UNIVERSITY OF PIRAEUS

School of Information and Communication Technologies

Department of Informatics

Thesis

Thesis Title: Τίτλος Διατριβής:	**KindLink: Application that promotes volunteering using .NET technology** KindLink: Εφαρμογή προαγωγής του εθελοντισμού με τη χρήση της τεχνολογίας .NET
Student's name-surname:	**Vassiliki Karagianniki**
Father's name:	**Vassilios**
Student's ID No:	**Π20074**
Supervisor:	**Efthimios Alepis, Professor**

September 2024/ Σεπτέμβριος 2024

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As the author of this paper, I declare that this paper is not a product of plagiarism and does not contain material from unmentioned sources.

1 Abstract

Στόχος της παρούσας πτυχιακής εργασίας είναι η ανάπτυξη μιας ολοκληρωμένης διαδικτυακής εφαρμογής για τη διευκόλυνση του συντονισμού εθελοντών και οργανώσεων που εμπλέκονται σε δραστηριότητες κοινωνικής και κοινοτικής υπηρεσίας. Η εφαρμογή στοχεύει στη διευκόλυνση της διαδικασίας αντιστοίχισης εθελοντών με τις κατάλληλες ευκαιρίες, παρακολούθησης της συμμετοχής των εθελοντών και αποτελεσματικής διαχείρισης των δραστηριοτήτων των οργανώσεων. Η μεθοδολογία που χρησιμοποιήθηκε περιλάμβανε ανάλυση απαιτήσεων, σχεδιασμό συστήματος, υλοποίηση και δοκιμή. Τα βασικά βήματα που ακολουθήθηκαν περιλάμβαναν τη συγκέντρωση απαιτήσεων χρήστη, το σχεδιασμό διεπαφών χρήστη, την υλοποίηση λειτουργιών backend χρησιμοποιώντας ASP.NET Core και Entity Framework Core και τη διεξαγωγή επαναληπτικών δοκιμών και βελτίωσης. Τα κύρια αποτελέσματα αυτής της εργασίας περιλαμβάνουν την ανάπτυξη μιας λειτουργικής διαδικτυακής εφαρμογής με δυνατότητες όπως εγγραφή χρήστη, περιήγηση σε εθελοντικές ευκαιρίες, διαχείριση εκδηλώσεων και δυνατότητες κοινωνικής δικτύωσης.

ΘΕΜΑΤΙΚΟΣ ΤΟΜΕΑΣ: Πληροφορική, Τεχνολογία Λογισμικού

ΛΕΞΕΙΣ ΚΛΕΙΔΙΑ: Διαχείριση εθελοντών, εφαρμογή Ιστού, ASP.NET Core, Entity Framework Core, Microsoft Identity

The aim of this thesis is to develop a comprehensive web application to facilitate the coordination of volunteers and organizations involved in social and community service activities. The application aims to facilitate the process of matching volunteers with appropriate opportunities, tracking volunteer participation, and managing organizational activities efficiently. The methodology employed involved requirements analysis, system design, implementation, and testing. The main steps followed included gathering user requirements, designing user interfaces, implementing backend functionality using ASP.NET Core and Entity Framework Core, and conducting iterative testing and refinement. The main results of this work include the development of a functional web application with features such as user registration, volunteer opportunity browsing, event management, and social networking capabilities.

SUBJECT AREA: Information Technology, Software Engineering

KEYWORDS: Volunteer Management, Web Application, ASP.NET Core, Entity Framework Core, Microsoft Identity

Table of Contents

2 Introduction

In today's interconnected world, the importance of volunteerism and community engagement cannot be overstated. Volunteers play a crucial role in addressing social issues, supporting communities, and driving positive change. However, effectively coordinating volunteers and matching them with suitable opportunities can present significant challenges for both volunteers and organizations alike. Recognizing this need for efficient volunteer management, a comprehensive web application was developed to address these challenges and enhance the efficiency and effectiveness of volunteer coordination efforts.

This web application serves as a platform designed to facilitate the coordination of volunteers and organizations involved in social and community service activities. Its primary aim is to simplify the process of matching volunteers with appropriate opportunities, tracking volunteer participation, and managing organizational activities efficiently. By making use of modern technology, the application aims to bridge the gap between volunteers seeking meaningful opportunities and organizations in need of dedicated support.

At its core, this web application offers a user-friendly interface for volunteers to browse and apply for opportunities that align with their interests, skills, and availability. Simultaneously, organizations can utilize the platform to post volunteer opportunities, manage events, and engage with volunteers. By centralizing volunteer management processes, the application empowers organizations to focus their resources on impactful initiatives while enhancing the overall volunteer experience.

The structure of this thesis is organized as follows:

- **Chapter 4** provides a review of similar applications currently available in the market.
- **Chapter 5** includes the user manual, detailing how to use the KindLink platform for both citizens and organizations.
- **Chapter 6** discusses the application architecture, including backend, frontend, and database design.
- **Chapter 7** concludes with a summary of findings and suggestions for future implementations.

In summary, the development of this web application serves as a testament to the power of technology in driving positive social change and empowering individuals and organizations to make a meaningful difference in their communities.

3 Field review - Similar Applications

3.1 VolunteerMatch

Website: https://www.volunteermatch.org/

VolunteerMatch is a popular web platform that connects volunteers with nonprofit organizations in need of assistance. It offers a searchable database of volunteer opportunities across various causes and allows users to find opportunities based on location, interests, and skills.

3.2 Idealist.org

Website: https://www.idealist.org/en

Idealist.org is an online platform dedicated to fostering social impact by connecting individuals, organizations, and initiatives striving for positive change. Idealist.org offers a variety of resources, including job and volunteer listings, internships, events and training opportunities, all aimed at promoting social justice, environmental sustainability and human rights.

3.3 HandsOn Network

Website: https://www.handsonnwnc.org/

HandsOn Network is a prominent organization that operates a digital platform connecting volunteers with local nonprofits across various communities. Through their user-friendly website and mobile app, individuals can easily discover volunteer opportunities based on their interests, skills, and availability. HandsOn Network collaborates with a wide range of nonprofit organizations to offer diverse volunteering experiences, ranging from one-time events to ongoing projects, empowering volunteers to make a meaningful difference in their communities.

3.4 Do Something.org

Website: https://www.dosomething.org/us

DoSomething.org is a youth-led organization that mobilizes young people to act on social issues they care about. With a focus on grassroots activism and social change, their platform offers a range of campaigns and initiatives addressing issues such as environmental sustainability, mental health awareness, and social justice. Through their website and mobile app, young people can join campaigns, access resources, and connect with like-minded peers to drive positive change in their communities and beyond.

4 User Manual

4.1 Introduction

4.1.1 Purpose of the User Manual

The purpose of the User Manual is to provide comprehensive guidance and instructions for users on how to effectively navigate and utilize the features of the *KindLink* platform. It aims to empower users, both volunteers and organizations, by offering clear explanations, step-by-step procedures, and troubleshooting tips to ensure a smooth and satisfying experience while using the platform.

4.1.2 Different User Roles

The ***KindLink*** platform caters to two distinct user roles: **Citizens** and **Organizations**. Each role offers unique functionalities tailored to their specific needs and objectives.

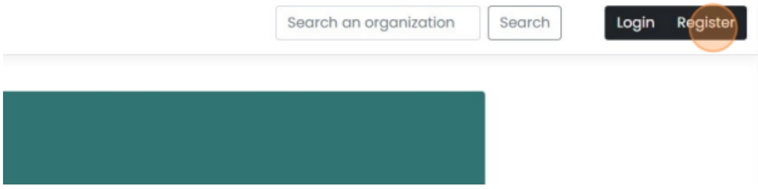
- **Citizens**: As a Citizen, individuals can explore a wide range of volunteer opportunities posted by nonprofit organizations. They can search for organizations that match their interests and beliefs and learn more about their voluntary activity via the posts uploaded and the events organized by each organization, enabling them to find meaningful ways to contribute to causes they care about. Citizens can also create profiles to showcase their skills, helping organizations identify suitable candidates for their projects.

- **Organizations**: Organizations have access to tools and features that facilitate volunteer engagement. They can create detailed profiles to showcase their mission, projects, and events, attracting potential volunteers to their cause. Additionally, organizations can communicate with volunteers effectively through the platform, maximizing their impact in the community.

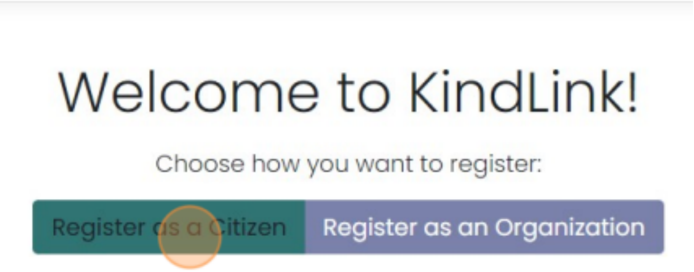
4.2 Getting Started

4.2.1 Citizen Registration

1. Navigate to https://localhost:7174/
2. Click "Register"



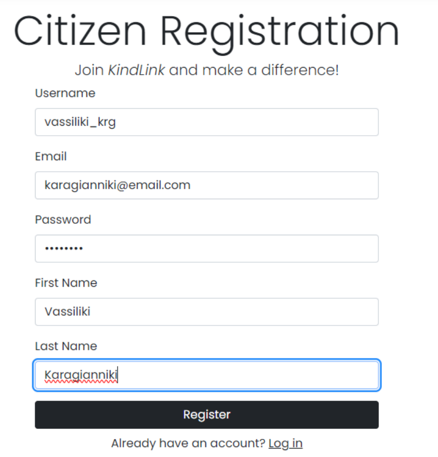
3. Click "Register as a Citizen"



Welcome to KindLink!

Choose how you want to register:

4. Fill in the form



Citizen Registration

Join *KindLink* and make a difference!

Username: vassiliki_krg

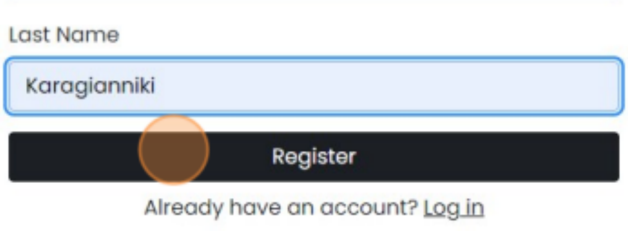
Email: karagianniki@email.com

Password: ••••••••

First Name: Vassiliki

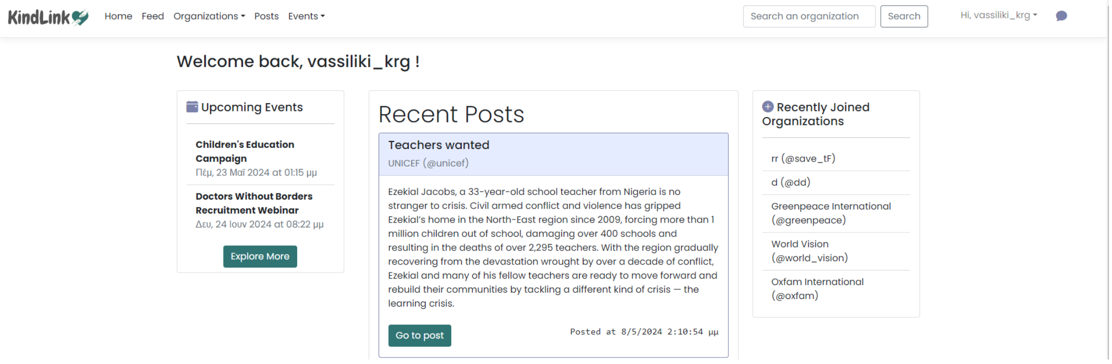
Last Name: Karagianniki

5. Click "Register"



Last Name: Karagianniki

6. You are now registered as a citizen



Welcome back, vassiliki_krg !

Upcoming Events

Children's Education Campaign
Πέμ, 23 Μαΐ 2024 at 01:15 μμ

Doctors Without Borders Recruitment Webinar
Δευ, 24 Ιουν 2024 at 08:22 μμ

Recent Posts

Teachers wanted
UNICEF (@unicef)

Ezekial Jacobs, a 33-year-old school teacher from Nigeria is no stranger to crisis. Civil armed conflict and violence has gripped Ezekial's home in the North-East region since 2009, forcing more than 1 million children out of school, damaging over 400 schools and resulting in the deaths of over 2,295 teachers. With the region gradually recovering from the devastation wrought by over a decade of conflict, Ezekial and many of his fellow teachers are ready to move forward and rebuild their communities by tackling a different kind of crisis — the learning crisis.

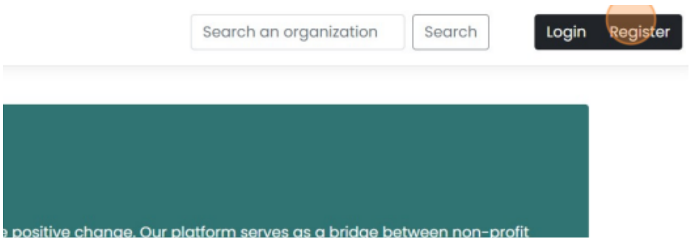
Posted at 8/5/2024 2:10:54 μμ

Recently Joined Organizations

- rr (@save_tF)
- d (@dd)
- Greenpeace International (@greenpeace)
- World Vision (@world_vision)
- Oxfam International (@oxfam)

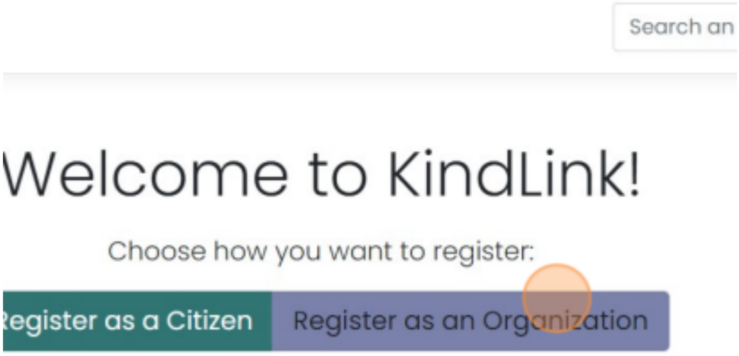
4.2.2 Organization Registration

1. Navigate to https://localhost:7174/
2. Click "Register"



positive change. Our platform serves as a bridge between non-profit

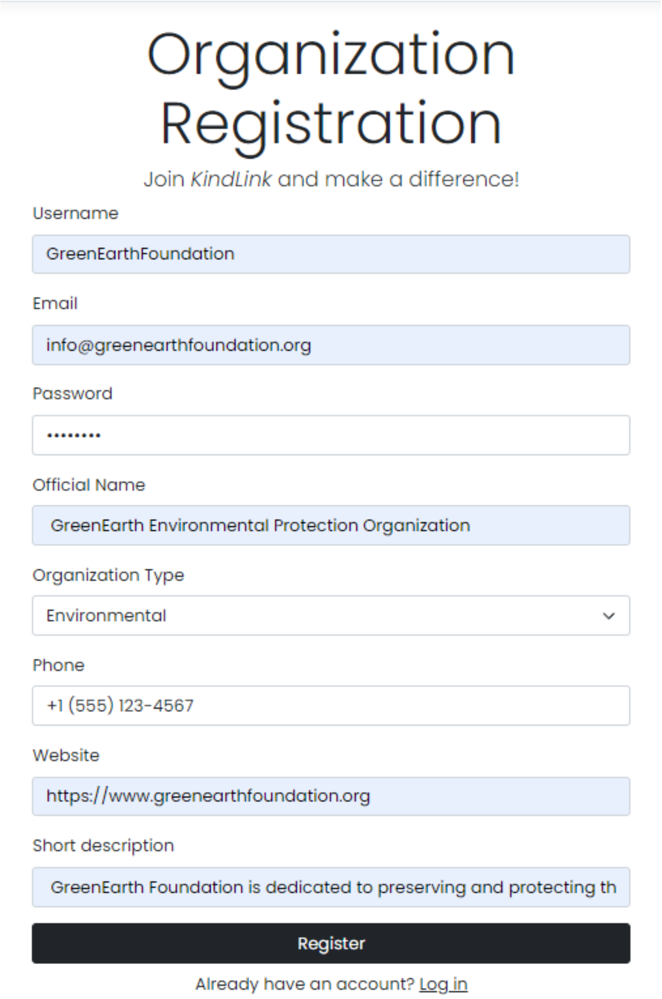
3. Click "Register as an Organization"



Welcome to KindLink!

Choose how you want to register:

4. Fill in the fields


Organization Registration

Join *KindLink* and make a difference!

Username: GreenEarthFoundation

Email: info@greenearthfoundation.org

Password: ••••••••

Official Name: GreenEarth Environmental Protection Organization

Organization Type: Environmental

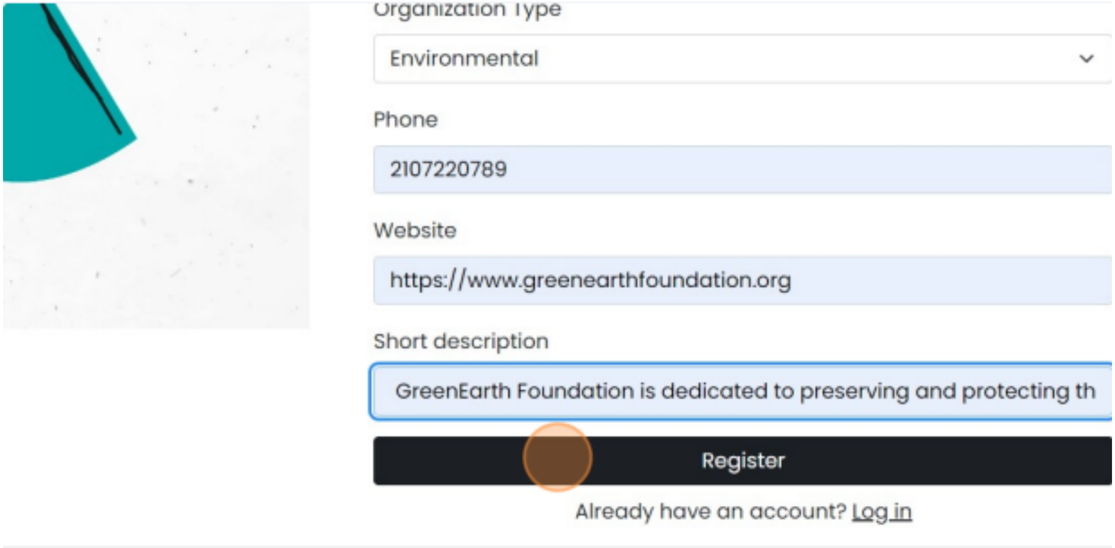
Phone: +1 (555) 123-4567

Website: https://www.greenearthfoundation.org

Short description: GreenEarth Foundation is dedicated to preserving and protecting th

Already have an account? Log in

5. Click "Register"



Organization Type

Environmental

Phone

2107220789

Website

https://www.greenearthfoundation.org

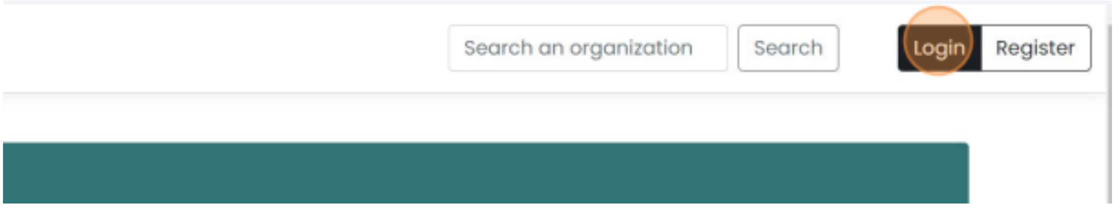
Short description

GreenEarth Foundation is dedicated to preserving and protecting th

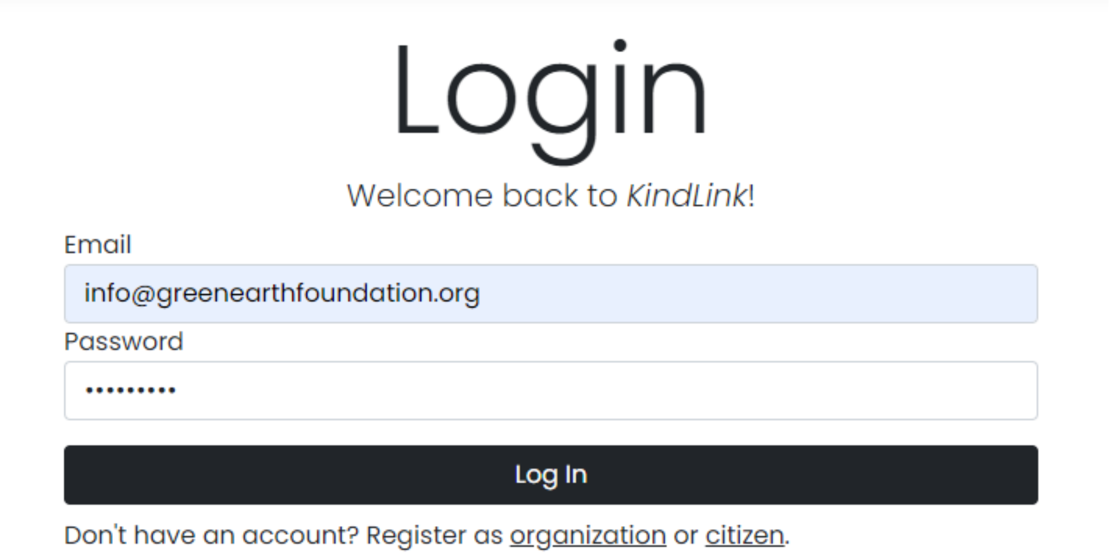
6. You are now registered as an organization.

