crafted to provide a quick understanding of the project at first glance. Clicking the button under each case allows users to navigate to a page with a detailed description of the work, where all details and additional materials are available.

This approach not only visually demonstrates our achievements but also encourages users to explore our projects further, enhancing their engagement and interest in our organization's activities.

СТАТЬИ, НОВОСТИ, ПОЛЕЗНЫЕ МАТЕРИАЛЫ

— ИСТОРИИ И СОБЫТИЯ ИЗ ЖИЗНИ КОМПАНИИ



Краткое описание первого поста



Краткое описание второго поста



Краткое описание третьего поста

01.01.2021



02.01.2021



03.01.2021



...

Figure 2.5: News

Continuing from the cases section, we've placed the news segment in a slider format. This section provides information on events involving our organization and news related to vandalism. Initially, users can view four news cards, with additional entries available through slider scrolling.

The design of the news section is standardized to match the rest of the site, ensuring a cohesive visual experience. Each news card features a brief description of the event, and by clicking on the card, users can navigate to a dedicated page offering detailed information and supplementary materials. This feature makes interacting with the content convenient and informative, allowing users to delve deeper into the details of each event.

ПОЧЕМУ МЫ?

— ПОЧЕМУ ВЫ ДОЛЖНЫ ВСТУПИТЬ
ИМЕННО В НАШУ КОМАНДУ

Дружная команда



Наша команда — это пример сотрудничества и взаимоподдержки.

Иновационные подходы



Мы используем новейшие технологии для достижения наших целей.

Экспертное знание



Наш коллектив включает ведущих специалистов в области гражданской ответственности.

Глобальное влияние



Наши инициативы оказывают широкое воздействие на улучшение общественной среды.

Figure 2.6: Why us

Following that is a section explaining why users should consider joining our team, highlighting the advantages of our organization. Initially, four uniquely

shaped cards are visible, each equipped with a title. Clicking on a button provides more detailed explanations of each advantage.

For this section, we chose a graffiti-like font to reflect our theme of combating vandalism and to emphasize our team's creativity. The block is designed to be maximally clear and appealing to the user, incorporating our brand colors and style. This presentation effectively communicates the key aspects of our activities to visitors and motivates them to participate in our projects.

ВАШ ЧАСТО ЗАДАВАЕМЫЙ ВОПРОС

— ВОПРОСЫ, КОТОРЫЕ ЗАДАЮТ МНОГИЕ С ОТВЕТАМИ

КАКОВА ОСНОВНАЯ ЦЕЛЬ ВАШЕЙ КОМАНДЫ? +

КАКИЕ КОНКРЕТНЫЕ МЕРЫ ВЫ ПРЕДПРИНИМАЕТЕ ДЛЯ БОРЬБЫ С АКТАМИ ВАНДАЛИЗМА? -

Для борьбы с актами вандализма мы проводим различные мероприятия, такие как кампании просвещения, акции по уборке территорий после актов вандализма, сотрудничество с правоохранительными органами и общественными организациями.

КАК ВЫ ПЛАНИРУЕТЕ ИЗМЕНИТЬ ОБЩЕСТВЕННОЕ МНЕНИЕ О ВАНДАЛИЗМЕ? +

КАКИЕ ВЫЗОВЫ ВЫ ВИДИТЕ НА ПУТИ К ДОСТИЖЕНИЮ ВАШИХ ЦЕЛЕЙ, И КАК ВЫ ПЛАНИРУЕТЕ ИХ ПРЕОДОЛЕТЬ? +

Figure 2.7: FAQ

Following that, you'll find the Frequently Asked Questions (FAQ) section. Based on our experience, we have preemptively answered the questions most commonly posed by users. This section consists of a list of the most frequent inquiries, each accompanied by a plus icon, allowing viewers to expand and view the answers. This format saves time for both users and our team and makes the information readily accessible and convenient to use. The design of this section is crafted to ensure readability and visual appeal, making the interface intuitive and user-friendly.

2.4.5 Mobile Optimization

Mobile optimization plays a critically important role in the success of any modern web project, and here's why it is especially significant for our site. Given that our site will often be used in its mobile version for quick browsing, mobile optimization becomes even more crucial. In situations such as campaigning events or other scenarios where laptop access is limited, the mobile version of our site becomes the primary tool for presenting information to potential users or clients.

The mobile version allows for convenient and quick demonstration of our site's content on smartphones or tablets, ensuring high loading speeds and availability

of key functions. This enables users to familiarize themselves with necessary information on the go, which is particularly important in the dynamic environment of campaigning events.

Each year, an increasing number of people use mobile devices to access the internet. According to statistics, mobile traffic accounts for a significant percentage of total internet traffic. Thus, mobile optimization allows our site to be accessible to a broad audience and retain users who prefer browsing the internet via smartphones or tablets.

Enhancing user experience (UX). Mobile optimization ensures that our site displays and functions correctly on various devices, providing a comfortable interaction with our content. This includes adaptive design, convenient navigation, and fast page loading, which enhances user satisfaction and loyalty.