4.2.3 Login Instructions

1. Navigate to https://localhost:7174/
2. Click "Login"



3. Fill in the fields



Login

Welcome back to *KindLink*!

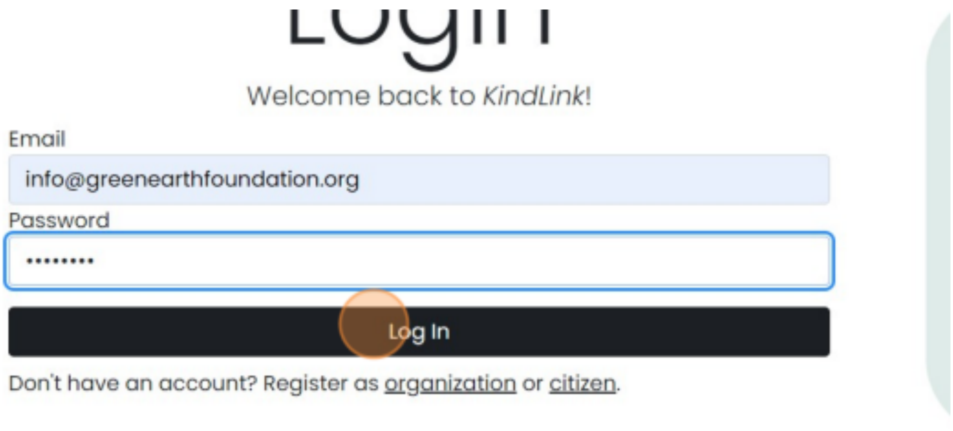
Email

info@greenearthfoundation.org

Password

•••••••••

4. Click “Log In”



Login

Welcome back to *KindLink*!

Email

info@greenearthfoundation.org

Password

•••••••••

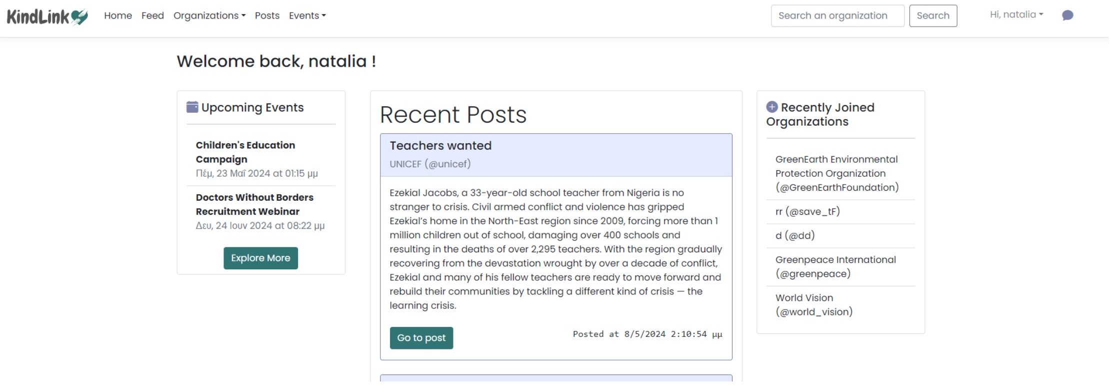
Don't have an account? Register as organization or citizen.

5. You are now logged in and can see either the feed (for citizens) or the dashboard (for organizations)

4.3 User Interface Overview

4.3.1 Main Feed (Citizen)

1. Login as Citizen
2. After successful login, you can see the feed



Welcome back, natalia !

Upcoming Events

Children's Education Campaign
Πέμ, 23 Μαΐ 2024 at 01:15 μμ

Doctors Without Borders Recruitment Webinar
Δευ, 24 Ιουν 2024 at 08:22 μμ

Recent Posts

Teachers wanted
UNICEF (@unicef)

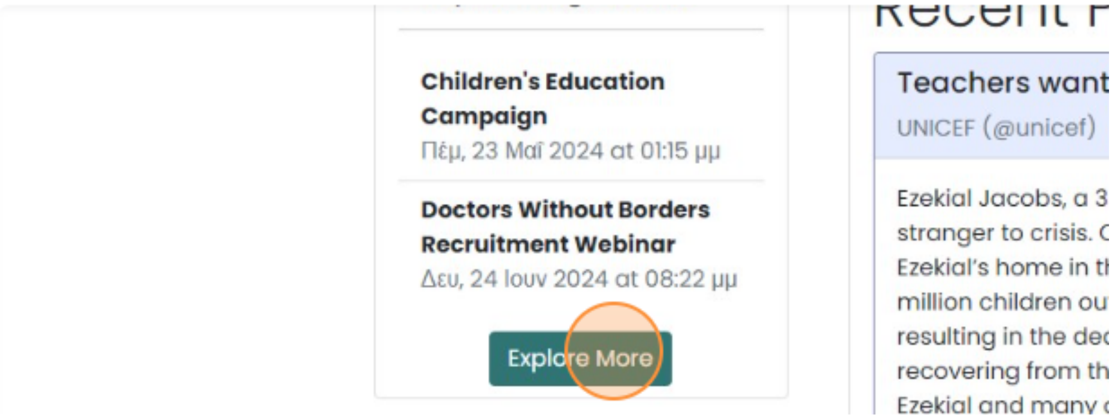
Ezekial Jacobs, a 33-year-old school teacher from Nigeria is no stranger to crisis. Civil armed conflict and violence has gripped Ezekial's home in the North-East region since 2009, forcing more than 1 million children out of school, damaging over 400 schools and resulting in the deaths of over 2,295 teachers. With the region gradually recovering from the devastation wrought by over a decade of conflict, Ezekial and many of his fellow teachers are ready to move forward and rebuild their communities by tackling a different kind of crisis — the learning crisis.

Posted at 8/5/2024 2:10:54 μμ

Recently Joined Organizations

- GreenEarth Environmental Protection Organization (@GreenEarthFoundation)
- rr (@save_tF)
- d (@dd)
- Greenpeace International (@greenpeace)
- World Vision (@world_vision)

3. Click "Explore More" to find other upcoming events that might interest you



Children's Education Campaign
Πέμ, 23 Μαΐ 2024 at 01:15 μμ

Doctors Without Borders Recruitment Webinar
Δευ, 24 Ιουν 2024 at 08:22 μμ

Teachers want
UNICEF (@unicef)

Ezekial Jacobs, a 3
stranger to crisis. C
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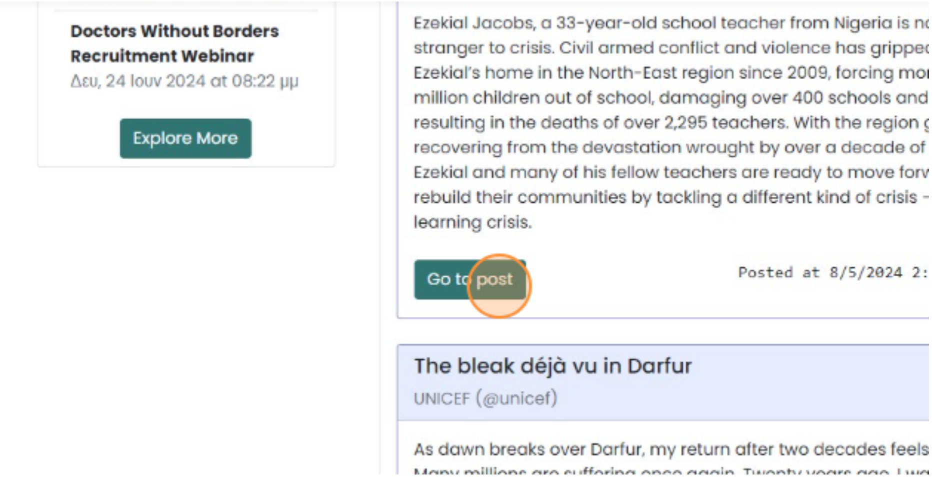
resulting in the dec
recovering from th
Ezekial and many c

4. Click on “Go to post” on any post to read it in full screen.



Doctors Without Borders Recruitment Webinar
Δευ, 24 Ιουν 2024 at 08:22 μμ

Ezekial Jacobs, a 33-year-old school teacher from Nigeria is no
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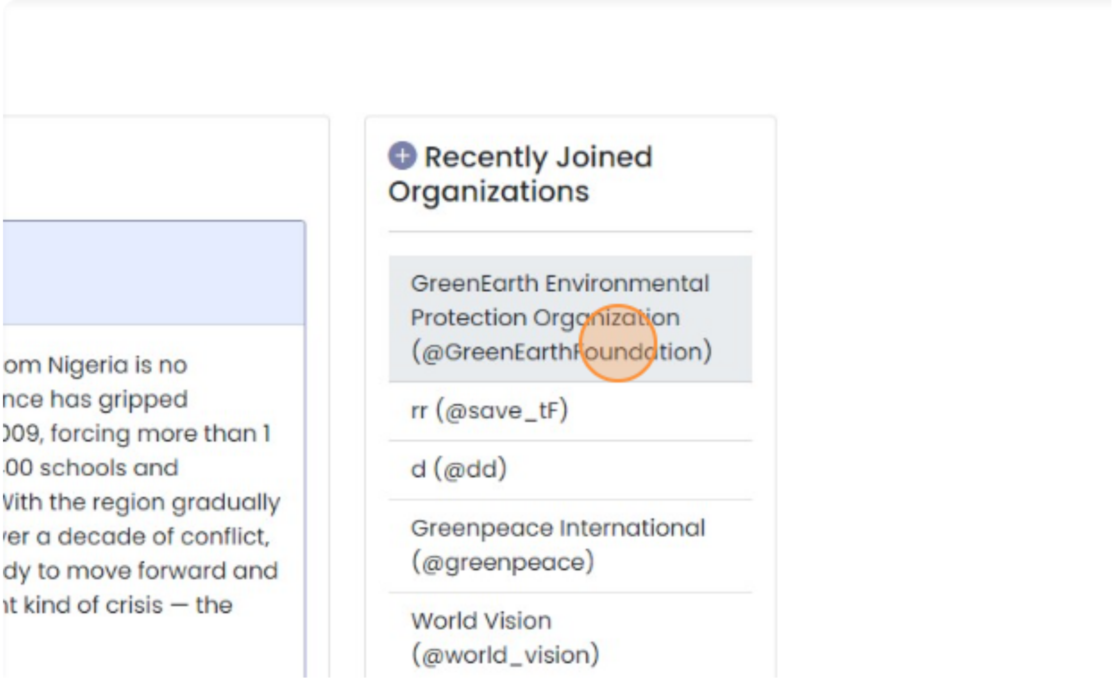
recovering from the devastation wrought by over a decade of
Ezekial and many of his fellow teachers are ready to move forv
rebuild their communities by tackling a different kind of crisis -
learning crisis.

Posted at 8/5/2024 2:

The bleak déjà vu in Darfur
UNICEF (@unicef)

As dawn breaks over Darfur, my return after two decades feels

5. Click on any of the organizations in “Recently Joined Organizations” section to go to their profile



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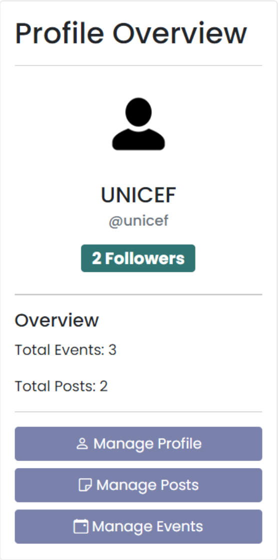
Recently Joined Organizations

- GreenEarth Environmental Protection Organization (@GreenEarthFoundation)
- rr (@save_tF)
- d (@dd)
- Greenpeace International (@greenpeace)
- World Vision (@world_vision)

4.3.2 Main Dashboard (Organization)

1. Login as Organization
2. Navigate to https://localhost:7174/Dashboard
3. Profile details section: You can view some profile details

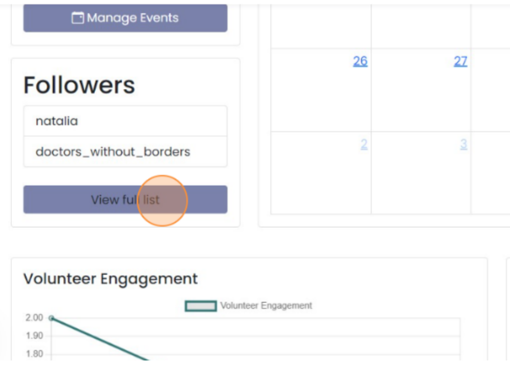


Profile Overview

UNICEF
@unicef
2 Followers

Overview
Total Events: 3
Total Posts: 2

4. Followers section: View your recent followers and click on the “View full list” button to move to a full list



Manage Events

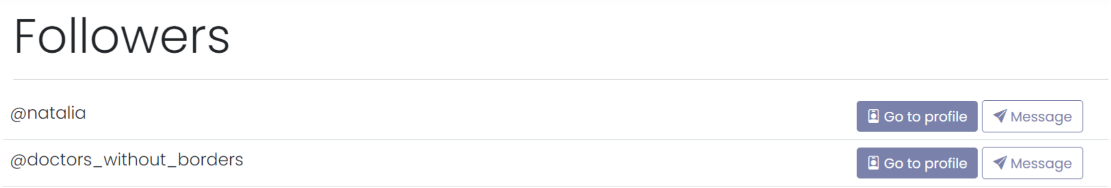
Followers

natalia

doctors_without_borders

View full list

Volunteer Engagement

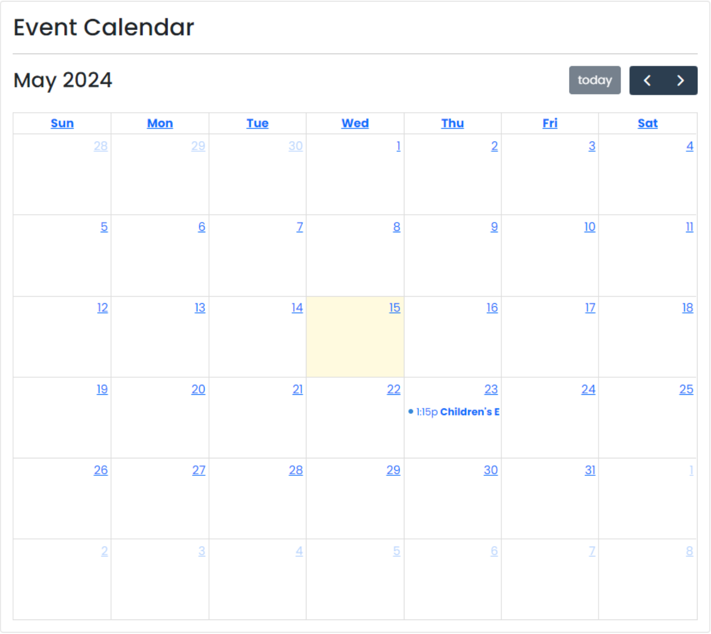


Followers

@natalia Go to profile Message

@doctors_without_borders Go to profile Message

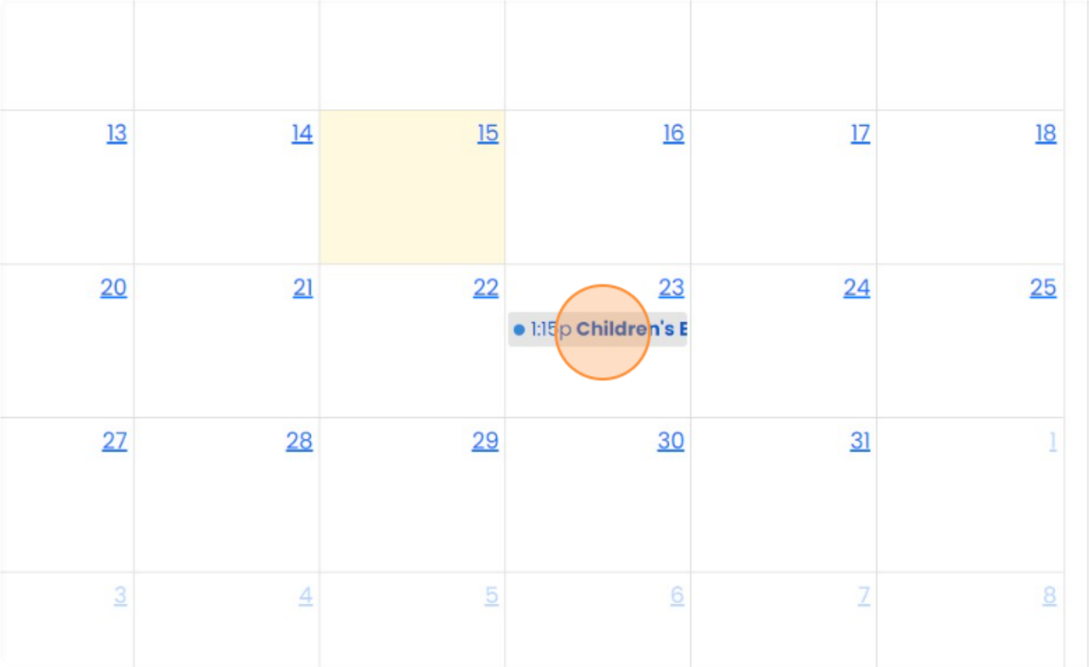
5. Calendar section: Click on any event of the calendar to view its details



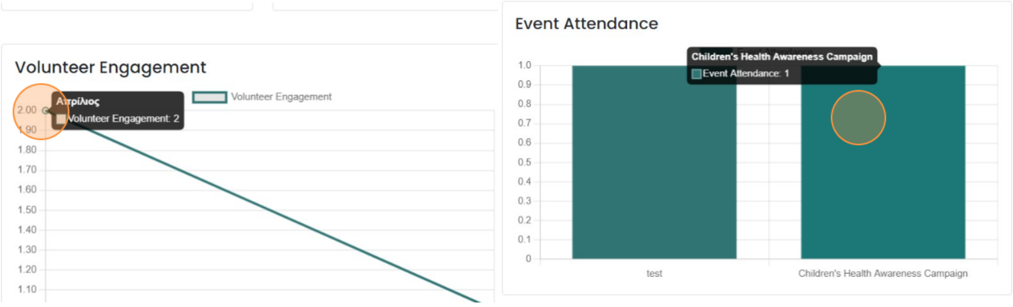
Event Calendar

May 2024

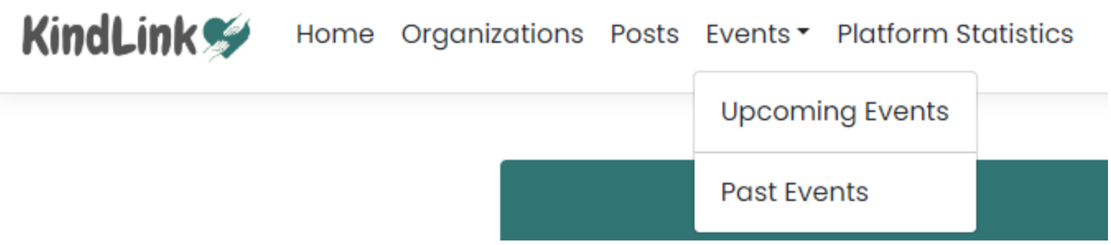
Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23 • 1:15p Children's E	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8



6. Charts section: You can explore charts that display statistics related to volunteer engagement, click on the charts to get more information

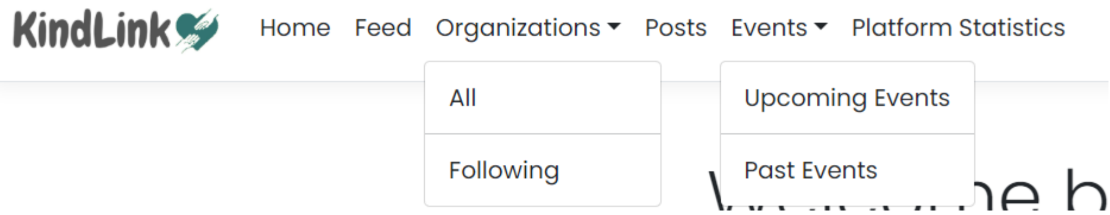


4.3.3 Navigation Menu (Non logged in user)



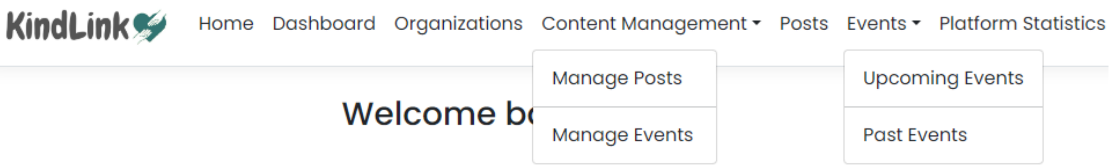
- Home: Click to go to home page
- Organizations: Click to move to a page to see all registered organizations
- Posts: Click to move to a page to see all posts
- Events>Upcoming events: Click to move to a page to see upcoming events
- Events>Past events: Click to move to a page to see all past events
- Platform Statistics: General statistics related to platform’s usage

4.3.4 Navigation Menu (Citizen)



- Home: Click to go to home page
- Feed: Click to go to feed
- Organizations>All: Click to move to a page to see all registered organizations
- Organizations>Following: Click to move to a page to see all registered organizations you follow
- Posts: Click to move to a page to see all posts
- Events>Upcoming events: Click to move to a page to see upcoming events
- Events>Past events: Click to move to a page to see all past events
- Platform Statistics: General statistics related to platform's usage

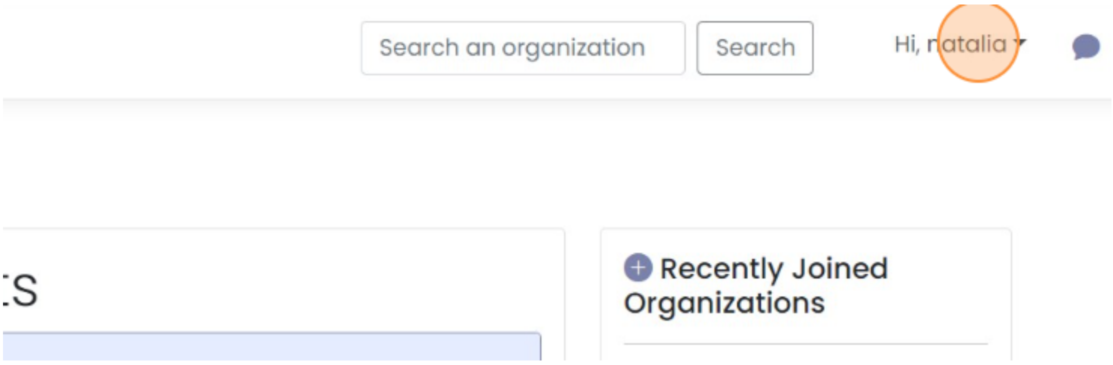
4.3.5 Navigation Menu (Organization)



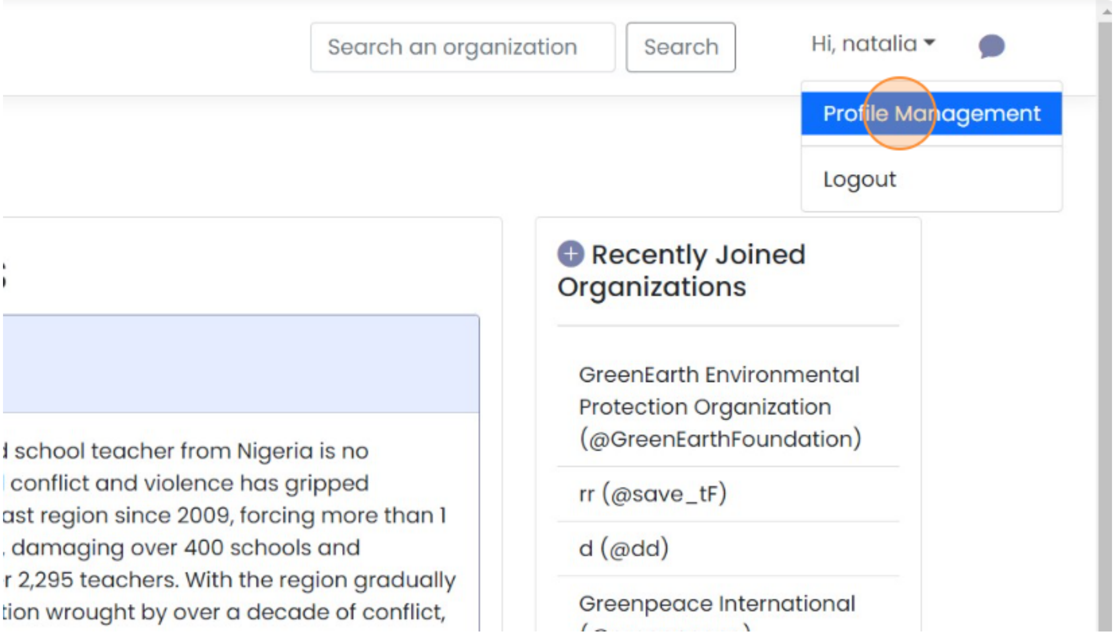
- Home: Click to go to home page
- Dashboard: Click to go to dashboard page
- Organizations: Click to move to a page to see all registered organizations
- Content Management>Manage Posts: Click to go to a page to manage all your posts
- Content Management>Manage Events: Click to go to a page to manage all the events you have organized
- Posts: Click to move to a page to see all posts
- Events>Upcoming events: Click to move to a page to see all upcoming events
- Events>Past events: Click to move to a page to see all past events
- Platform Statistics: General statistics related to platform's usage

4.3.6 Profile Settings (Citizen)

1. Login as citizen
2. Click on user menu (at top right)



3. Click "Profile Management"



Recently Joined Organizations

GreenEarth Environmental Protection Organization (@GreenEarthFoundation)

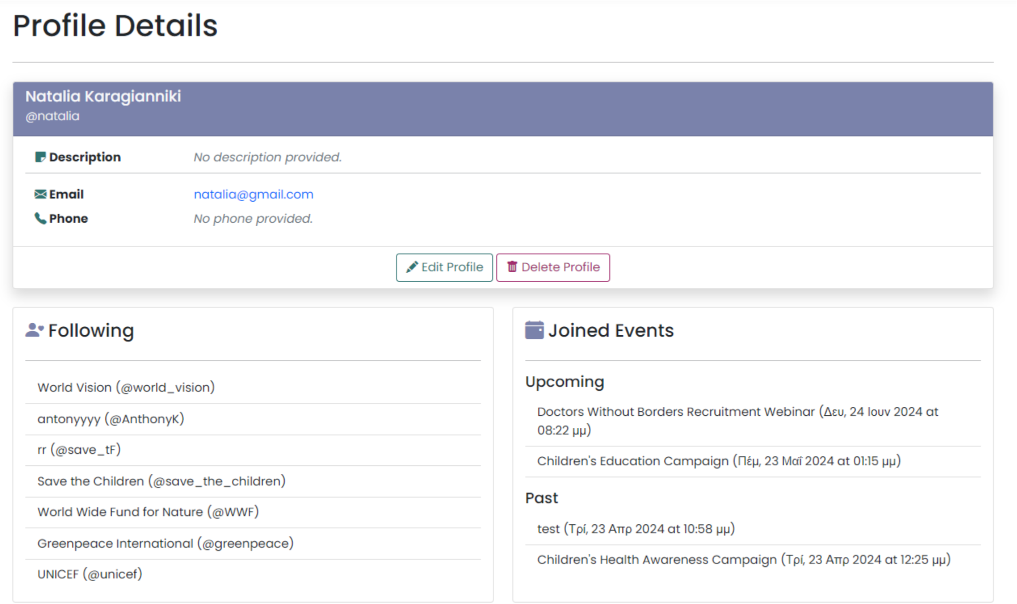
rr (@save_tF)

d (@dd)

Greenpeace International

school teacher from Nigeria is no
conflict and violence has gripped
ast region since 2009, forcing more than 1
damaging over 400 schools and
r 2,295 teachers. With the region gradually
tion wrought by over a decade of conflict,

4. You can now see the profile details



Profile Details

Natalia Karagianniki
@natalia

Description	*No description provided.*
Email	natalia@gmail.com
Phone	*No phone provided.*

Following

- World Vision (@world_vision)
- antonyyyy (@AnthonyK)
- rr (@save_tF)
- Save the Children (@save_the_children)
- World Wide Fund for Nature (@WWF)
- Greenpeace International (@greenpeace)
- UNICEF (@unicef)

Joined Events

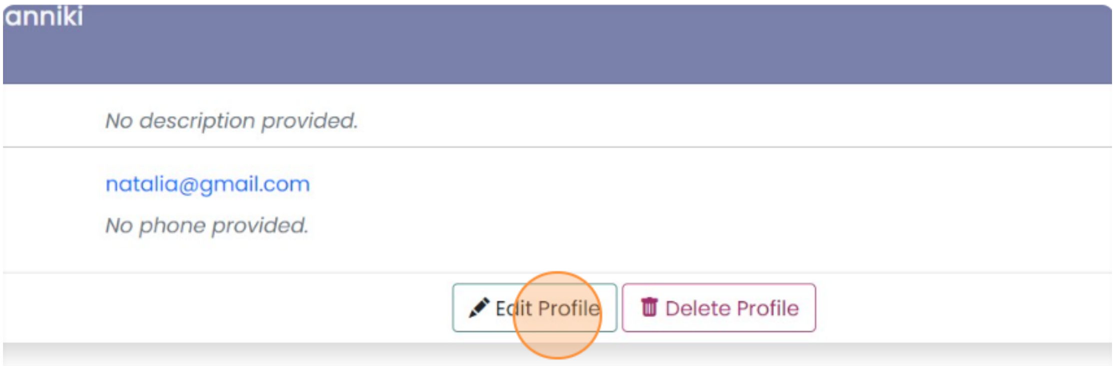
Upcoming

- Doctors Without Borders Recruitment Webinar (Δευ, 24 Ιουν 2024 at 08:22 μμ)
- Children's Education Campaign (Πέμ, 23 Μαΐ 2024 at 01:15 μμ)

Past

- test (Τρί, 23 Απρ 2024 at 10:58 μμ)
- Children's Health Awareness Campaign (Τρί, 23 Απρ 2024 at 12:25 μμ)

5. Click “Edit Profile” to edit your profile

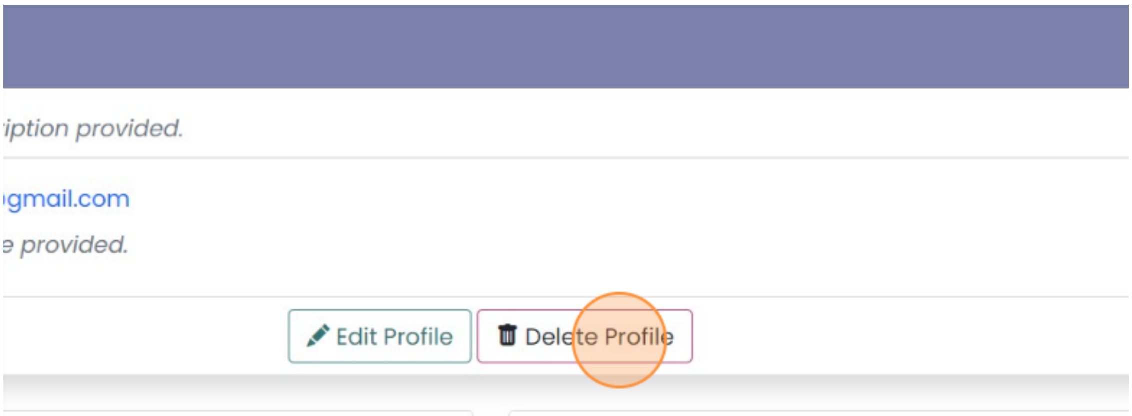

anniki

No description provided.

natalia@gmail.com

No phone provided.

6. Click “Delete Profile” to delete your profile

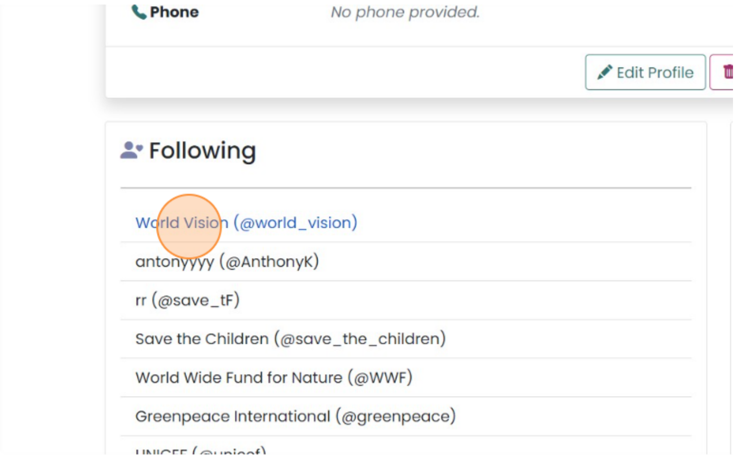


iption provided.

gmail.com

e provided.

7. Click on any of the following organizations to go to their profile

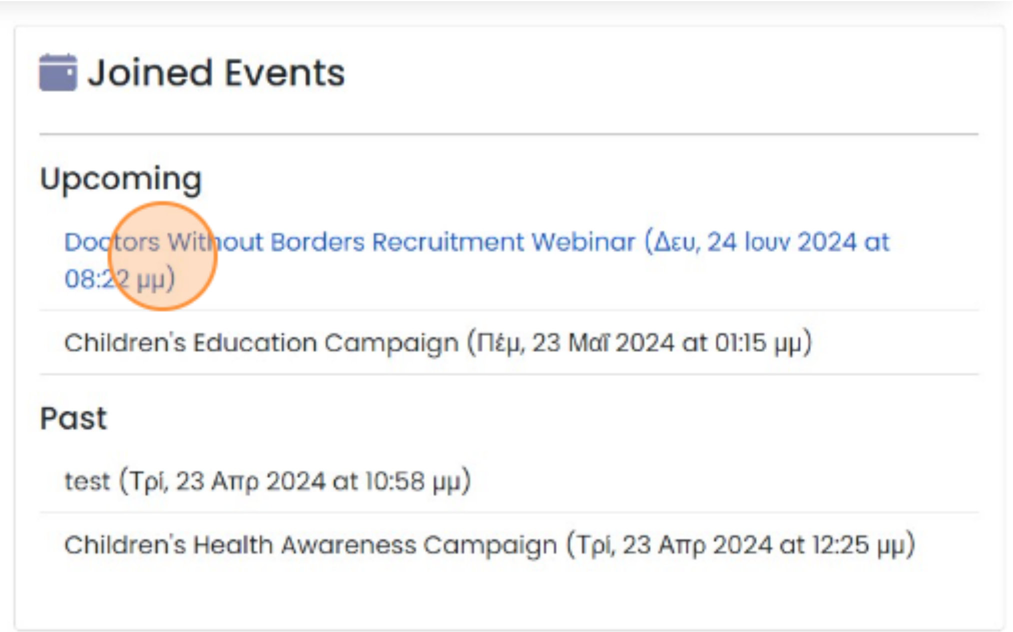


Phone No phone provided.

Following

- World Vision (@world_vision)
- antonyyyy (@AnthonyK)
- rr (@save_tF)
- Save the Children (@save_the_children)
- World Wide Fund for Nature (@WWF)
- Greenpeace International (@greenpeace)
- UNICEF (@unicef)

8. Click on any of the joined events to see more information



Joined Events

Upcoming

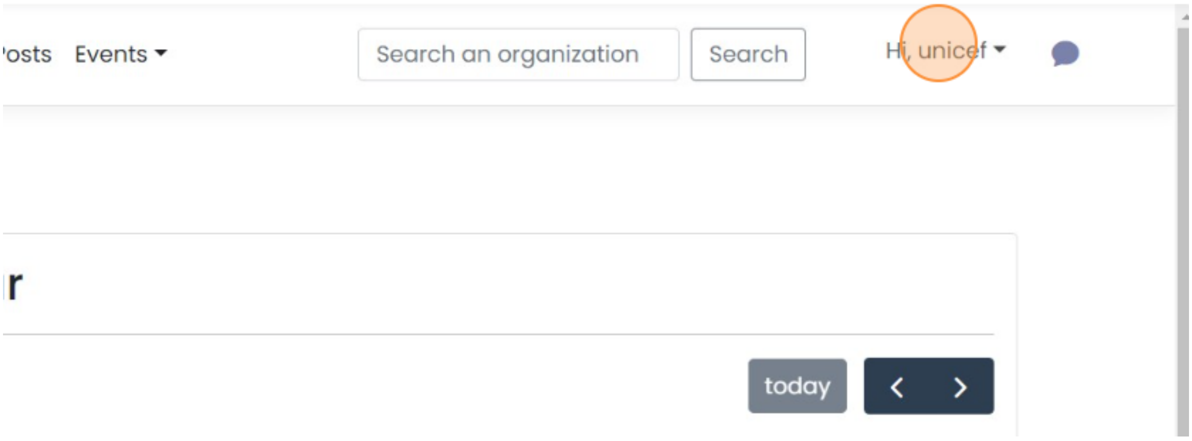
- Doctors Without Borders Recruitment Webinar (Δευ, 24 Ιουν 2024 at 08:22 μμ)
- Children's Education Campaign (Πέμ, 23 Μαΐ 2024 at 01:15 μμ)

Past

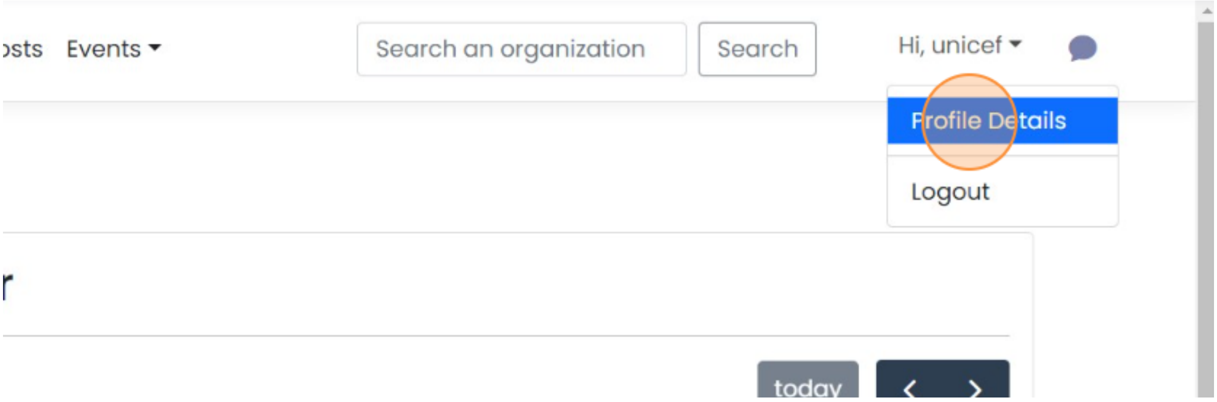
- test (Τρί, 23 Απρ 2024 at 10:58 μμ)
- Children's Health Awareness Campaign (Τρί, 23 Απρ 2024 at 12:25 μμ)

4.3.7 Profile Settings (Organization)

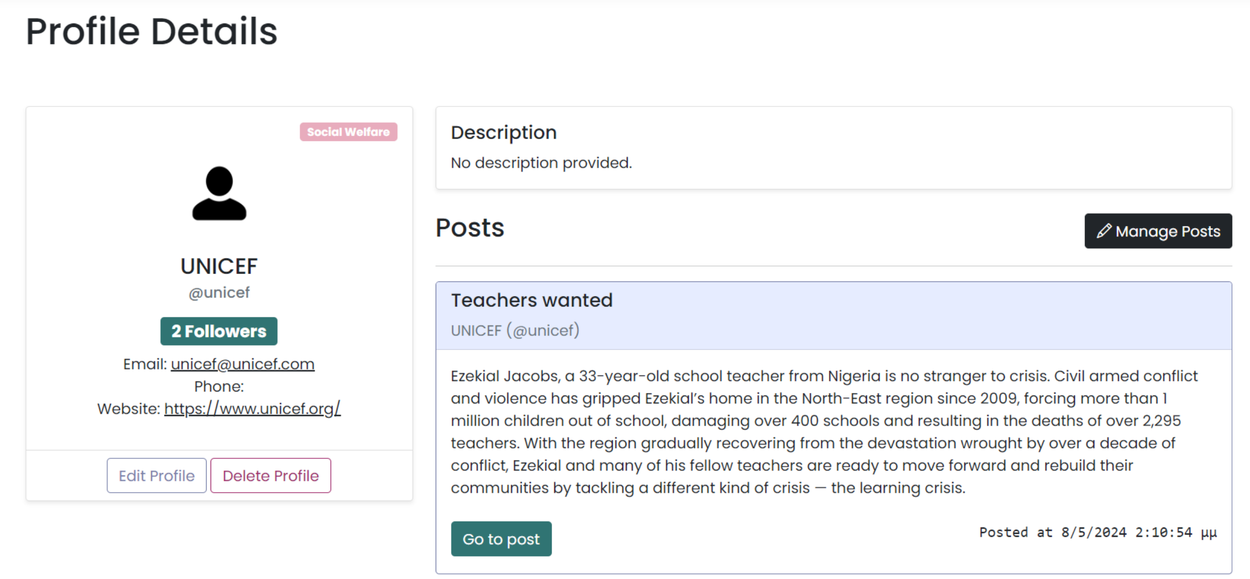
1. Login as organization
2. Click on user menu (at top right)



3. Click "Profile Details"



4. You can now see the profile details



Profile Details

Social Welfare

UNICEF

@unicef

2 Followers

Email: unicef@unicef.com

Phone:

Website: https://www.unicef.org/

Edit Profile Delete Profile

Description

No description provided.