When optimizing the design of the site for mobile devices, simplification is a key factor, offering several important advantages:

Quick Loading: A simplified design means fewer elements on the page, affecting the site's loading speed. Mobile devices, especially when using mobile internet, can experience data transmission speed limitations. Reducing graphic elements, decreasing image sizes, and minimizing scripts help our site's pages load faster, which is crucial for retaining user attention on the information.

Improved Navigation Convenience: On mobile devices, the screen is significantly smaller than on desktops, making it crucial that control elements are easily accessible and understandable. Simplifying the design of our site includes enlarging button sizes, optimizing menus, and reducing the number of steps for performing basic actions.

By integrating a simplified design for the mobile version of our site, we not only improve functionality and accessibility but also ensure that users can interact effectively and pleasantly with our content, regardless of the device they are using to access the site.

Thus, mobile optimization of our project has not only increased its accessibility and convenience for users but also significantly improved its visibility and effectiveness.

2.5 Front-end Development

Front-end development refers to the process of creating the client-side of a web application or website that users interact with directly. This involves designing the interface and user experience, and implementing user interactions using HTML, CSS, and JavaScript. The importance of front-end development lies in creating a user-friendly, functional, and aesthetically appealing interface that enhances user retention and engagement. The role of a front-end developer is not only to code but also to understand principles of design, accessibility, and performance optimization. In this thesis, we aim to leverage modern technologies and approaches

to build an effective and interactive web application that provides an excellent user experience.

2.5.1 Choosing React

[3] Originally, we conducted an analysis to determine which framework would be best suited for our website. As a result, we chose React as the framework to implement our project. There are several reasons for this decision.

React offers a virtual DOM, which allows for efficient updating of only the parts of the page that have changed, without needing to redraw the entire interface. This enhances application performance and improves the user experience.

Another important distinction between React and some other frameworks is that React is a library, not a full-fledged framework. This means that React focuses on solving specific tasks, such as rendering interfaces and managing state, while other aspects, such as routing and dependency management, can be addressed using additional libraries or tools.

Overall, while each framework has its own features and advantages, React stands out for its flexibility, performance, and active developer community, making it a popular choice for developing modern web applications.

A distinctive feature of React is also its approach to application state management. Instead of using two-way data binding like Angular, React proposes a one-way data flow (from parent component to child). This makes the code more predictable and easier to debug.

Beyond technical advantages, React is also well-suited for creating websites with engaging designs. Its flexibility and modular architecture allow for easy integration of various libraries and tools for crafting creative user interfaces. This is one of the key differences from other frameworks, such as Angular, which lies in its component architecture. In React, the emphasis is on creating components, which are independent and reusable building blocks of the interface that can be used multiple times across different parts of the application. This ensures better code organization, reusability, and easier maintenance.

Our site requires an attractive and modern design that will catch visitors' attention and ensure ease of use. By using React, we can easily create components with various animations, transitions, and effects, making the user interface more appealing and interactive.

Thanks to the ability to use JSX in React, we can describe the structure of the user interface in terms of components that resemble regular HTML, but also allow for the integration of JavaScript and CSS directly into the code. This simplifies the process of creating and styling the interface, as well as enabling more dynamic and creative designs.

Thus, the choice of React for the development of our site is driven not only by its technical capabilities but also by its ability to create an attractive and interesting design that meets the requirements of modern users.

We chose Next.js[9] as the foundation for our React project for several reasons. First, Next.js provides excellent support for Server-Side Rendering (SSR), which significantly enhances the application's performance and SEO-friendliness. This is crucial for our goals as we aim to ensure fast page loads and better indexing by search engines.

Secondly, Next.js offers built-in routing features, which simplifies the development and maintenance of complex applications. This allows us to avoid additional configurations and streamline the project structure.

Thirdly, Next.js seamlessly integrates with Node.js, allowing us to use the same programming language (JavaScript) on both the client and server sides. This ensures high flexibility and simplifies development, as developers do not need to switch between different technologies.

Thus, choosing Next.js for our project enables us to optimize performance and accelerate development, while staying at the forefront of web technologies.

After creating the project, we proceeded with the project structure.

2.5.2 Project Structure

We decided to use a component-based architecture because it is very convenient for structuring a website due to its modularity, scalability, and reusability of components. The component-based architecture of a website is an approach to building web applications based on dividing the user interface into many independent and reusable components. Each component represents a separate building block that contains both visual elements and associated logic. Components can be nested within each other to create more complex interfaces.

The main advantages of using a component-based architecture include:

Modularity: Components should be independent and easily reusable in different parts of the application.

Responsibility separation: Each component should be responsible for only one specific functionality or part of the interface. This makes the code easier to understand and maintain.

Component hierarchy: Components can be nested within each other to create more complex interfaces. This allows building applications using smaller components and reusing them.

State management: Some components may have internal state that can change during the application's execution. State management allows reacting to user actions and data changes.

The benefits of a component-based architecture include improved code support, increased reusability, simplified testing, and more flexible development. Additionally, components can be easily replaced or modified without affecting other parts of the application.