Posts

Manage Posts

Teachers wanted

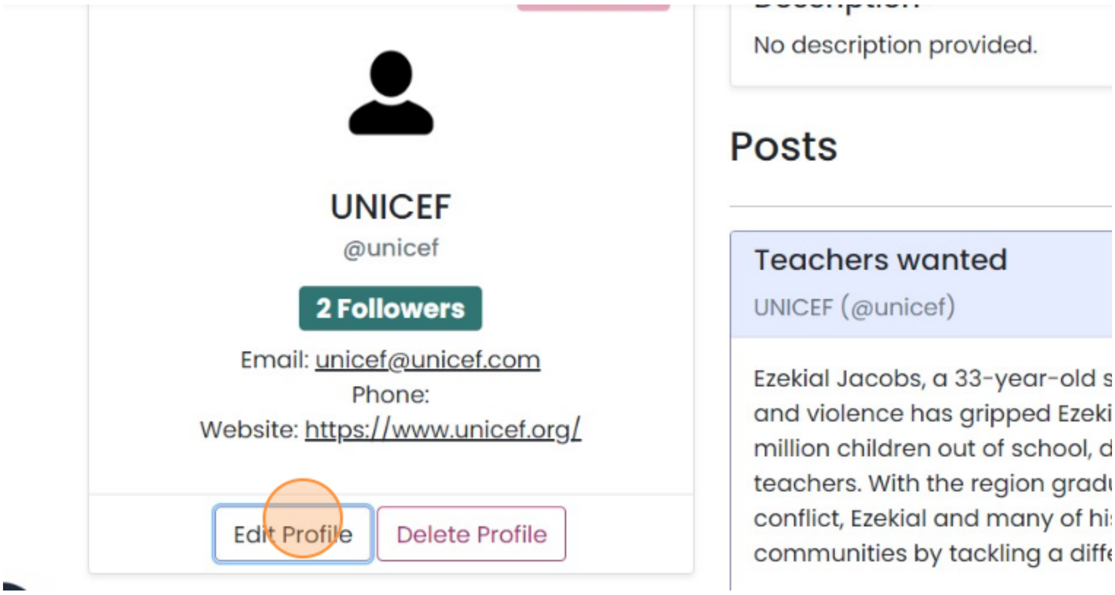
UNICEF (@unicef)

Ezekial Jacobs, a 33-year-old school teacher from Nigeria is no stranger to crisis. Civil armed conflict and violence has gripped Ezekial's home in the North-East region since 2009, forcing more than 1 million children out of school, damaging over 400 schools and resulting in the deaths of over 2,295 teachers. With the region gradually recovering from the devastation wrought by over a decade of conflict, Ezekial and many of his fellow teachers are ready to move forward and rebuild their communities by tackling a different kind of crisis — the learning crisis.

Go to post

Posted at 8/5/2024 2:10:54 μμ

5. Click “Edit Profile” to edit your profile.



UNICEF

@unicef

Email: unicef@unicef.com

Phone:

Website: https://www.unicef.org/

No description provided.

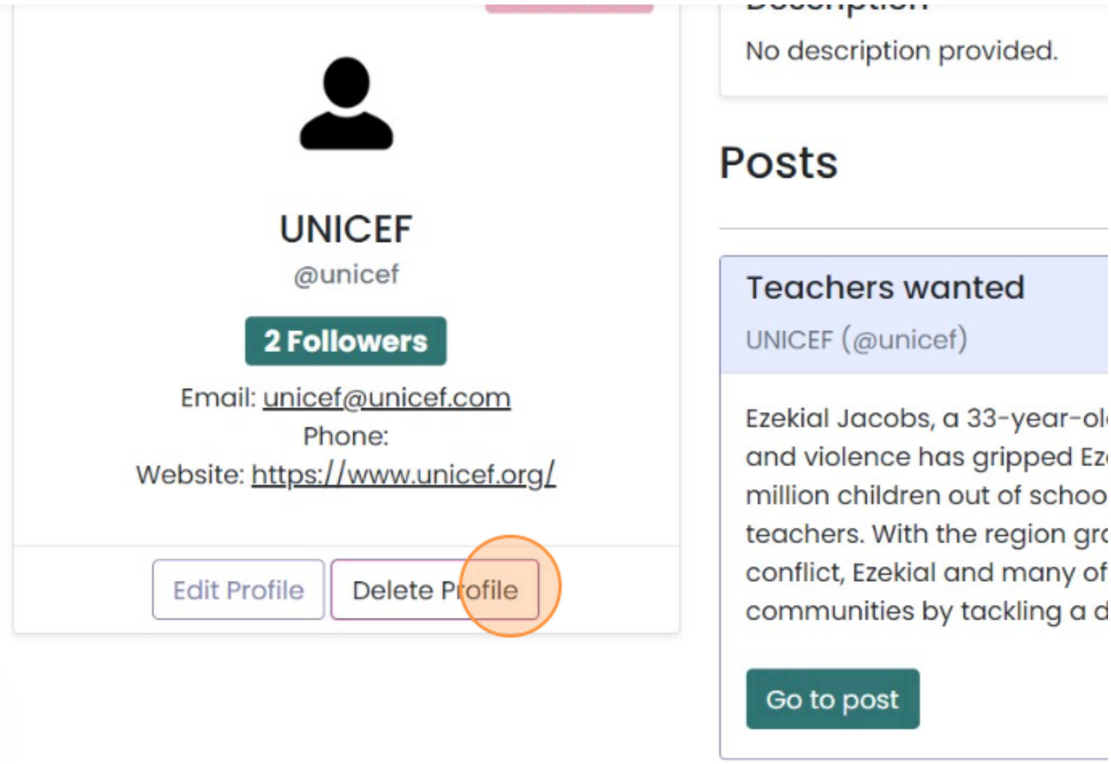
Posts

Teachers wanted

UNICEF (@unicef)

Ezekial Jacobs, a 33-year-old s
and violence has gripped Ezeki
million children out of school, d
teachers. With the region grad
conflict, Ezekial and many of hi
communities by tackling a diffe

6. Click “Delete Profile” to delete your profile.



UNICEF

@unicef

Email: unicef@unicef.com

Phone:

Website: https://www.unicef.org/

No description provided.

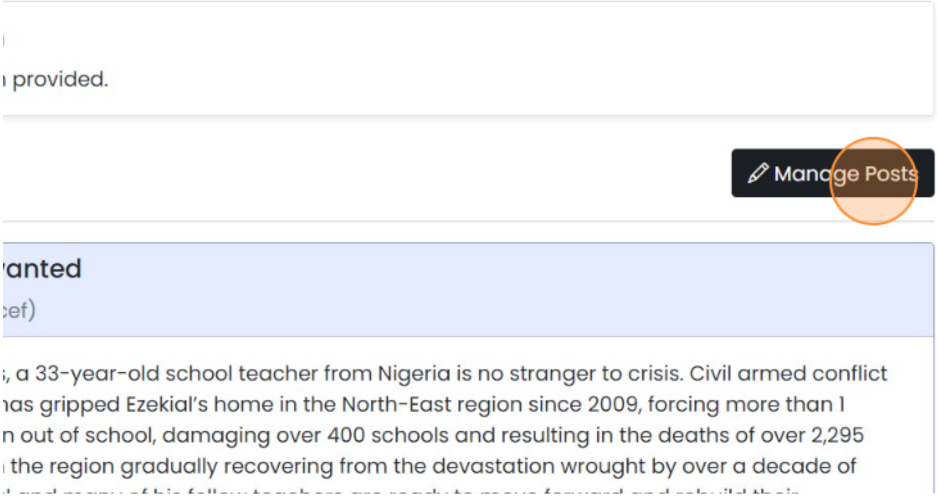
Posts

Teachers wanted

UNICEF (@unicef)

Ezekial Jacobs, a 33-year-ol
and violence has gripped Ez
million children out of schoo
teachers. With the region gr
conflict, Ezekial and many of
communities by tackling a d

7. In the Posts section you can click on “Manage Posts” to view, edit or delete your posts



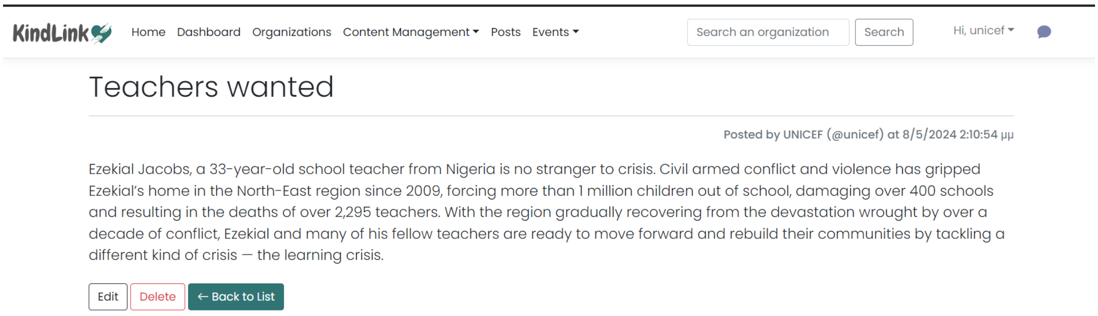
ı provided.

ʼanted

ːef)

ː, a 33-year-old school teacher from Nigeria is no stranger to crisis. Civil armed conflict ıas gripped Ezekial’s home in the North-East region since 2009, forcing more than 1 n out of school, damaging over 400 schools and resulting in the deaths of over 2,295 ı the region gradually recovering from the devastation wrought by over a decade of l and many of his fellow teachers are ready to move forward and rebuild their

8. In the Posts section you can click each post’s button “Go to post” to see it in full screen

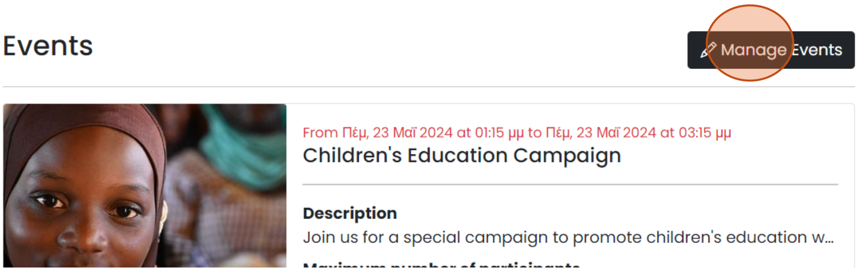


Teachers wanted

Posted by UNICEF (@unicef) at 8/5/2024 2:10:54 μμ

Ezekial Jacobs, a 33-year-old school teacher from Nigeria is no stranger to crisis. Civil armed conflict and violence has gripped Ezekial’s home in the North-East region since 2009, forcing more than 1 million children out of school, damaging over 400 schools and resulting in the deaths of over 2,295 teachers. With the region gradually recovering from the devastation wrought by over a decade of conflict, Ezekial and many of his fellow teachers are ready to move forward and rebuild their communities by tackling a different kind of crisis — the learning crisis.

9. In the Events section you can click on “Manage Events” to view, edit or delete your events



Events

From Πέμ, 23 Μαΐ 2024 at 01:15 μμ to Πέμ, 23 Μαΐ 2024 at 03:15 μμ

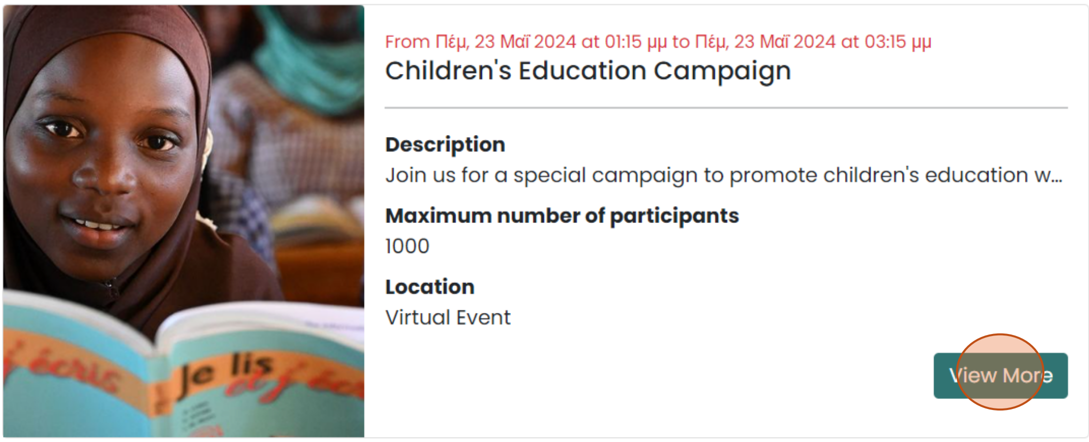
Children's Education Campaign

Description

Join us for a special campaign to promote children's education w...

Maximum number of participants

10. In the Events section you can click on each event's button "View More" to see it in full screen



From Πέμ, 23 Μαΐ 2024 at 01:15 μμ to Πέμ, 23 Μαΐ 2024 at 03:15 μμ

Children's Education Campaign

Description

Join us for a special campaign to promote children's education w...

Maximum number of participants

1000

Location

Virtual Event

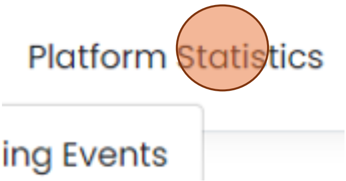
4.4 Features and Functionality

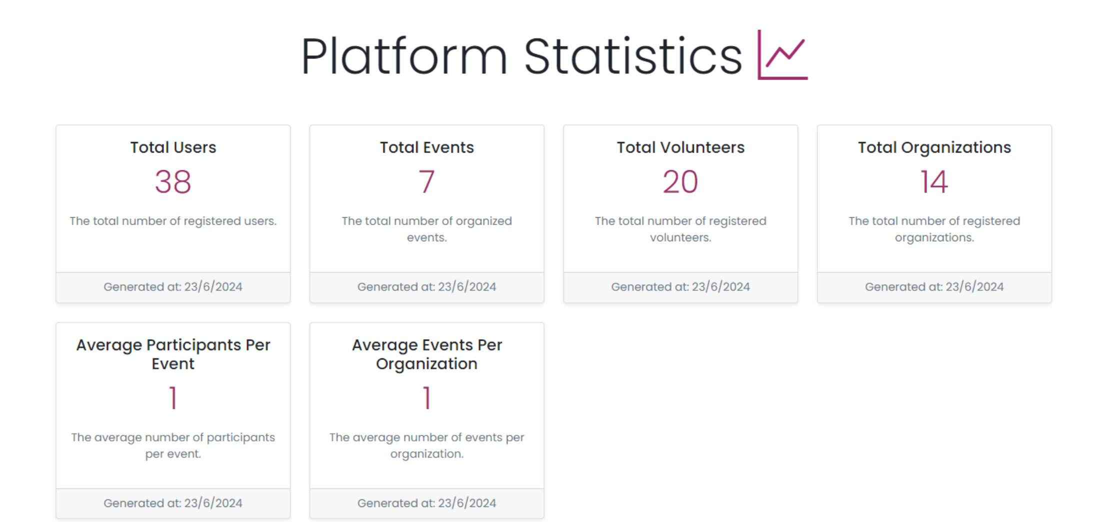
4.4.1 For all users

Platform statistics

1. Click on "Platform Statistics" button of the navbar

2. Explore statistics





Platform Statistics

Total Users
38
The total number of registered users.
Generated at: 23/6/2024

Total Events
7
The total number of organized events.
Generated at: 23/6/2024

Total Volunteers
20
The total number of registered volunteers.
Generated at: 23/6/2024

Total Organizations
14
The total number of registered organizations.
Generated at: 23/6/2024

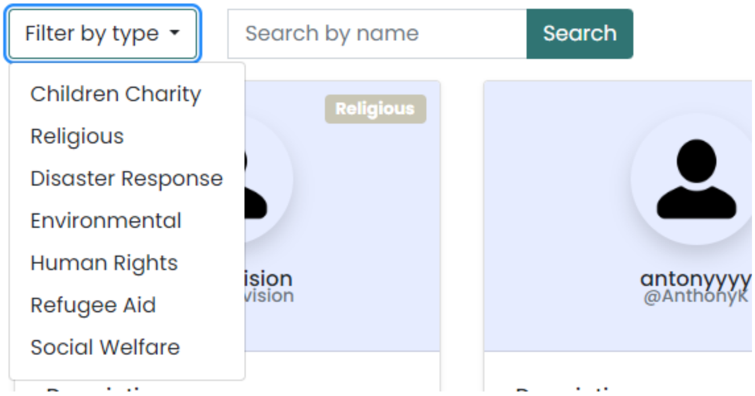
Average Participants Per Event
1
The average number of participants per event.
Generated at: 23/6/2024

Average Events Per Organization
1
The average number of events per organization.
Generated at: 23/6/2024

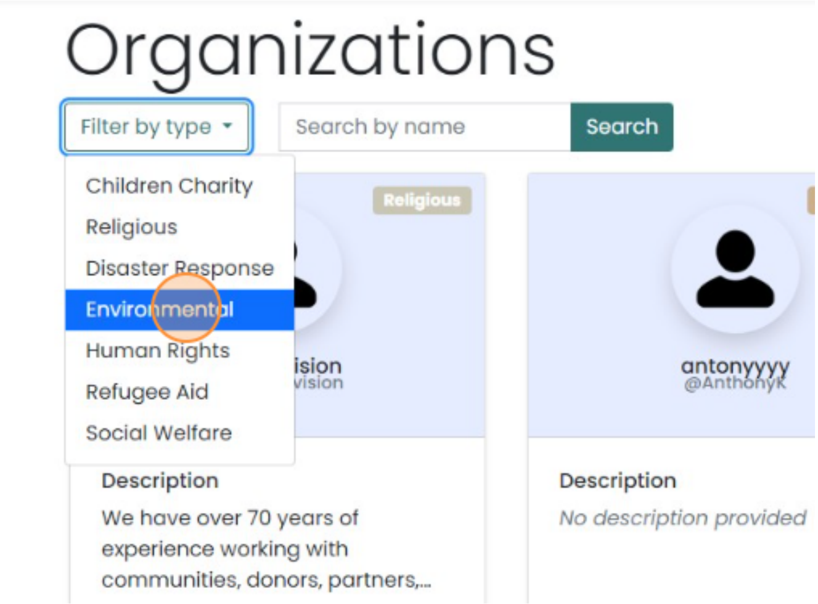
Filtering organizations

There are 2 types of filtering: Filtering by organization type and Filtering by name

1. Select any filter you prefer (either from the dropdown or fill in the field)



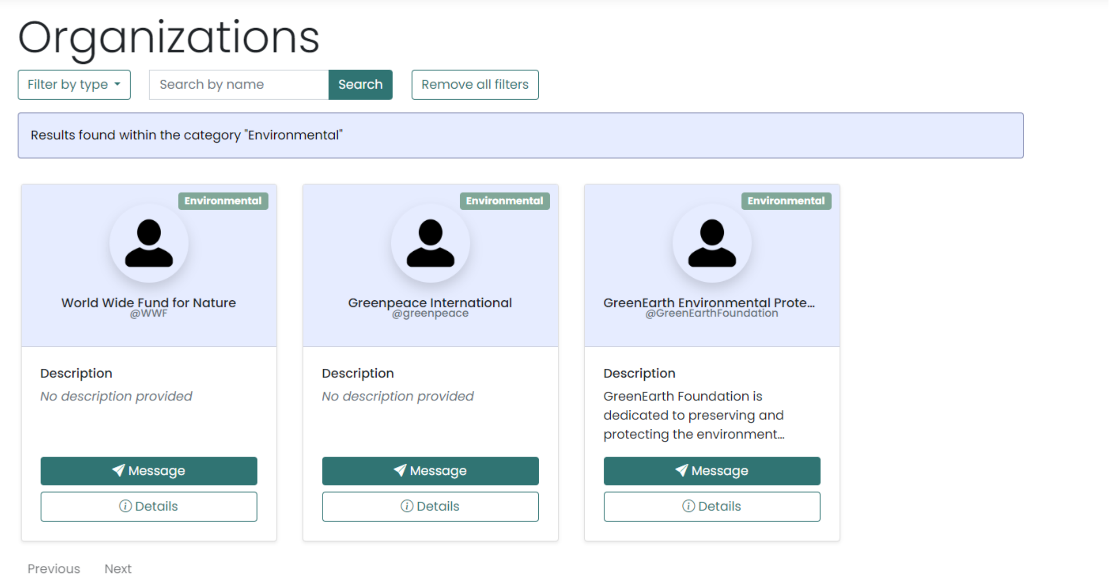
2. Selection of type filter



We have over 70 years of experience working with communities, donors, partners,...