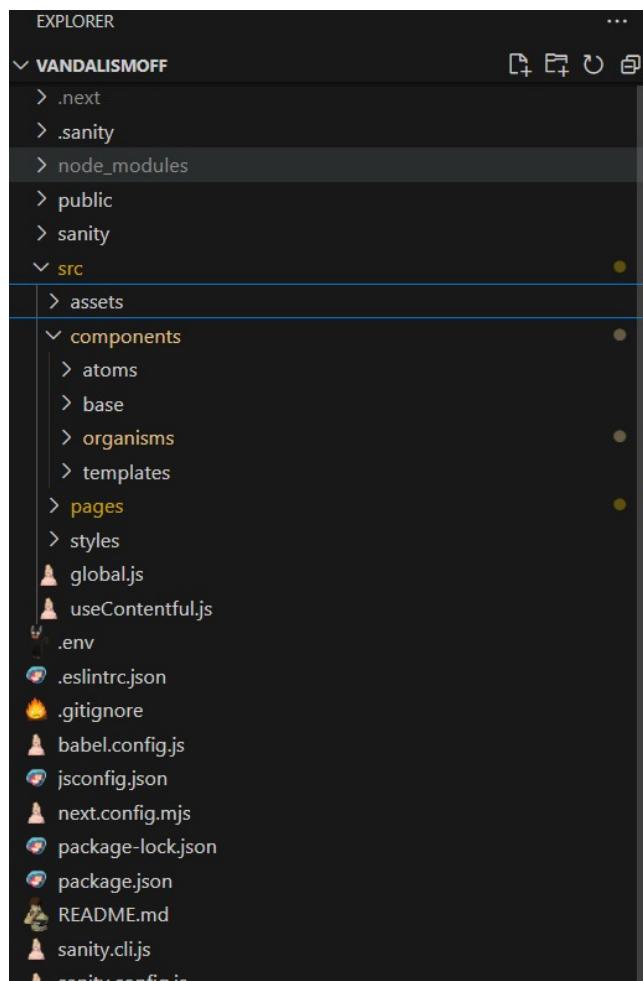
Therefore, we decided to use this architecture in the website structure because it is convenient for collaborative work. Using components makes the code more

readable and understandable for other team members, which simplifies collaborative development and maintenance of the project. Each component can be developed and tested independently of others, reducing the risk of errors.

Component-based architecture makes it easy to make changes to the website interface, as each component can be easily modified or replaced without affecting other parts of the site. This is especially useful for rapid iterative development when quick responses to changes in requirements or design are required.

Components can contain internal state and handle user events, allowing for the creation of interactive interface elements such as forms, buttons, tabs, etc. This makes the site more attractive and user-friendly.

Thus, using a component-based architecture in the website structure helps create a more flexible, modular, and easy-to-maintain project, contributing to its quality and efficiency.



2.5.3 Effective Layout

In React, the application structure is organized through components, so you can create a scalable, user-friendly interface. The component approach helps you break down the interface into smaller, independent parts, reuse them and test them individually.

In order to place the elements of a web page, React decided to use the following principles and techniques:

Components: The header, sidebar, body, and footer blocks can be represented as separate React components. This simplifies code development and maintenance because each component performs only part of the work.

Configuration: The parent component may contain other components. For example, the main app component may contain headers, sidebars, body, and footers as child components.

Body - The main block occupies a large part of the page and is intended for the main content. The central location provides convenient reading and interaction, which is especially important for keeping the user's attention. Place the main block containing the information here.

Header - Placing a header at the top of a page is a standard practice because it typically includes navigation elements, logos, and so on. This should appear as soon as the page is loaded.

Sidebar - The sidebar provides convenient access to additional resources and functional elements such as links to other pages on our site. Its location on the left allows users to easily navigate through additional options without having to scroll through the main content.

Footer - The footer contains copyright information, links to privacy policies, contact details, and other important elements that should be accessible, but do not distract attention from the main content.

Props: I used props to transfer data and settings from the parent component to the child component. For example, if you need to display different elements in the sidebar depending on what the user selects in the header, use props to control this.

State: The state was used to manage dynamic data such as the current page and the open section of the sidebar. The component has its own local state that is managed through useState or useReducer.

Routing: I used a library such as react-router-dom to control the navigation of the sections. This allows you to define a "path" or "route" to various components (pages), for example, a separate route for each page in the body.

Global State Management: If you need to make the state available to many components at different levels of the hierarchy, you can use React Context or an external state management library such as Redux or MobX.

As a result, we used these principles and tools to effectively manage the location and behavior of components in React applications, creating a structured, easily adaptable web application.

2.5.4 Execution of all components

During the development of each component of the project, deep knowledge and practical skills in front-end development were utilized, especially in using React

and Next.js technologies. These frameworks were chosen for their powerful capabilities to create interactive user interfaces and enhanced application performance.

"About Us" Block serves as an informational segment about the Vandalan-chOFF team. This block is divided into a textual description part and an image display part. By utilizing styled-components[7] for styling, we ensure the design's responsiveness, allowing the block to display correctly across devices with different screen resolutions. The "More" button leads users to an extended page with more detailed information about the team. Modern CSS effects such as transitions and animations are used to enhance visual perception and add interactivity when interacting with the block.

Goals Block is organized into cards, each showcasing a key goal of the team. Using flexbox to create a responsive layout, this block ensures proper display across various devices. The cards contain icons and brief descriptions, making the information easily digestible. The useState[3] hook is used to dynamically change styles during interaction, for example, changing the background color of a card upon hover, which enhances interactivity.

Case Studies Block utilizes the react-slick[1] slider to showcase the team's cases. Each slide contains a video and description, creating a multimedia presentation of activities. Lazy loading [2] of components using Suspense and lazy speeds up page loading times and reduces its initial weight. The slider is set to auto-scroll with the ability to manually control, making content viewing more comfortable and user-friendly.

Advantages Block includes interactive elements, each revealing additional information upon a click. Using the useState hook[], we manage the visibility [6] of text in each block, allowing the user to gradually learn information. Styling with CSS animations adds dynamism during text expansion, making interactions more engaging.

News Block offers users the ability to scroll through news with a convenient slider. News cards are styled to attract attention and include brief descriptions, publication dates, and images. Hover effects enhance interaction, such as card elevation on mouseover. The slider's responsive design ensures it displays correctly on all device types.

FAQ Block creates interactive user engagement through expandable answers to frequently asked questions. Each question and answer are styled using styled-components, allowing easy adaptation of appearance to match the overall site styling. Dynamic state changes with useState add interactivity, making it easier for users to find necessary information.

Site Routing includes dynamic navigation using React Router, allowing the user to move between different pages without reloading. We have implemented smooth transitions between pages with animations and maintaining the interface state, ensuring seamless and comfortable site operation. This is particularly important for enhancing user experience and optimizing interactions.

Site Header with an adaptive menu provides convenient navigation throughout

the site. Using styled-components allows flexible styling and behavior of menu elements depending on the device type. The menu button adapts to different screen resolutions, making the interface user-friendly on both desktops and mobile devices. The implementation of states to control menu visibility adds interactivity and improves user experience.

Team Block demonstrates a dynamic visual representation of the team using React's useState and useRef. The central image changes based on the cursor's position, adding an engaging element to the page. This visualization method allows for a more dynamic and visually appealing representation of the team. Images of team members respond to cursor movement, making interaction with the block more engaging.

Contact Page integrates an interactive map and detailed contact information, styled with styled-components for consistency with the overall design. This page provides essential contact details such as address, email, and phone numbers, presented in an aesthetically pleasing manner. The integration of a responsive map enhances user engagement and provides a direct visual reference to the location.

Functionality: Each component of the site has its own logic, implemented through states and props in React. The use of hooks such as useState and useEffect allowed organizing state management and the component lifecycle, providing dynamic behavior of elements depending on user actions.

Learning React and Next.js: Deep diving into documentation and the developer community helped not only master the basics of working with these technologies but also apply advanced techniques such as server-side rendering to improve SEO and page load speed, which is critically important for commercial projects.

Integration and Testing: Each stage of development was accompanied by intensive testing of components to ensure their correct operation in various browsers and on different devices. The use of tools for automated testing, such as Jest and React Testing Library, accelerated the development process and increased the reliability of the application.

Optimization and Configuration: Great attention was paid to optimizing application performance, including lazy loading components using React.lazy and Suspense, which significantly reduced the time of the first load and improved the overall user impression of the site's speed.

Mobile Device Adaptation: From the very beginning of development, adapting the interface for mobile devices was a leading priority. The use of media queries and flexible styles in styled-components ensured excellent display on screens of any size.

2.5.5 Libraries used

Let's look at each of the selected libraries and technologies in more detail to understand why they were chosen for our project and what advantages they provide.

React React is a library for creating user interfaces from Facebook. It allows

you to develop interfaces as a set of independent components, which simplifies the process of developing and maintaining complex user interfaces. React uses a virtual DOM that optimizes interface updates and improves application performance. We chose React because it offers a vast community, a vast ecosystem of libraries, and the flexibility to integrate with other tools.

Styled-components Styled-components is a library for React that allows you to write CSS code directly in JavaScript files, creating stylized components. This eliminates the problems associated with cascading and style conflicts, allowing the styles of each component to remain isolated. This approach makes it easier to scale styles and reuse them, which makes Styled-components an ideal choice for our project with a dynamic and modular design.

Next.js Next.js is a framework for server-side rendering of React applications. It provides improved SEO, fast page loading and provides features such as static generation and creation of server APIs. Next.js is ideal for creating high-performance web applications and improving the user experience by loading content faster.

React Player React Player is a React component that makes it possible to embed video content from various platforms such as YouTube, Facebook and Twitch. We chose this component to integrate videos on our site, as it supports many sources and has flexible settings, which makes it easy to integrate videos into various parts of the site.

useContentful useContentful is a custom hook for integration with the Contentful content management system. Contentful provides a content management API that allows us to easily extract data and use it in our React application. This hook helps simplify working with the Contentful API and integrate content data directly into React components.

Slider (react-slick) react-slick is a library for creating carousels and sliders in React applications. It provides many settings for creating adaptive and functional sliders. We use react-slick to showcase news and projects on the site, which allows us to present information in a convenient and visually attractive form.