No description provided

Result:



Results found within the category "Environmental"

Description

No description provided

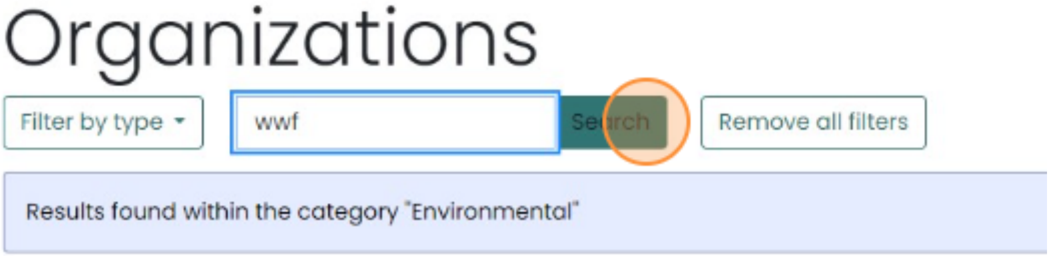
Description

No description provided

Description

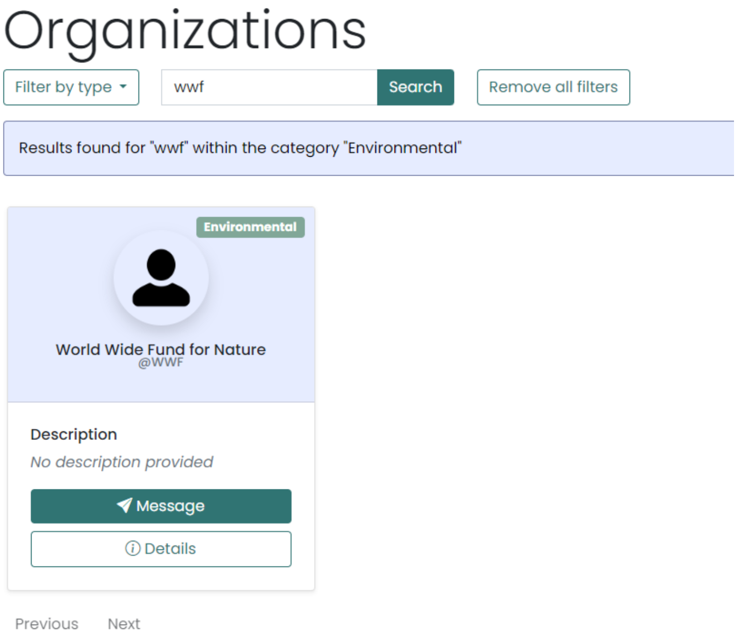
GreenEarth Foundation is dedicated to preserving and protecting the environment...

3. Selection of both type and name filter



Results found within the category "Environmental"

Result:

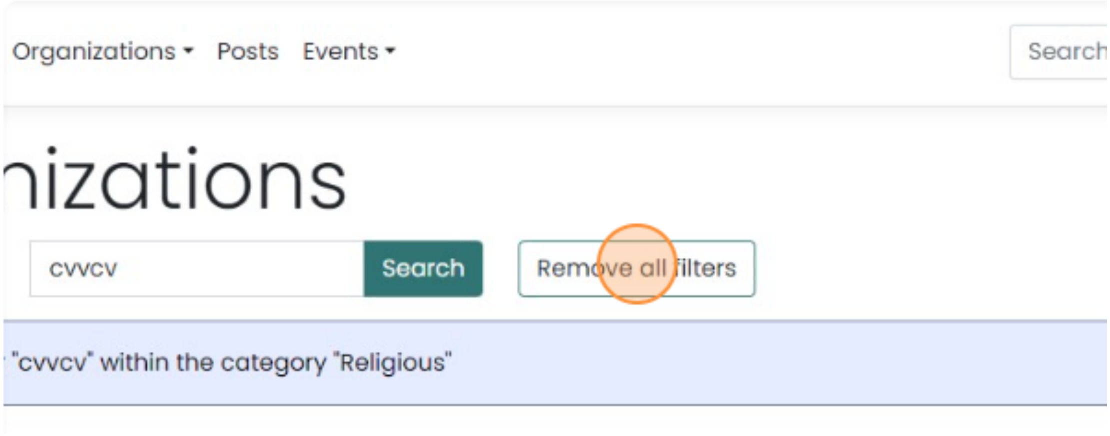


Results found for "wwf" within the category "Environmental"

Description

No description provided

4. Click "Remove all filters" to see all organizations

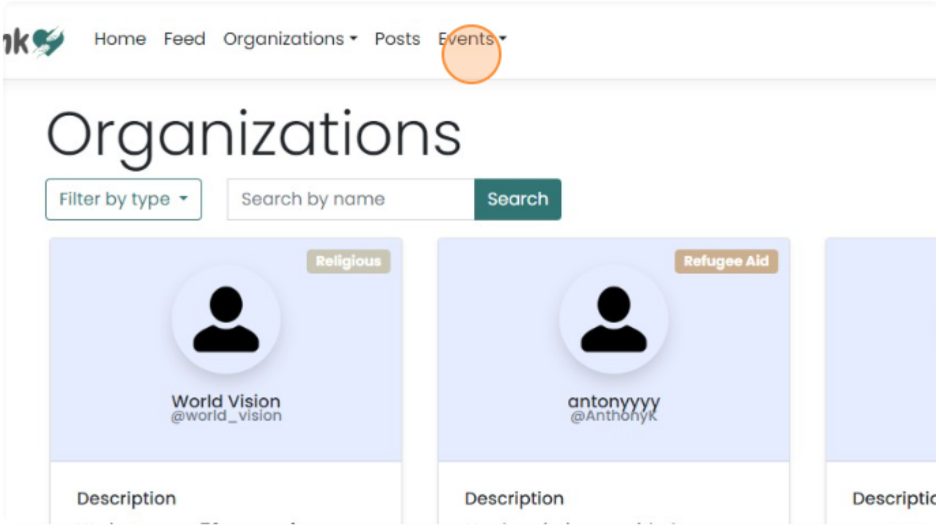


"cvvcv" within the category "Religious"

Searching for Events

1. Login

2. Click "Events" link of the navbar



Organizations

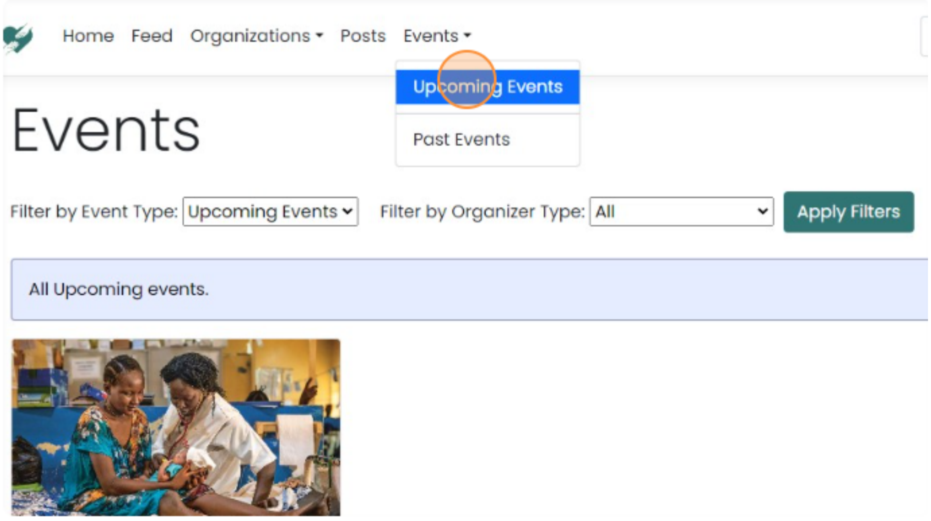
World Vision
@world_vision

Description

antonyyyy
@AnthonyK

Description

3. Click "Upcoming Events" to explore upcoming events

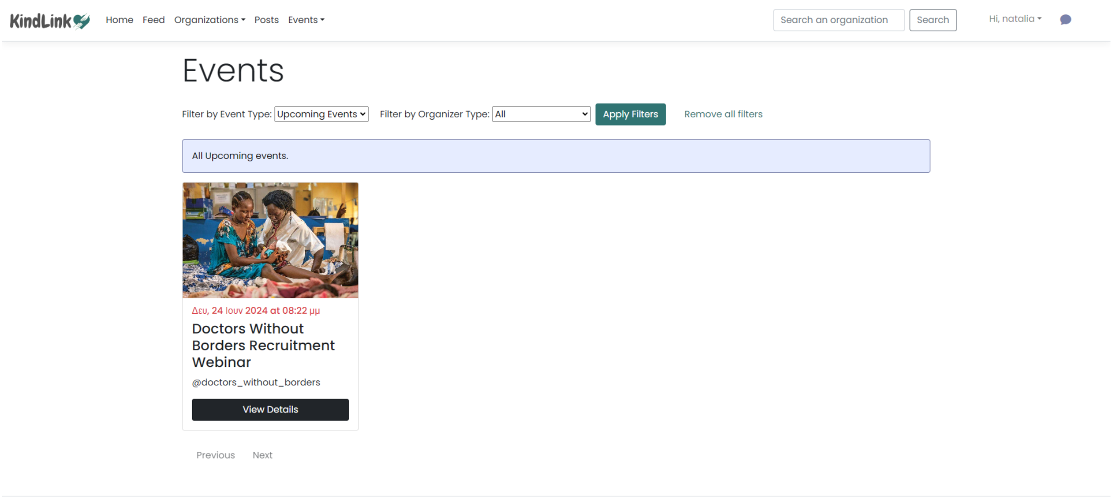


Events

Filter by Event Type: Upcoming Events Filter by Organizer Type: All

All Upcoming events.

Result:



Events

Filter by Event Type: Upcoming Events Filter by Organizer Type: All

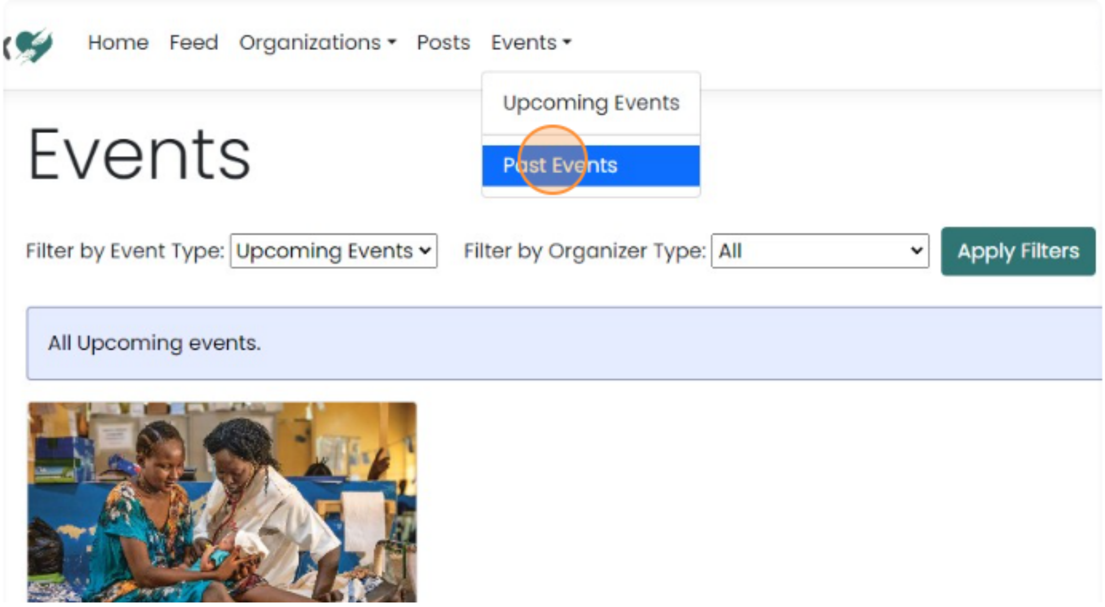
All Upcoming events.

Δευ, 24 Ιουν 2024 at 08:22 μμ

Doctors Without Borders Recruitment Webinar

@doctors_without_borders

4. Click "Past Events" to explore past events

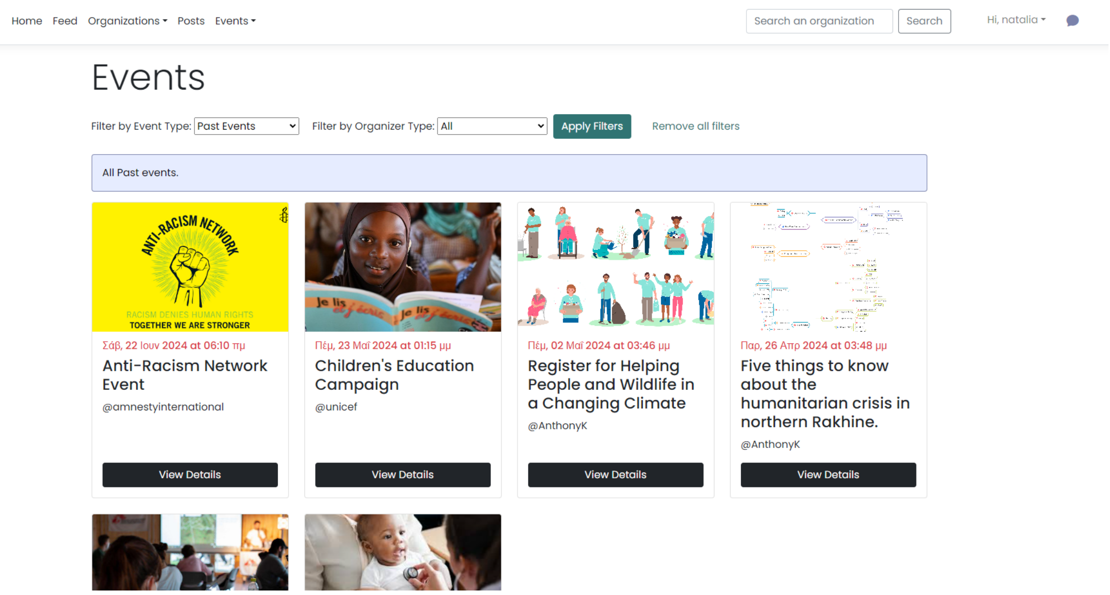


Events

Filter by Event Type: Upcoming Events Filter by Organizer Type: All Apply Filters

All Upcoming events.

Result:



Events

Filter by Event Type: Past Events Filter by Organizer Type: All Apply Filters Remove all filters

All Past events.

Σάβ, 22 Ιουν 2024 at 06:10 πμ
Anti-Racism Network Event
@amnestyinternational
View Details

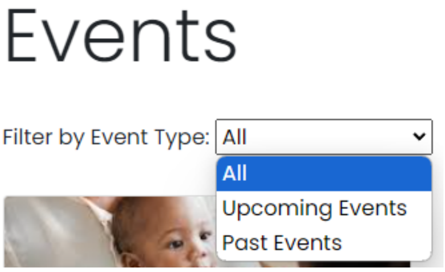
Πέμ, 23 Μαΐ 2024 at 01:15 μμ
Children's Education Campaign
@unicef
View Details

Πέμ, 02 Μαΐ 2024 at 03:46 μμ
Register for Helping People and Wildlife in a Changing Climate
@AnthonyK
View Details

Παρ, 26 Απρ 2024 at 03:48 μμ
Five things to know about the humanitarian crisis in northern Rakhine.
@AnthonyK
View Details

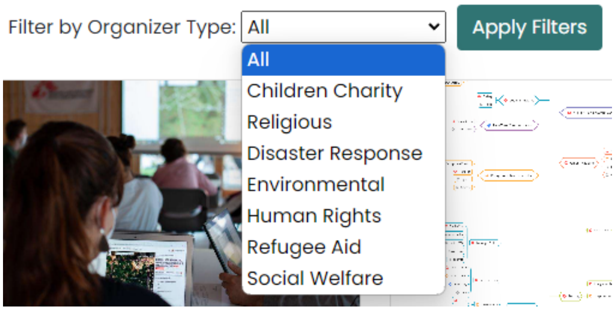
Filtering events

There are 2 types of filtering: Filtering by event type (upcoming or past) and Filtering by organizer type



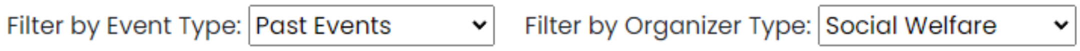
Events

Filter by Event Type: All



Filter by Organizer Type: All Apply Filters

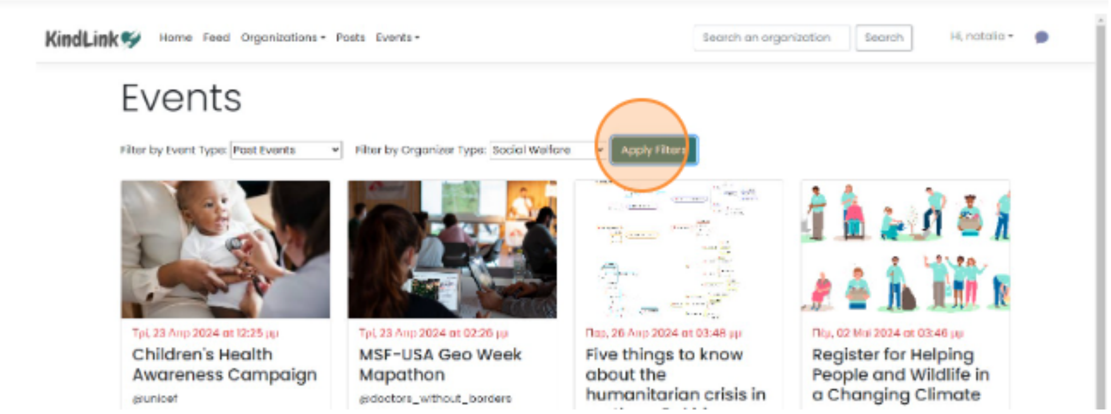
1. Select any filter you prefer from the dropdowns



Filter by Event Type: Past Events

Filter by Organizer Type: Social Welfare

2. Click on “Apply Filters”



Events

Filter by Event Type: Past Events

Filter by Organizer Type: Social Welfare

Τρί, 23 Απρ 2024 at 12:25 μμ

Children's Health Awareness Campaign

@unicef

Τρί, 23 Απρ 2024 at 02:26 μμ

MSF-USA Geo Week Mapathon

@doctors_without_borders

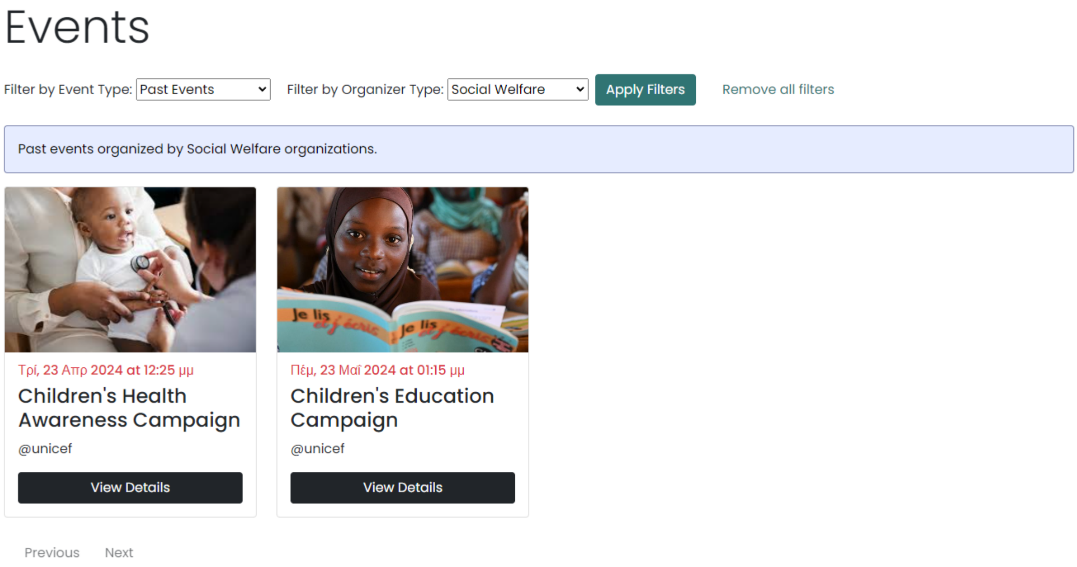
Παρ, 26 Απρ 2024 at 03:48 μμ

Five things to know about the humanitarian crisis in

Πέμ, 02 Μαΐ 2024 at 03:46 μμ

Register for Helping People and Wildlife in a Changing Climate

Result:



Events

Filter by Event Type: Past Events

Filter by Organizer Type: Social Welfare

Past events organized by Social Welfare organizations.