Express Express is a framework for Node.js, which simplifies the creation of server applications. Express is used to create REST APIs, request processing, and routing. The choice was influenced by its performance, simplicity and flexibility, which makes it an ideal tool for fast backend development.

Axios Axios is an HTTP client for making API requests. It supports promises, which simplifies asynchronous request processing and data state management. Axios was chosen for its simplicity, reliability and extensive configuration options.

CORS CORS (Cross-Origin Resource Sharing) is used for secure communication between different domains. This mechanism is necessary for our site to ensure safe and correct interaction between the frontend and backend located on different domains.

Head (from Next.js) Head from Next.js allows you to manage the meta data of an HTML document for each page. This is important for SEO, as it allows you

to set title, description and other meta tags, which contributes to better indexing of pages by search engines.

These technologies were chosen not only for their functionality and reliability, but also for their ability to integrate with each other, ensuring smooth and efficient development of a modern web application.

2.6 Utilizing CMS

A Content Management System (CMS) is software that allows you to create, edit, and manage content on a website without the need to directly intervene in the site's code. This makes CMS an indispensable tool for websites where content is regularly updated, such as news portals, blogs, and corporate sites.

The need for a CMS for our site: Our site actively uses various forms of content, including news, cases (examples of completed projects), and team information. This data requires regular updates to keep the site relevant and interesting to users. Using a CMS will allow our team to quickly and efficiently update information, add new materials, and manage existing content without having to contact developers each time.

Advantages of using a CMS:

1. Ease of use: CMS usually have an intuitive interface that allows users without technical skills to easily publish and edit content.
2. Timeliness of content updates: CMS allows for timely responses to changes, adding current news and information, which is important for a dynamically developing project.
3. Access rights differentiation: CMS provide the ability to configure access levels for different users, which is important for large teams and ensures secure site management.
4. SEO optimization: Many modern CMS include tools for SEO optimization, helping to improve the site's visibility in search engines.

Choosing the right CMS: When choosing a CMS, it's important to consider the specifics of the project and the team's preferences. There are many solutions on the market, from popular platforms like WordPress and Joomla to more specialized systems like Drupal and Magento. For our site, it is important to choose a system that will provide flexibility in customization, high security, and the ability to integrate with other tools and services.

Integration with Design and Development: The CMS must integrate with the site's design and architecture, maintaining the unique visual style and functionality developed by the team. This includes support for modern web standards and responsiveness for mobile devices.

In conclusion, a CMS is a critically important component for our website, ensuring its relevance, ease of management, and timeliness in active information activities.

2.6.1 Choosing Contentful

Contentful[5] is a modern content management platform that functions as a headless CMS. Unlike traditional CMS that are tightly integrated with a specific web platform or template, a headless CMS provides only the backend for storing and managing content, which allows developers to use any technology for the frontend.

Choosing Contentful for our project was motivated by several key factors:

1. API-Centricity: Contentful offers powerful APIs for delivering content to any platform or device, making it convenient to integrate content with websites, mobile apps, and even IoT devices. Contentful supports both REST and GraphQL APIs, providing flexibility and efficiency in data handling.
2. Separation and Security: Contentful allows for role-based access control to content, which is important for teams with divided responsibilities. This not only secures the data but also organizes the workflow.
3. Scalability: The platform is suitable for both small and large projects due to its high scalability. Contentful can handle large volumes of data and traffic, which is crucial for growing projects.
4. Convenience for Developers and Marketers: Contentful provides user-friendly tools for both technical specialists and non-technical users. Developers can manage data structure and display logic, while content managers and marketers can handle content filling and optimization without risking affecting the site structure.
5. Rich Integration Capabilities: Contentful easily integrates with other services and platforms thanks to an extensive catalog of extensions and APIs. This allows for expanding the site's functionality without needing to overhaul its architecture completely.
6. Content Localization: The platform offers advanced capabilities for handling multilingual content, enabling the management of different content versions for various regions from a single interface.

The choice of Contentful was driven by the need to create a modern, flexible, and scalable content management solution that could ensure fast and efficient operation for both developers and content managers. This choice supports the aim to continually update technologically and enhance the user experience on our site.

2.6.2 Administration Interface

In the development of our project, the administration interface provided by Contentful plays a crucial role in streamlining content management and enhancing productivity. Contentful offers a highly customizable and intuitive web-based admin panel that allows users to create, manage, and publish content seamlessly.

Downloading and Integrating Contentful:

1. Setting Up Contentful: The initial step involves setting up an account on Contentful. This process is straightforward and involves registering on their website, after which you can immediately start creating your content spaces.
2. Creating a Space: After logging into Contentful, I created a new "space" which acts as a container for all the content related to our project. This space includes various content types, entries, and assets.
3. Defining Content Models: Contentful allows for the definition of different content models which serve as blueprints for the data that will be entered. In our case, I defined content models for news articles, case studies, team member profiles, and other necessary types. Each model was designed with fields that correspond to the data structure required for our frontend application, such as text, images, links, and rich text fields.
4. Content Management: With the content models set up, the next step involved populating the space with actual content. The administration interface facilitated this process by providing a user-friendly environment where non-technical team members could easily add and update content without needing to understand the underlying code.
5. Integrating with the Project: To connect our React project with Contentful, I used the Contentful JavaScript SDK. This SDK simplifies the process of fetching data from Contentful's APIs and integrating it into our application. The setup involved installing the SDK via npm, configuring it with our space ID and access tokens, and then querying Contentful's APIs to retrieve the required data.
6. Dynamic Content Updates: One of the key advantages of using Contentful in our project is the dynamic nature of content updates. Any changes made in the Contentful admin panel are immediately available to our application through the API, ensuring that our site remains up-to-date without requiring redeployment.
7. Role-Based Access Control: The admin panel supports role-based access control, which is critical for large teams. We assigned different roles and permissions to various team members, ensuring that each individual could only access the parts of the system relevant to their responsibilities.

Advantages of Using Contentful’s Admin Interface:

- Efficiency and Flexibility: The ability to define custom content models and then manage content through an easy-to-use web interface significantly reduces the time and effort required to maintain our site.
- Scalability: As our project grows, Contentful’s infrastructure can handle increased loads without performance degradation.
- Collaboration: With features like scheduled publishing and version control, our team can collaborate effectively, ensuring that updates are rolled out smoothly and on time.

By integrating Contentful, we have significantly optimized the content management workflow, allowing our team to focus more on improving the user experience and less on the technical complexities of content management.

2.7 Back-end Development

For the server-side of our project, we opted to use Python [8] in conjunction with the D[4]jango web framework. Python is a powerful and flexible programming language that supports structured, object-oriented, and functional programming styles. It is particularly suited for web application development due to its readability, a rich ecosystem of libraries and tools, and strong community support.

Django, on the other hand, is a high-level web framework for Python that enables the rapid development of secure and maintainable web applications. Django encourages quick development and clean, pragmatic design by adhering to the DRY (Don’t Repeat Yourself) principle and focusing on automating as much as possible.

Learning and Application The learning process began with acquiring a fundamental understanding of Python, covering variables, data types, functions, classes, inheritance, and exceptions. After solidifying the basics of Python, we proceeded to explore Django, starting with its MVT (Model-View-Template) architecture, which is a variant of the traditional MVC architecture.

The next step involved applying this knowledge to the project: setting up a Django project, creating data models that define the database structure, and interacting with this database through Django’s ORM—a powerful tool for database operations that allows developers to use Python code to perform database queries without writing SQL code directly.

Implementation of Form Submission A key aspect of backend development was implementing the form submission functionality. Using Django's forms, we managed secure data collection from users, validation of that data, and its subsequent processing. All data transmitted through forms are subjected to Django's built-in cleansing and validation mechanisms, providing protection against various types of web attacks, such as SQL injections.

Data from forms were handled on the server using Django's classes and functions, which allowed for effective management of data flow and application logic. Django's integration with database systems like SQLite and PostgreSQL ensured reliable information storage.

Throughout the backend development process, technical skills in programming with Python and using Django were not only acquired but also complemented with competencies in planning application architecture and handling data security and management. This experience has provided a solid foundation in backend web development, emphasizing the practical application of theoretical knowledge and the importance of a well-structured, secure backend for comprehensive web solutions.

2.8 Hosting and Deployment

Hosting and deploying a web project are crucial aspects that ensure its availability to users on the Internet. This process involves selecting a hosting platform, setting up the server, uploading the project files to the server, and configuring various services to monitor and manage traffic.

Choosing a Hosting Service For our project, we chose PS.KZ hosting platform, which offers reliable and affordable hosting services with the support needed for Django-based web applications. PS.KZ provides various scalable service plans to accommodate project needs and ensures high performance and stability for the application.

Deployment Process The deployment of our project included the following steps:

1. Preparing the project for deployment, which involves minimizing and optimizing the code.
2. Setting up the server environment at PS.KZ, which entails configuring databases, installing necessary libraries, and setting up the server to handle requests to our web application.
3. Uploading the project files to the server via FTP or other deployment tools provided by PS.KZ.

4. Testing the deployed application to ensure its correct function before opening access to users.

Using Google Analytics To monitor user interactions with our website and analyze the effectiveness of the project, we integrated Google Analytics. This tool allows tracking metrics such as visit counts, session durations, traffic sources, and user behavior on the site. Information from Google Analytics helps us understand which aspects of the site are most effective and where additional optimization is needed to improve the user experience.

Conclusion Hosting and deployment are critical for the success of any web project. The right choice of hosting and careful planning of the deployment process ensure stable and efficient operation of the website. Integration with analytics systems, such as Google Analytics, further allows for improving and optimizing the project, focusing on the needs and behaviors of users.

Result

3.1 Overview

edef,defmgdem Building upon the core implementation strategies and design choices discussed in the previous chapters, this section aims to present a comprehensive overview of the project outcomes. The evaluation of our website development project focuses on various dimensions such as user engagement, design effectiveness, and technical robustness, reflecting on both the successes and the areas requiring further enhancements.