Τρί, 23 Απρ 2024 at 12:25 μμ

Children's Health Awareness Campaign

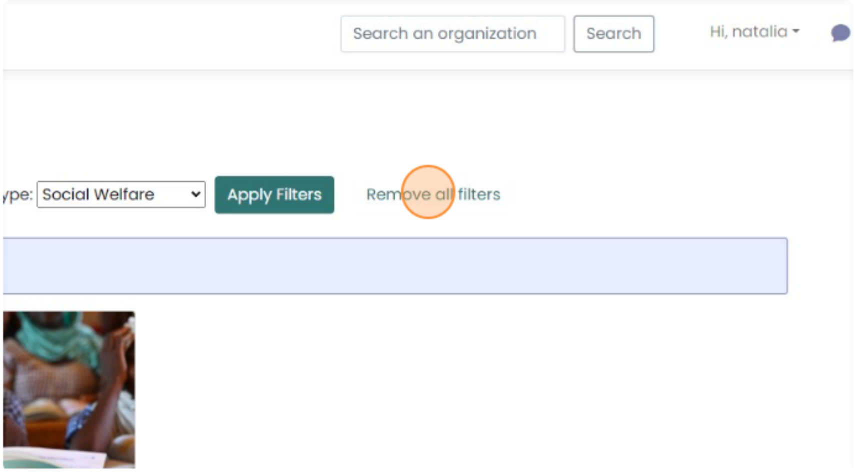
@unicef

Πέμ, 23 Μαΐ 2024 at 01:15 μμ

Children's Education Campaign

@unicef

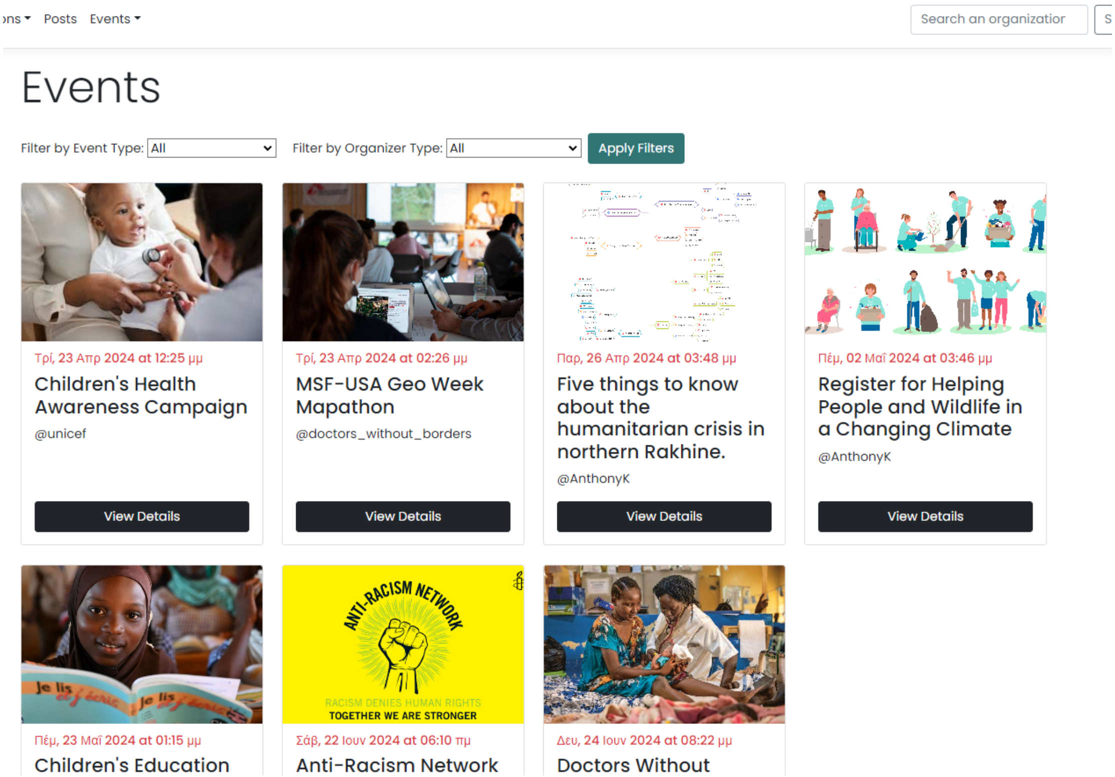
3. Click on “Remove all filters” to see all events



ype: Social Welfare

View Event Participants

1. Navigate to “https://localhost:7174/Events”



Filter by Event Type: All

Filter by Organizer Type: All

Τρί, 23 Απρ 2024 at 12:25 μμ
Children's Health Awareness Campaign
@unicef

Τρί, 23 Απρ 2024 at 02:26 μμ
MSF-USA Geo Week Mapathon
@doctors_without_borders

Παρ, 26 Απρ 2024 at 03:48 μμ
Five things to know about the humanitarian crisis in northern Rakhine.
@AnthonyK

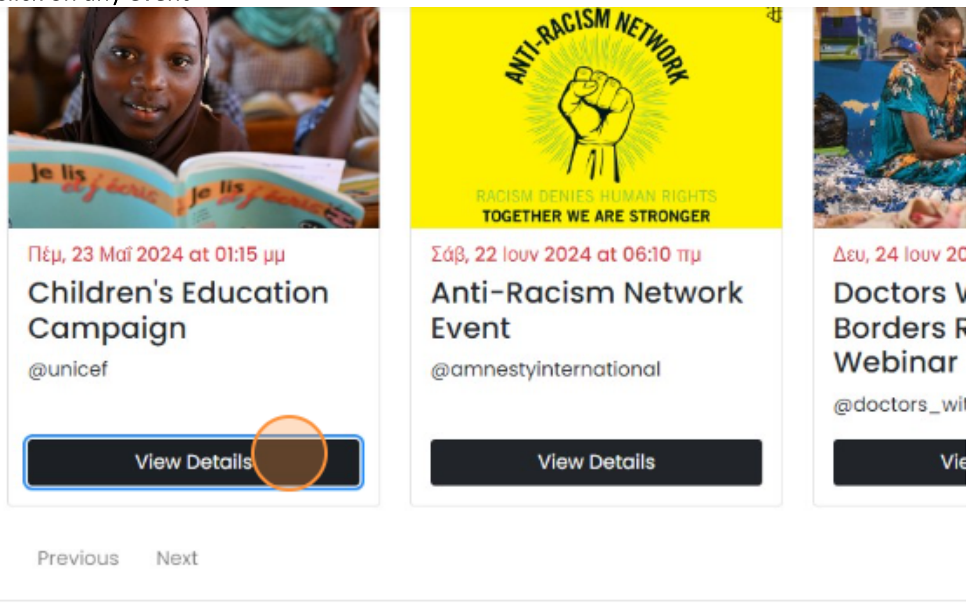
Πέμ, 02 Μαΐ 2024 at 03:46 μμ
Register for Helping People and Wildlife in a Changing Climate
@AnthonyK

Πέμ, 23 Μαΐ 2024 at 01:15 μμ
Children's Education

Σάβ, 22 Ιουν 2024 at 06:10 πμ
Anti-Racism Network

Δευ, 24 Ιουν 2024 at 08:22 μμ
Doctors Without

2. Click on any event

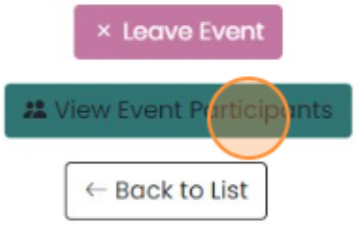


Πέμ, 23 Μαΐ 2024 at 01:15 μμ
Children's Education Campaign
@unicef

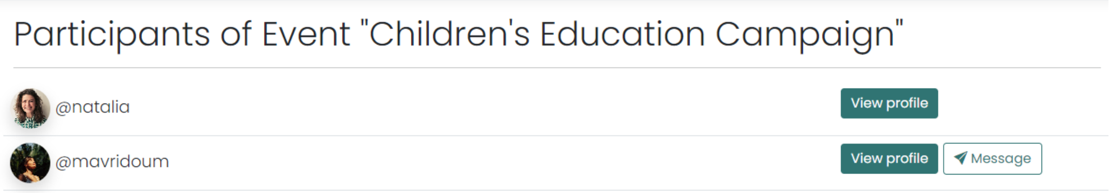
Σάβ, 22 Ιουν 2024 at 06:10 πμ
Anti-Racism Network Event
@amnestyinternational

Δευ, 24 Ιουν 20
Doctors W
Borders F
Webinar
@doctors_wi

3. Click "View Event Participants" at the bottom of the event details page



4. Explore the participants of the event



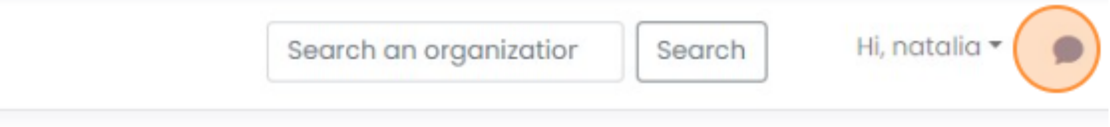
Participants of Event "Children's Education Campaign"

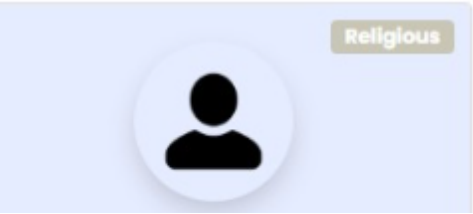
@natalia View profile

@mavridoum View profile Message

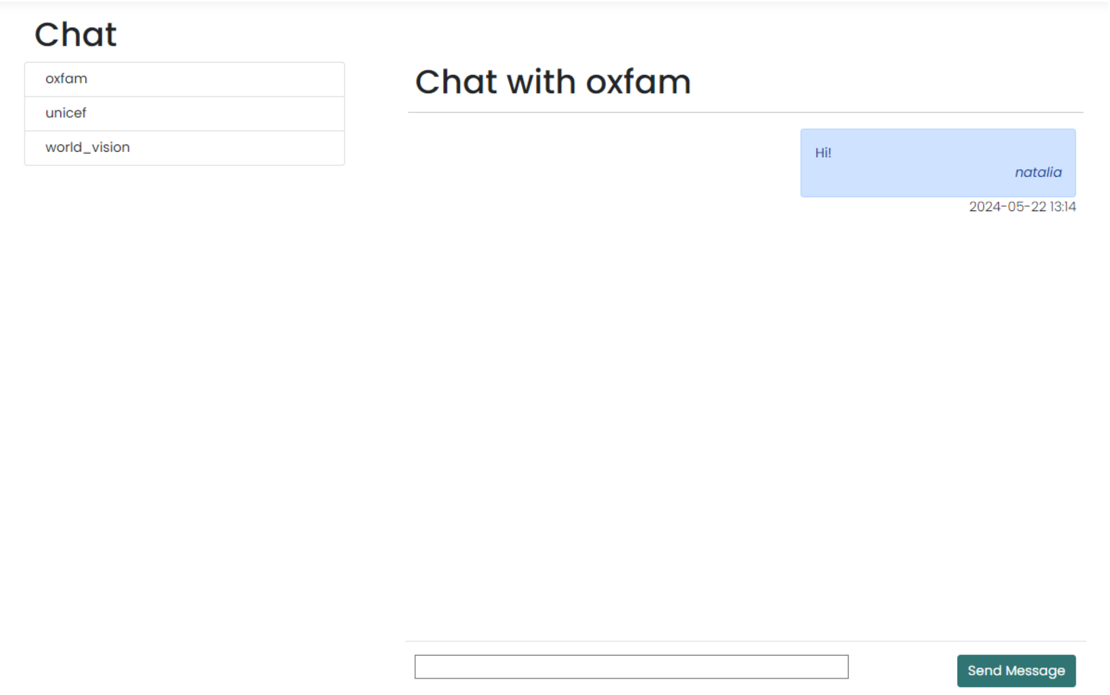
See all chats

1. Anywhere you are, click on the “message” icon of the navbar to see all the chats





Result:

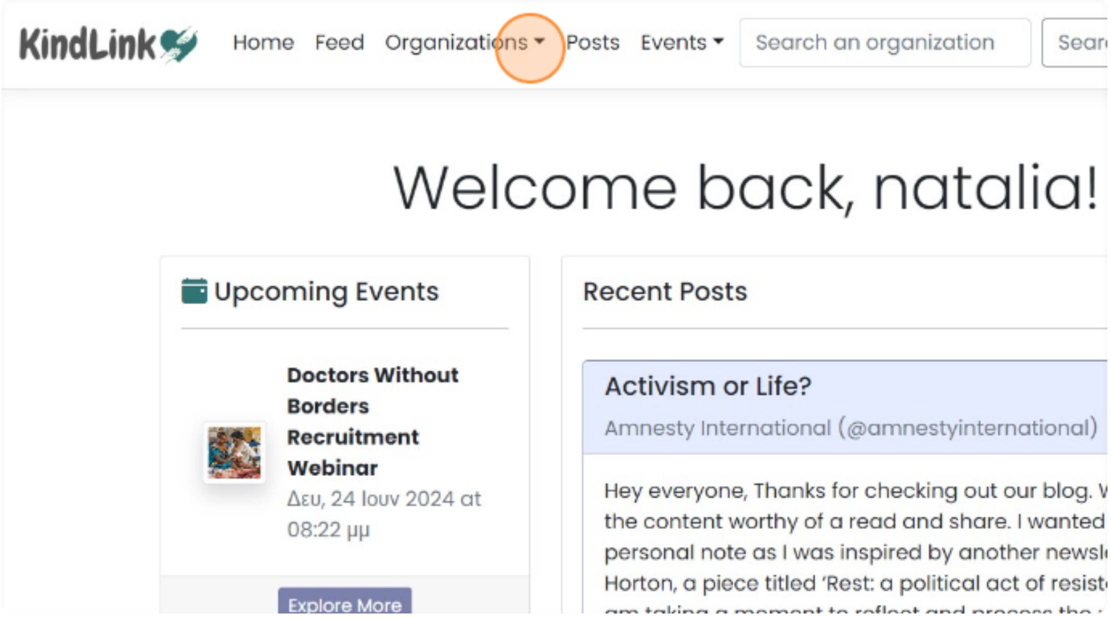


Hi!
natalia
2024-05-22 13:14

4.4.2 Citizen Functionalities

Nonprofit Organization Search

1. Login
2. Click “Organizations” link of the navbar



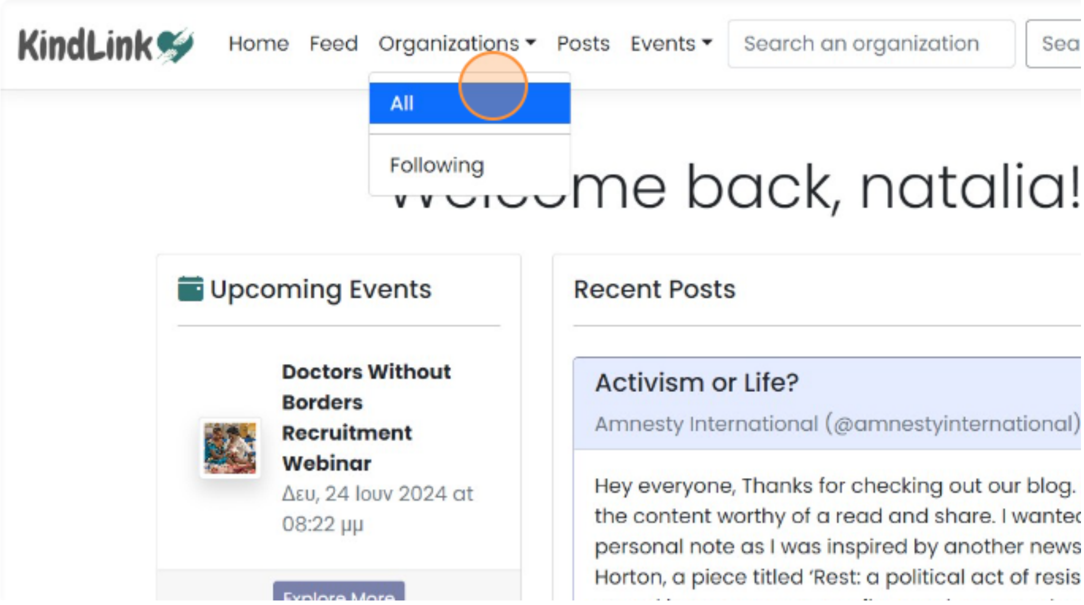
Welcome back, natalia!

Doctors Without Borders Recruitment Webinar
Δευ, 24 Ιουν 2024 at 08:22 μμ

Activism or Life?
Amnesty International (@amnestyinternational)

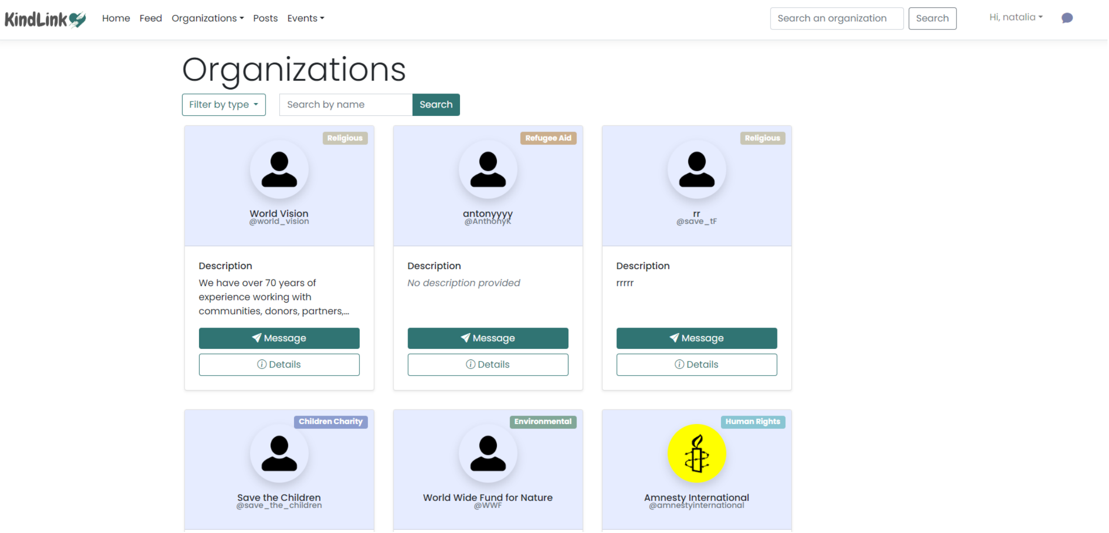
Hey everyone, Thanks for checking out our blog. W
the content worthy of a read and share. I wanted
personal note as I was inspired by another newsl
Horton, a piece titled 'Rest: a political act of resist

3. Click “All” if you want to explore all the organizations that are registered in the platform



Hey everyone, Thanks for checking out our blog. the content worthy of a read and share. I wantec personal note as I was inspired by another news Horton, a piece titled ‘Rest: a political act of resis

The result:

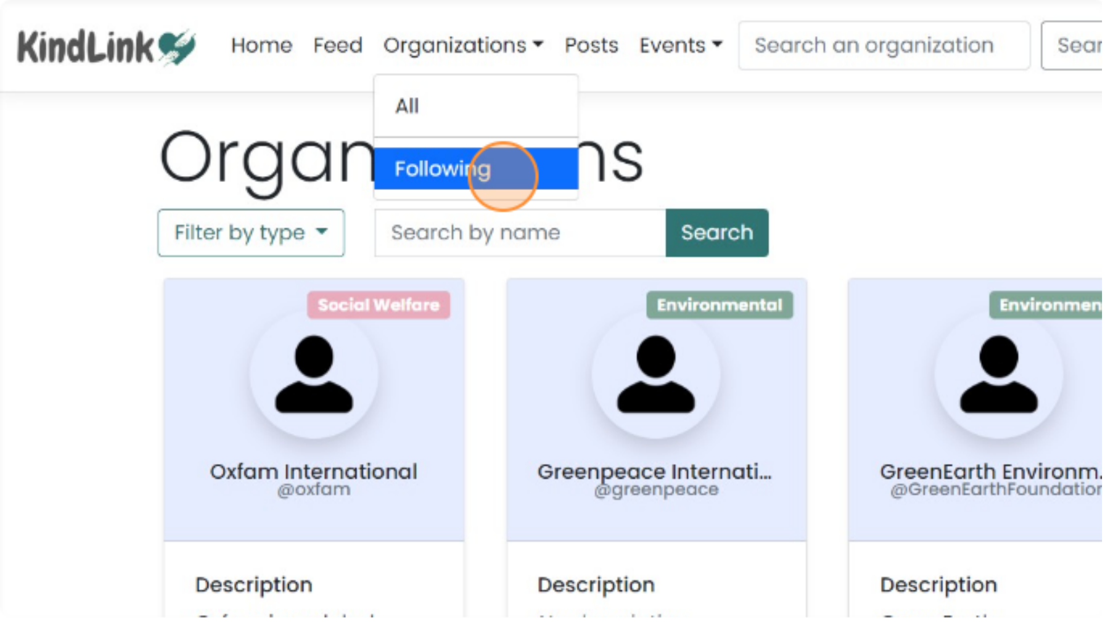


We have over 70 years of experience working with communities, donors, partners,...