3.2 User Engagement

The initiative to combat vandalism through our interactive platform has significantly heightened user engagement. Analytics reveal a consistent increase in visitor numbers, session duration, and interactive activities such as form submissions and participation in community discussions. This uptick is a testament to the compelling content and user-friendly design of the website, which encourages visitors to explore more and engage deeply. Feedback mechanisms integrated into the site have not only fostered a two-way communication channel but also gathered valuable user insights that guide continuous improvement.

3.3 Design Effectiveness

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well with the theme of active community involvement against vandalism. The long-scroll format of the website enhances user experience by allowing seamless navigation and content consumption, which is critical in educating the community about the adverse effects of vandalism and promoting proactive engagement.

3.4 Technical Rer

From a technical perspective, the website has demonstrated robust performance, supported by a solid backend architecture built with Django and a reactive frontend using React. This combination has facilitated a responsive and dynamic user experience across various devices and platforms. The use of modern web technologies has ensured that the site remains fast, accessible, and secure, which is crucial for maintaining user trust and satisfaction.

Looking forward, the scalability of the website needs to be addressed to accommodate an increasing amount of content and user interactions. As the community grows, the platform must evolve to handle higher traffic volumes and more complex data interactions without compromising performance.

Further personalization features could be introduced to deliver tailored content to different user segments. This approach would increase relevance and engagement by providing users with information and activities that match their specific interests and involvement levels.

Expanding community features such as forums, live chats, and collaborative tools could significantly enhance user interaction and participation. These features would support a more vibrant community ecosystem, encouraging users to take active roles in content creation and community moderation.

On the technical side, continuous efforts are needed to integrate advanced security measures and data protection protocols to safeguard user data and enhance trust. Additionally, optimizing the mobile experience should be a priority to align with the increasing trend of mobile internet usage.

The project has successfully created a platform that not only raises awareness about vandalism but also actively engages the community in preventive measures. The results achieved thus far are promising, yet there is considerable scope for enhancement and expansion. The future phases of the project will focus on scaling the platform, enriching user engagement strategies, and leveraging technological advancements to ensure the website's long-term success and impact.

Conclusion

At the end of this project, we developed and launched a website that plays a key role in the fight against vandalism in our country. The creation of this site was motivated by the need to provide a reliable and effective platform to educate the public and promote civic participation in addressing the problem of vandalism.

The site provides users with extensive information about the activities of our team, methods of combating vandalism and ways for everyone to personally contribute to this process. One of the main goals of the site is to attract the attention of the general public to the problem of vandalism, create awareness of the activities carried out by the team, and mobilize public support.

Key achievements of the project include:

Developing a user-friendly and attractive interface that facilitates easy user interaction with content, simplifying the process of learning and engagement. Creation of a content management system (CMS), which allows you to quickly and efficiently update information on the site, add news and articles without constant intervention from developers. Integration of modern analytics tools such as Google Analytics, which allows you to track user interaction with the site and adapt your content strategy in accordance with the data received. Our future plans include expanding the functionality of the site by adding new interactive features such as forums, chats and collaboration tools, which will make the platform even more attractive and useful for users.

We also plan to continue working on optimizing the mobile version of the site to ensure comfortable use of the resource from any device. This is especially important in light of the growing number of users who prefer mobile Internet.

In addition, emphasis will be placed on improving data protection mechanisms and site security so that users do not have to worry about the confidentiality of their information.

Thus, the project not only achieved its goals of informing and engaging the public in the fight against vandalism, but also laid the foundation for further expansion and improvement, which will allow us to remain at the forefront of this important social fight.