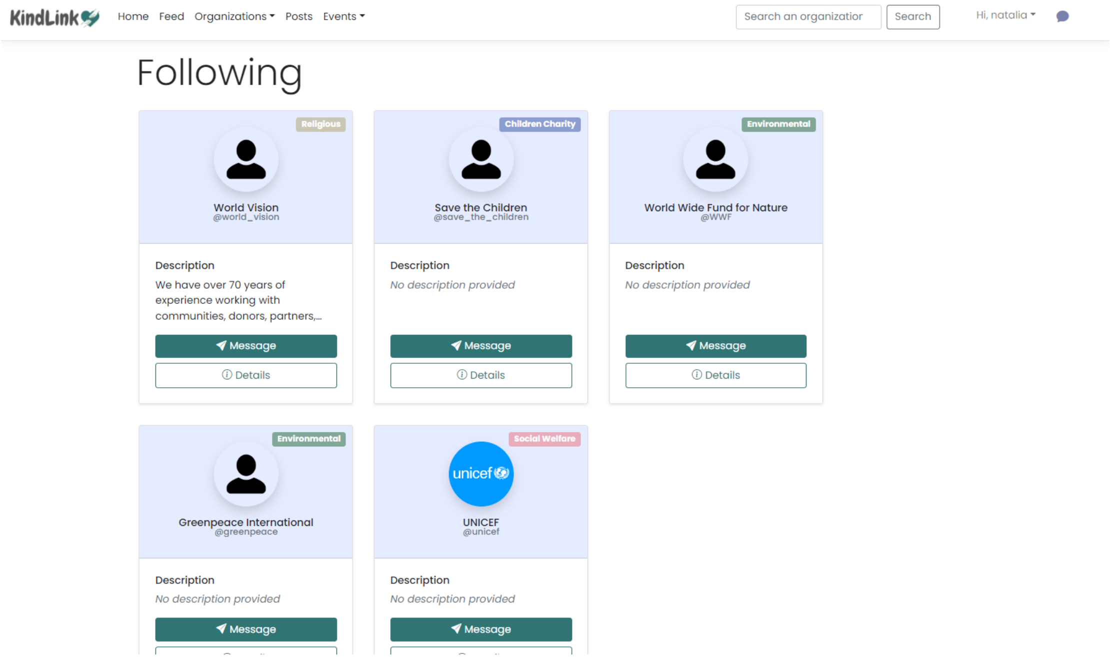
No description provided

rrrrr

4. Click “Following” if you want to explore all the organizations that are registered in the platform



The result:



We have over 70 years of experience working with communities, donors, partners,...

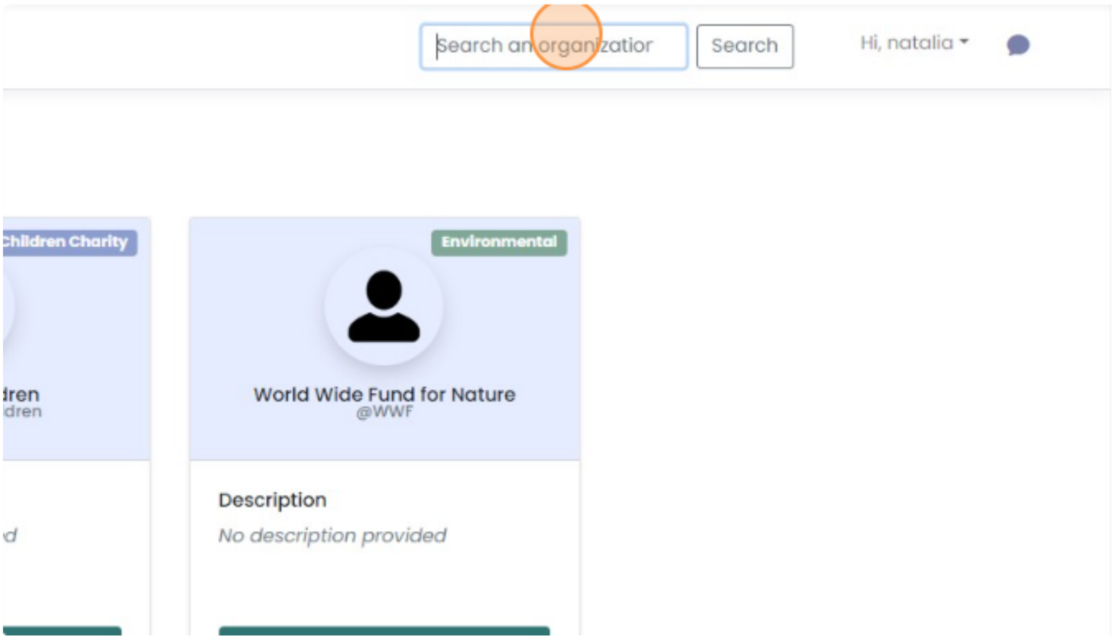
No description provided

No description provided

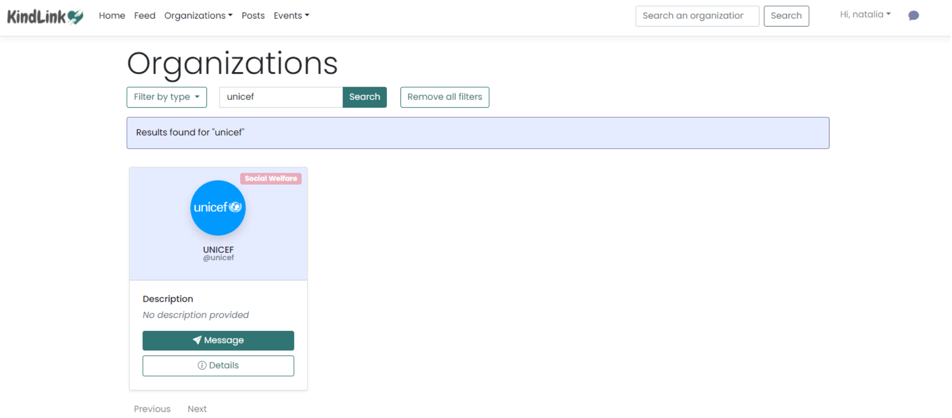
No description provided

No description provided

5. Search for specific organizations using the “Search an organization” field.

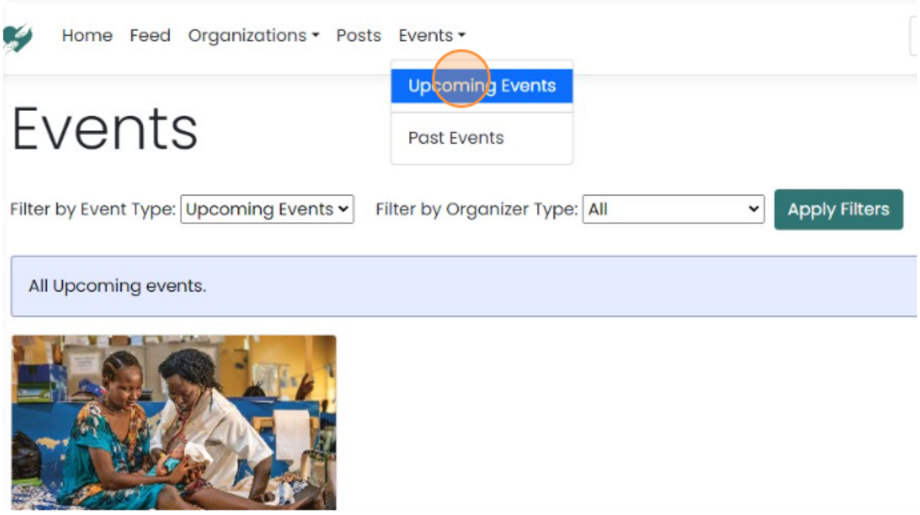


Result of searching for “unicef” :

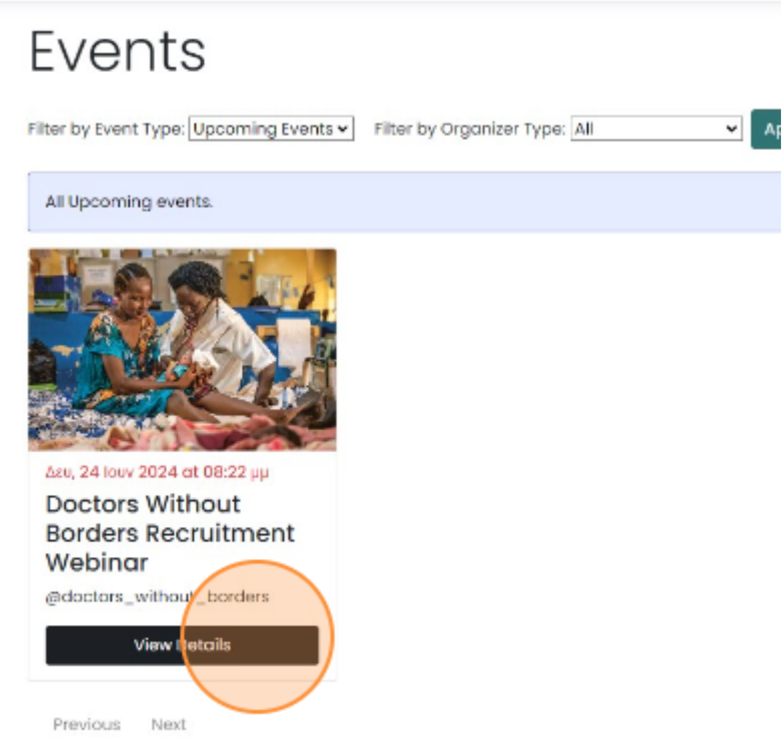


Participating in events

1. Navigate to “Upcoming Events”



2. Select the event you would like to join



Events

Filter by Event Type: Upcoming Events

Filter by Organizer Type: All

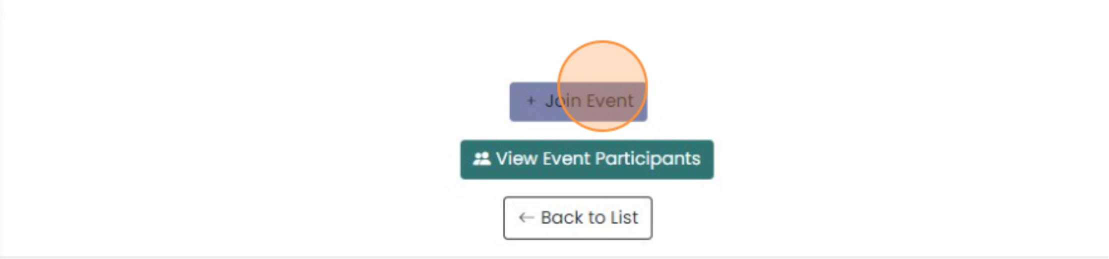
All Upcoming events.

Δευ, 24 Ιουν 2024 at 08:22 μμ

Doctors Without Borders Recruitment Webinar

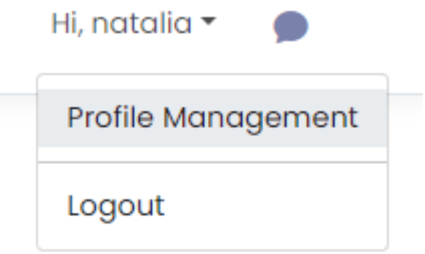
@doctors_without_borders

3. Click «Join Event»

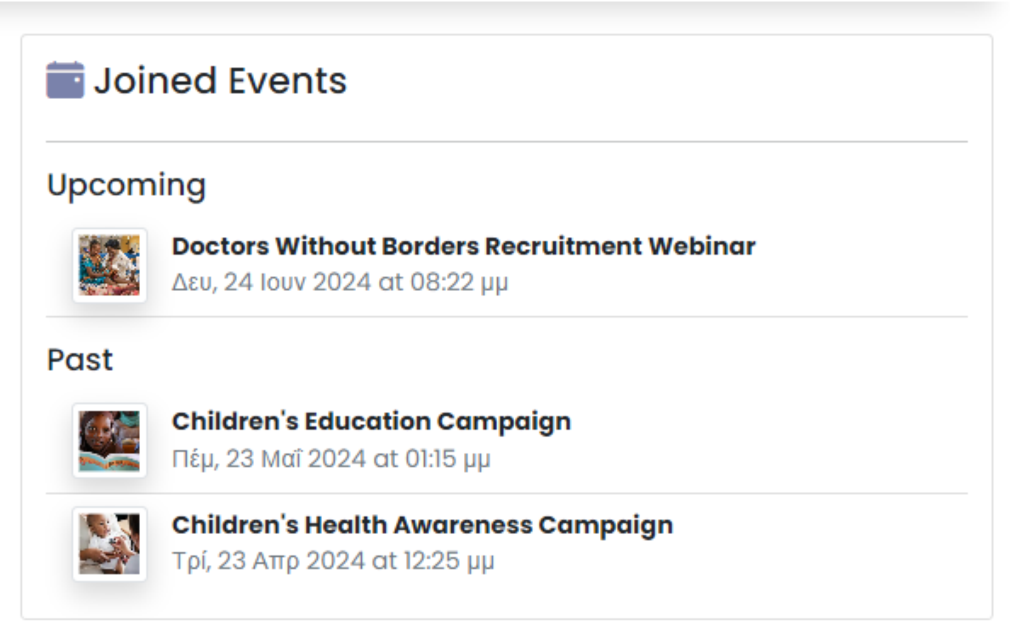


Leave joined event

1. Click on “Profile Management” link of the navbar



2. Go to the section “Joined Events”



Joined Events

Upcoming

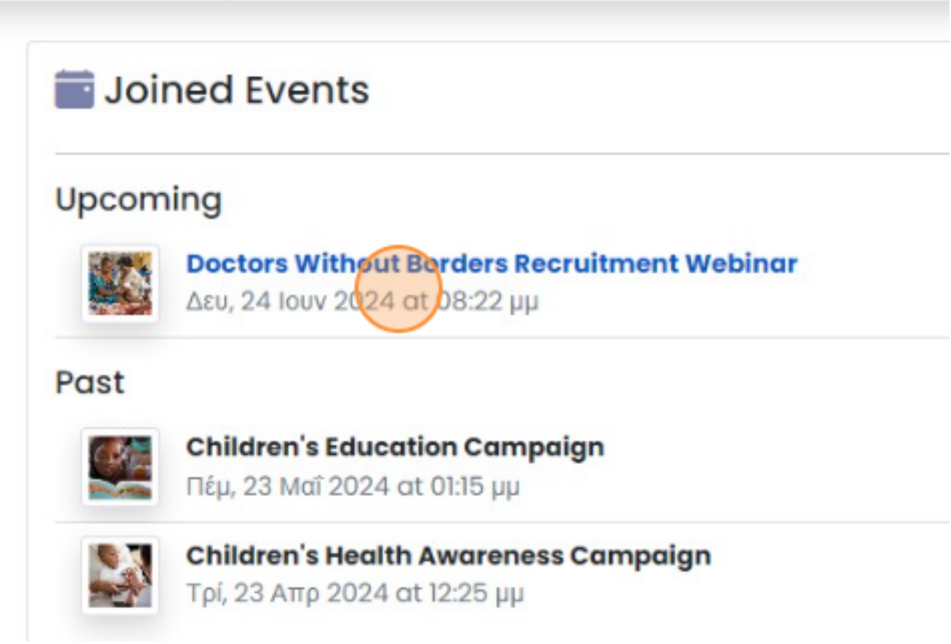
Doctors Without Borders Recruitment Webinar
Δευ, 24 Ιουν 2024 at 08:22 μμ

Past

Children's Education Campaign
Πέμ, 23 Μαΐ 2024 at 01:15 μμ

Children's Health Awareness Campaign
Τρί, 23 Απρ 2024 at 12:25 μμ

3. Click on any Upcoming Event



Joined Events

Upcoming

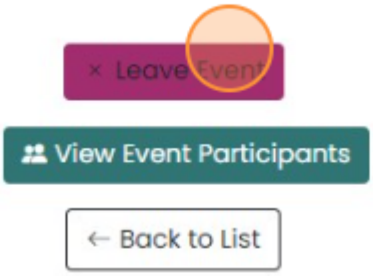
Doctors Without Borders Recruitment Webinar
Δευ, 24 Ιουν 2024 at 08:22 μμ

Past

Children's Education Campaign
Πέμ, 23 Μαΐ 2024 at 01:15 μμ

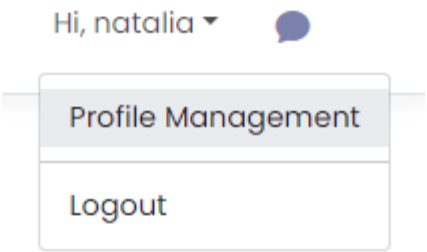
Children's Health Awareness Campaign
Τρί, 23 Απρ 2024 at 12:25 μμ

4. Click “Leave Event” at the bottom of the page

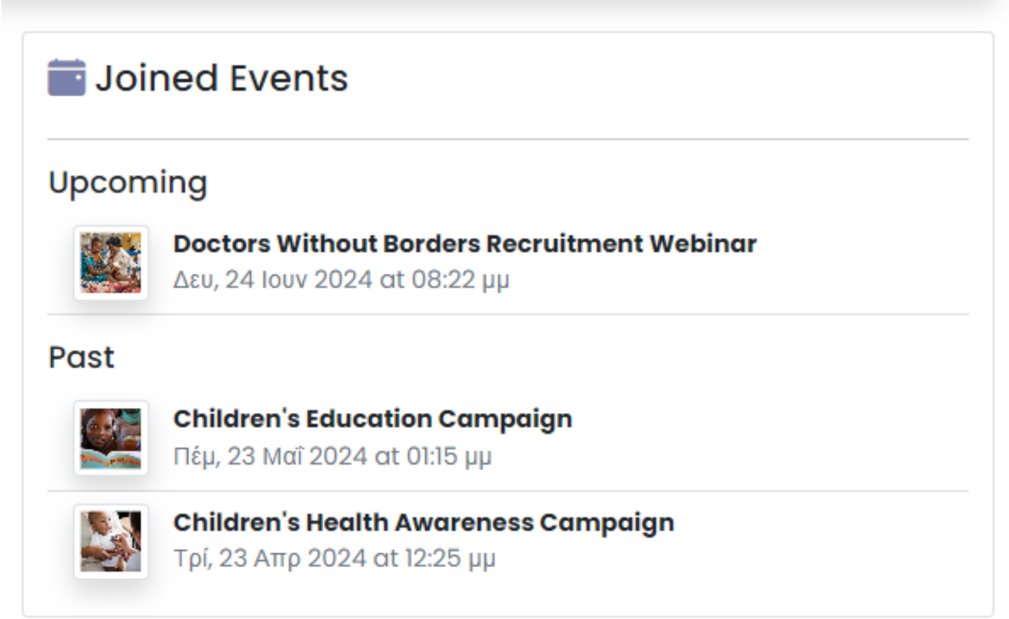


Browse joined events

1. Click on “Profile Management” link of the navbar



2. The section “Joined Events” at the right bottom of the page contains all the events you have joined



Joined Events

Upcoming

Doctors Without Borders Recruitment Webinar
Δευ, 24 Ιουν 2024 at 08:22 μμ

Past

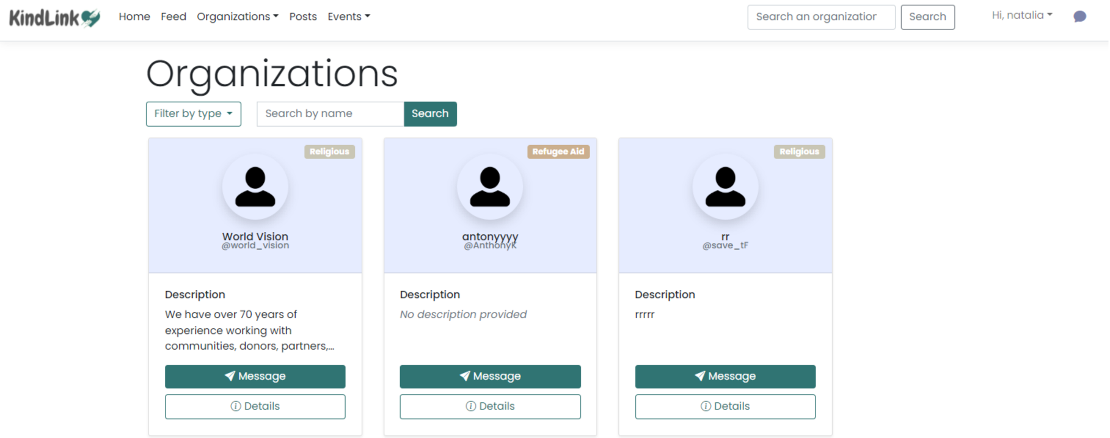
Children's Education Campaign
Πέμ, 23 Μαΐ 2024 at 01:15 μμ

Children's Health Awareness Campaign
Τρί, 23 Απρ 2024 at 12:25 μμ

Messaging Organizations

1. Click on “organizations” link of the navbar

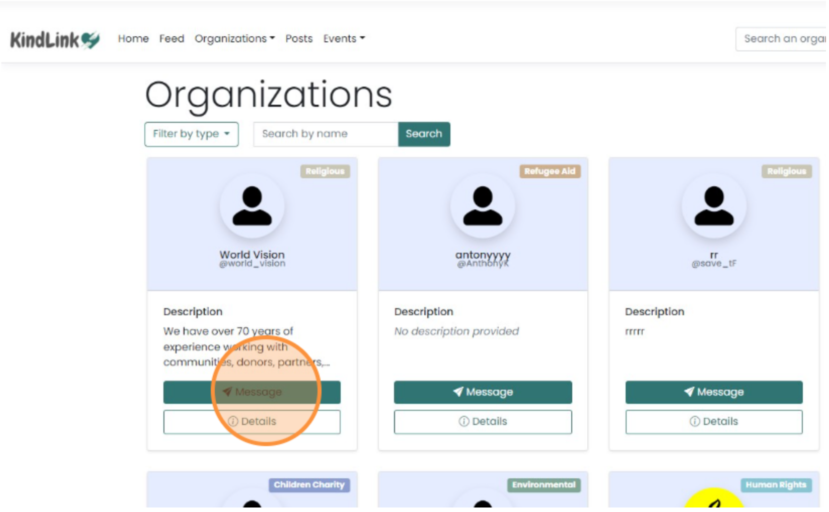
2. Select an organization you would like to message



We have over 70 years of experience working with communities, donors, partners,...