Appendix

A.1

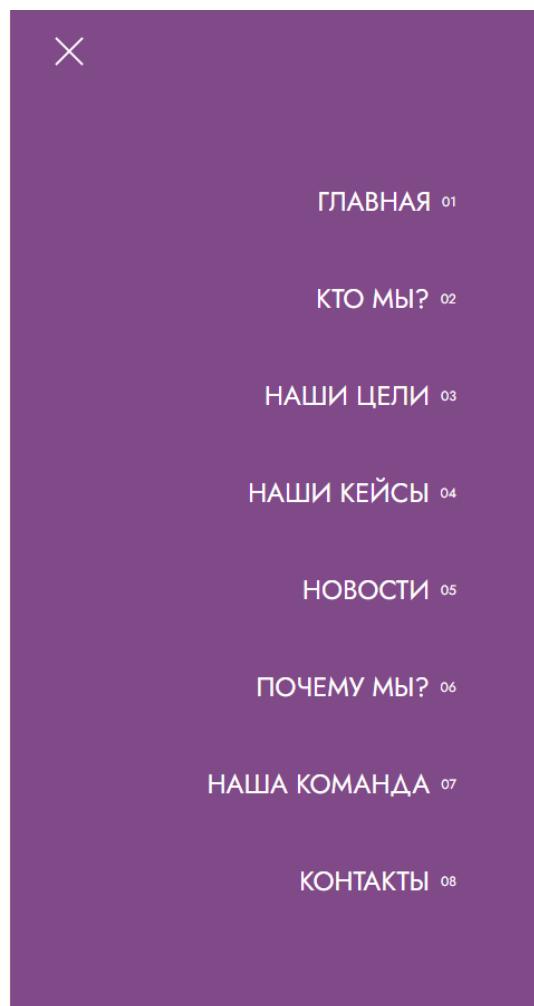


Figure A.1: Menu

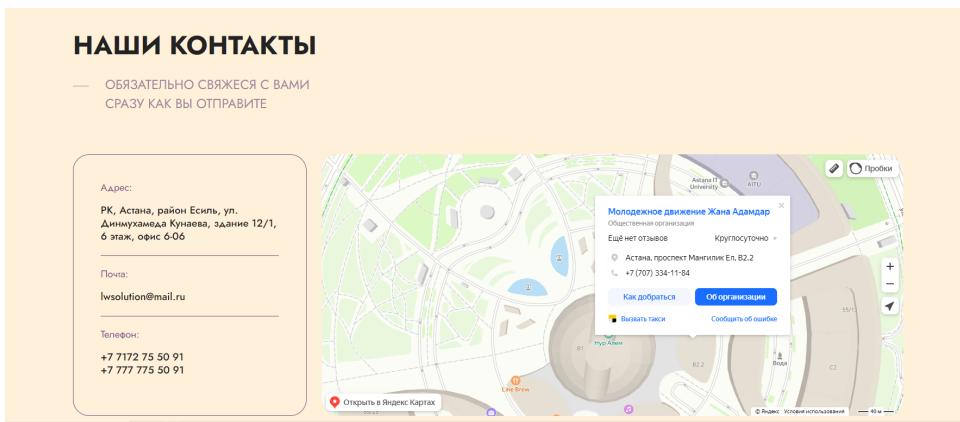


Figure A.2: Contacts

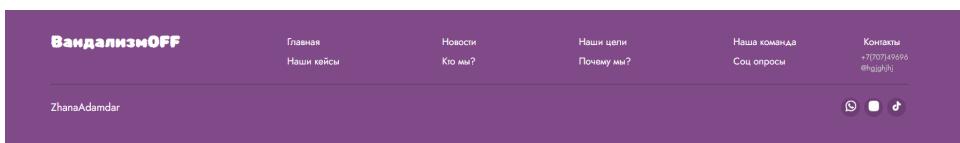


Figure A.3: Footer

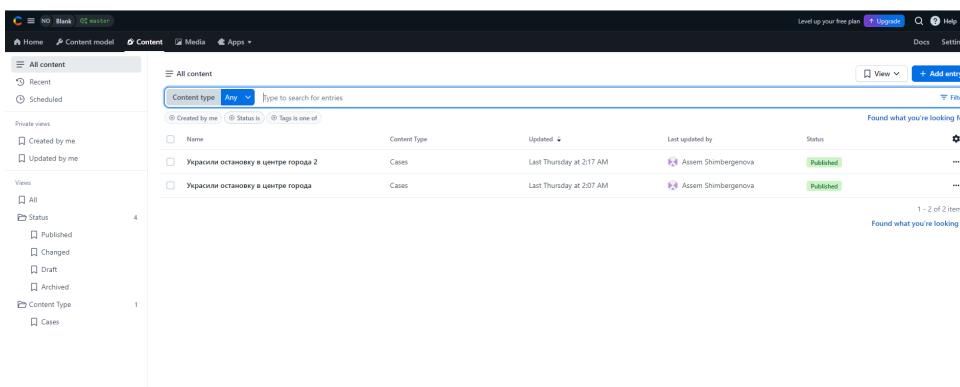


Figure A.4: Admin

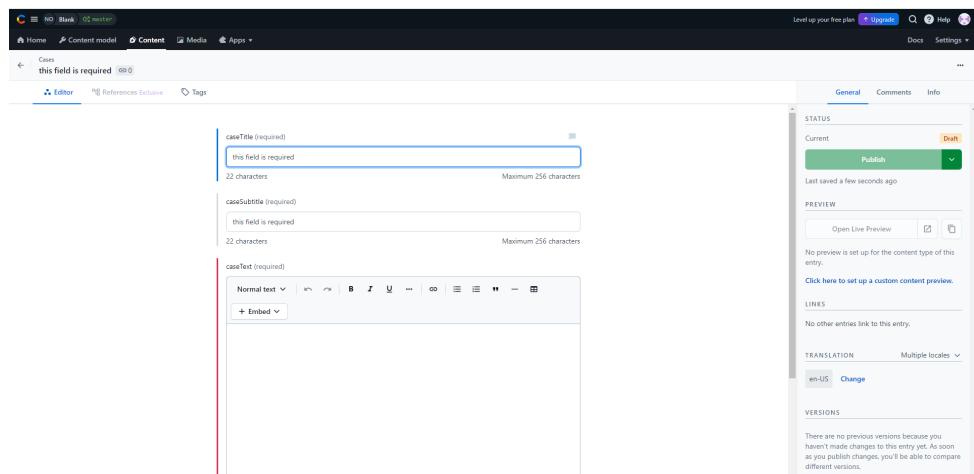


Figure A.5: Admin CMS



Figure A.6: Screenshot

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