No description provided

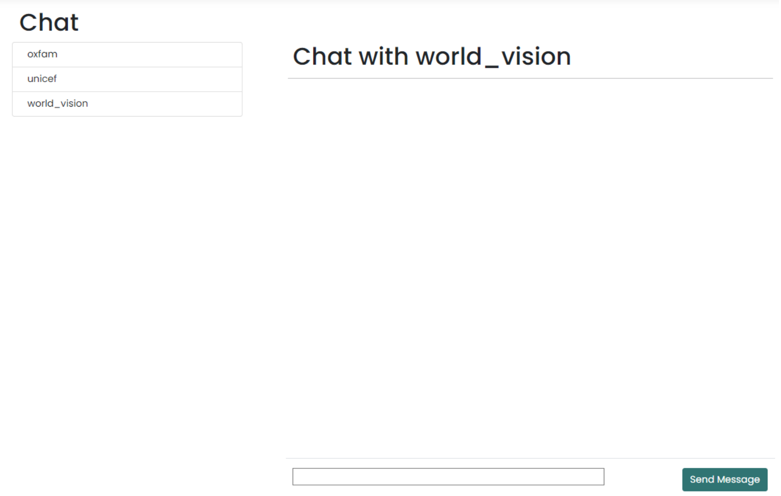
3. Click "Message"



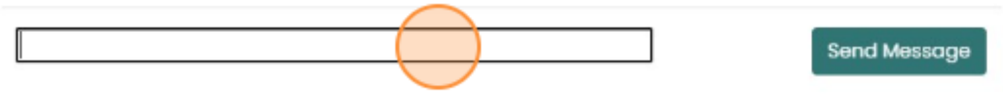
We have over 70 years of experience working with communities, donors, partners,...

No description provided

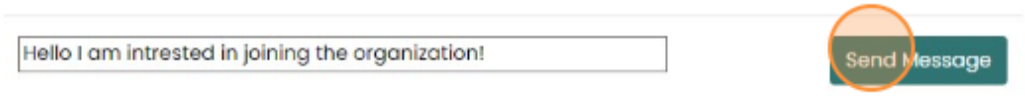
4. A new chat is created



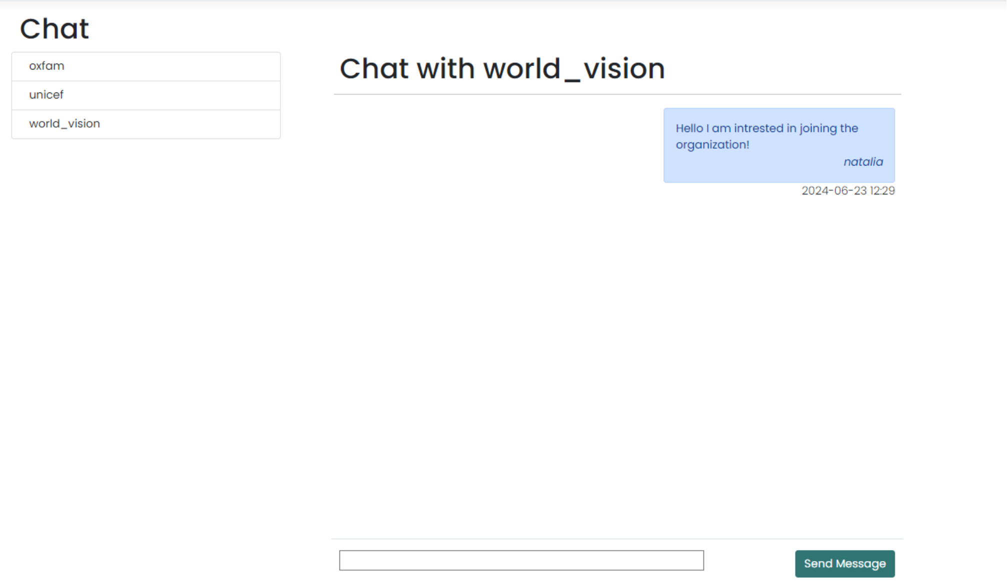
5. Click on the text field.



6. Write your message
7. Click "Send Message"


Hello I am intrested in joining the organization!

8. The message is sent


Chat

oxfam
unicef
world_vision

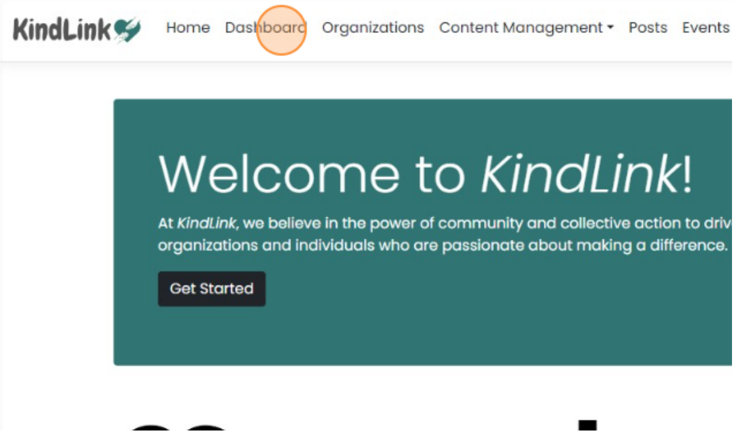
Chat with world_vision

Hello I am intrested in joining the organization!
natalia
2024-06-23 12:29

4.4.3 Organization Functionalities

Managing Posts

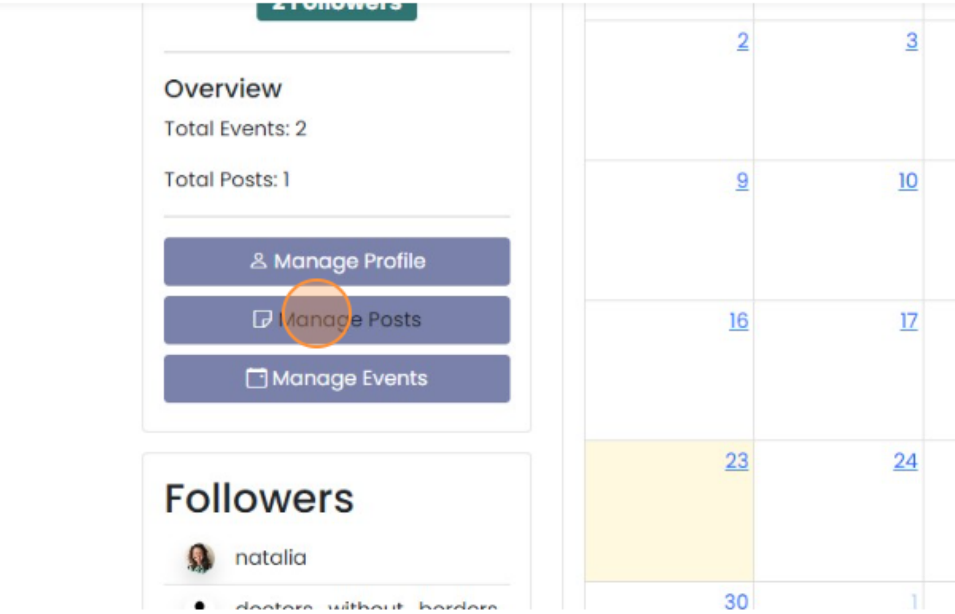
1. Navigate to "Dashboard"



Welcome to KindLink!

At KindLink, we believe in the power of community and collective action to driv organizations and individuals who are passionate about making a difference.

2. Click “Manage Posts”



Overview

Total Events: 2

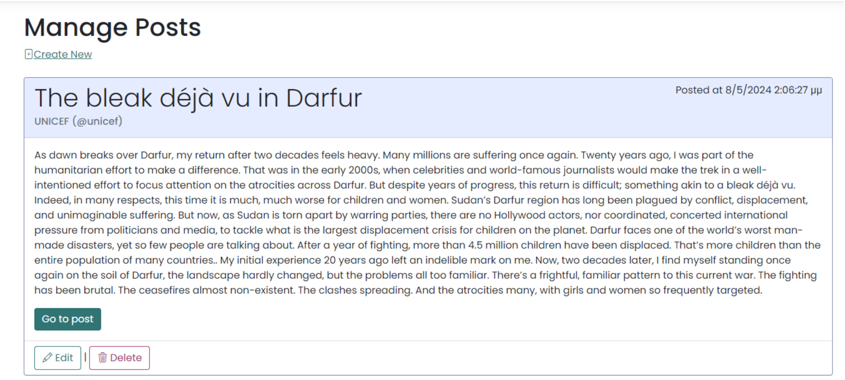
Total Posts: 1

Followers

natalia

doctors without borders

3. You can now manage you posts



Manage Posts

The bleak déjà vu in Darfur

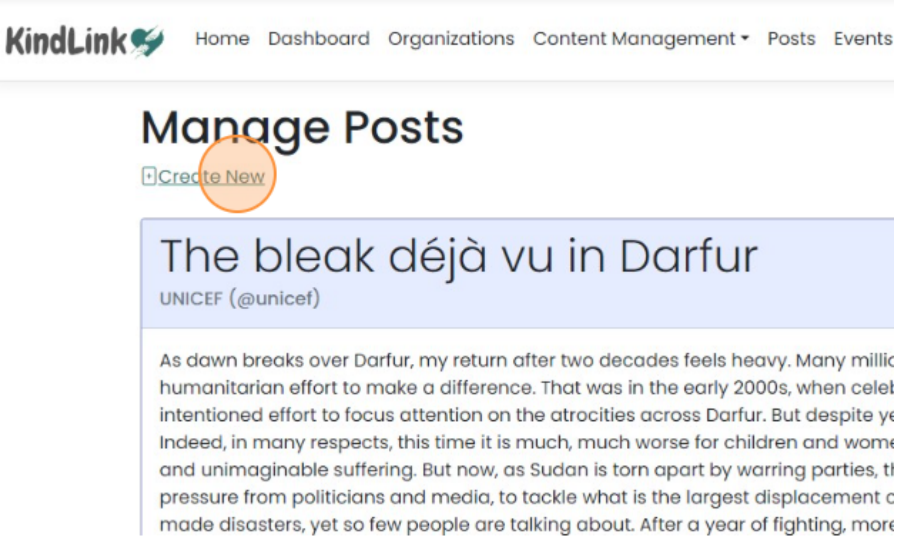
UNICEF (@unicef)

Posted at 8/5/2024 2:06:27 μμ

As dawn breaks over Darfur, my return after two decades feels heavy. Many millions are suffering once again. Twenty years ago, I was part of the humanitarian effort to make a difference. That was in the early 2000s, when celebrities and world-famous journalists would make the trek in a well-intentioned effort to focus attention on the atrocities across Darfur. But despite years of progress, this return is difficult; something akin to a bleak déjà vu. Indeed, in many respects, this time it is much, much worse for children and women. Sudan’s Darfur region has long been plagued by conflict, displacement, and unimaginable suffering. But now, as Sudan is torn apart by warring parties, there are no Hollywood actors, nor coordinated, concerted international pressure from politicians and media, to tackle what is the largest displacement crisis for children on the planet. Darfur faces one of the world’s worst man-made disasters, yet so few people are talking about. After a year of fighting, more than 4.5 million children have been displaced. That’s more children than the entire population of many countries.. My initial experience 20 years ago left an indelible mark on me. Now, two decades later, I find myself standing once again on the soil of Darfur, the landscape hardly changed, but the problems all too familiar. There’s a frightful, familiar pattern to this current war. The fighting has been brutal. The ceasefires almost non-existent. The clashes spreading. And the atrocities many, with girls and women so frequently targeted.

Create Post

1. Click “Create New”



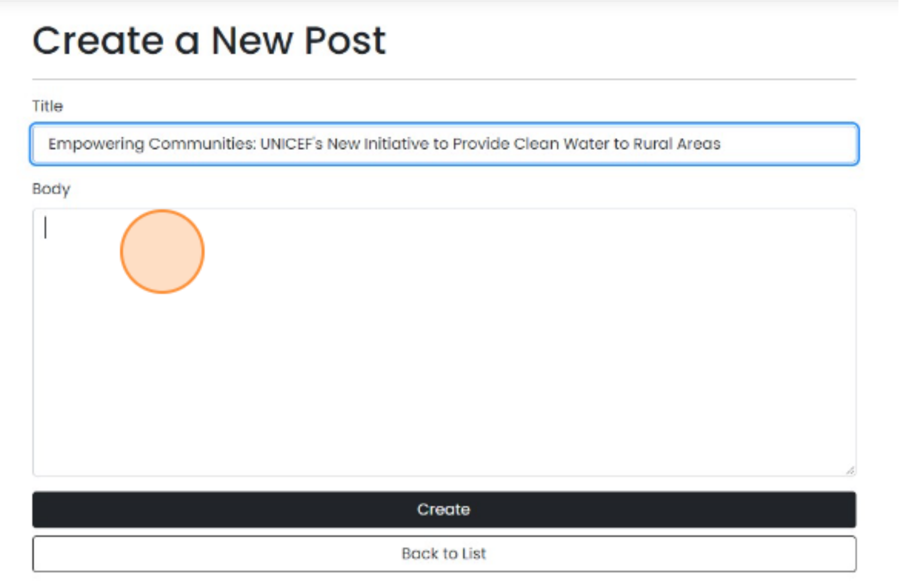
Manage Posts

The bleak déjà vu in Darfur

UNICEF (@unicef)

As dawn breaks over Darfur, my return after two decades feels heavy. Many millic
humanitarian effort to make a difference. That was in the early 2000s, when celel
intentioned effort to focus attention on the atrocities across Darfur. But despite ye
Indeed, in many respects, this time it is much, much worse for children and wome
and unimaginable suffering. But now, as Sudan is torn apart by warring parties, tl
pressure from politicians and media, to tackle what is the largest displacement c
made disasters, yet so few people are talking about. After a year of fighting, more

2. Fill the “Title” and “Body” field



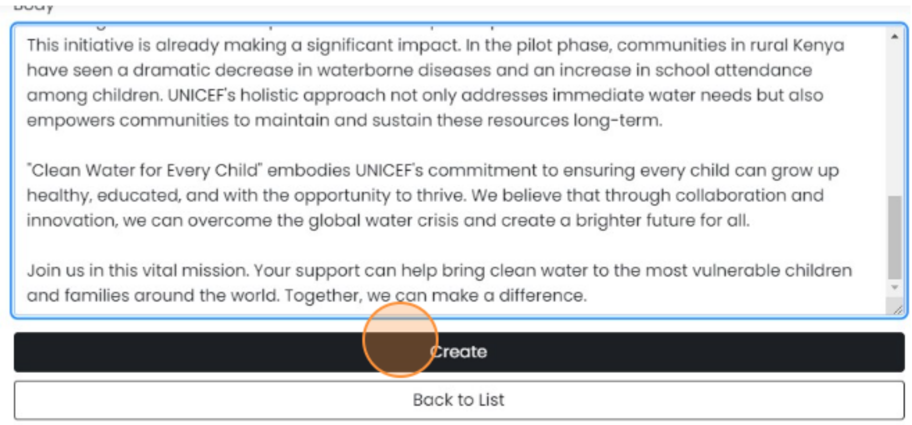
Create a New Post

Title

Empowering Communities: UNICEF's New Initiative to Provide Clean Water to Rural Areas

Body

3. Click on “Create” button



This initiative is already making a significant impact. In the pilot phase, communities in rural Kenya have seen a dramatic decrease in waterborne diseases and an increase in school attendance among children. UNICEF's holistic approach not only addresses immediate water needs but also empowers communities to maintain and sustain these resources long-term.

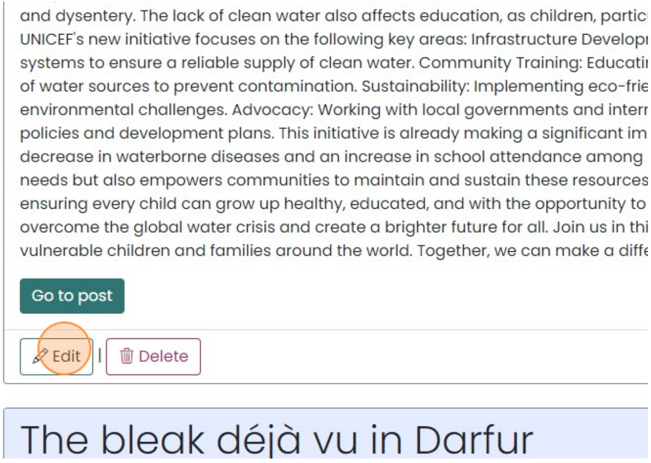
"Clean Water for Every Child" embodies UNICEF's commitment to ensuring every child can grow up healthy, educated, and with the opportunity to thrive. We believe that through collaboration and innovation, we can overcome the global water crisis and create a brighter future for all.

Join us in this vital mission. Your support can help bring clean water to the most vulnerable children and families around the world. Together, we can make a difference.

4. The post is created

Edit Post

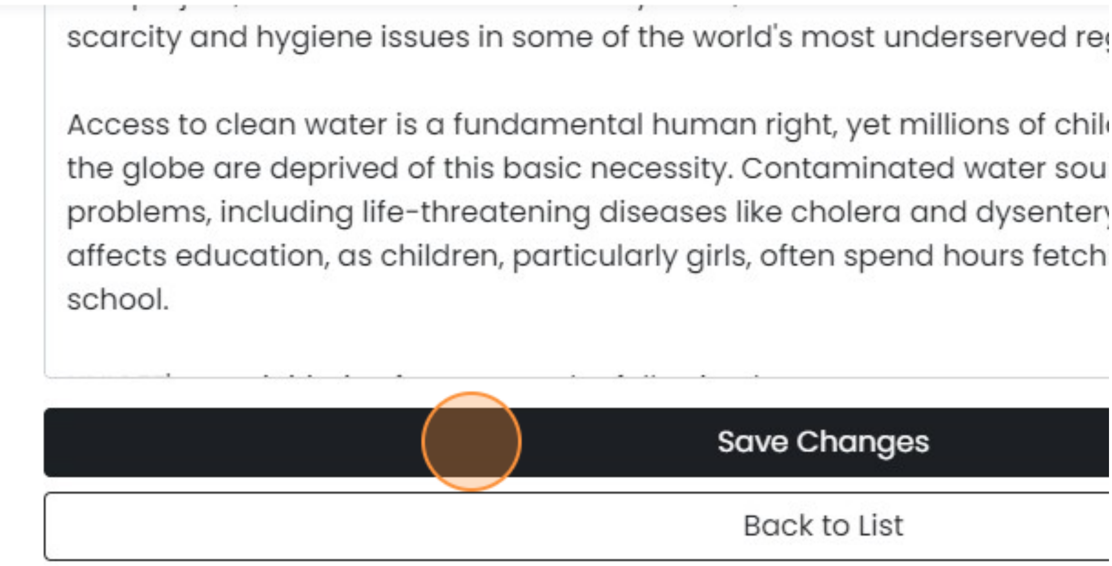
1. Click “Edit” on any post you wish to edit



and dysentery. The lack of clean water also affects education, as children, partic
UNICEF's new initiative focuses on the following key areas: Infrastructure Develop
systems to ensure a reliable supply of clean water. Community Training: Educati
of water sources to prevent contamination. Sustainability: Implementing eco-frie
environmental challenges. Advocacy: Working with local governments and interr
policies and development plans. This initiative is already making a significant im
decrease in waterborne diseases and an increase in school attendance among
needs but also empowers communities to maintain and sustain these resources
ensuring every child can grow up healthy, educated, and with the opportunity to
overcome the global water crisis and create a brighter future for all. Join us in thi
vulnerable children and families around the world. Together, we can make a diffe

The bleak déjà vu in Darfur

2. Make the changes and then click “Save Changes” to save them

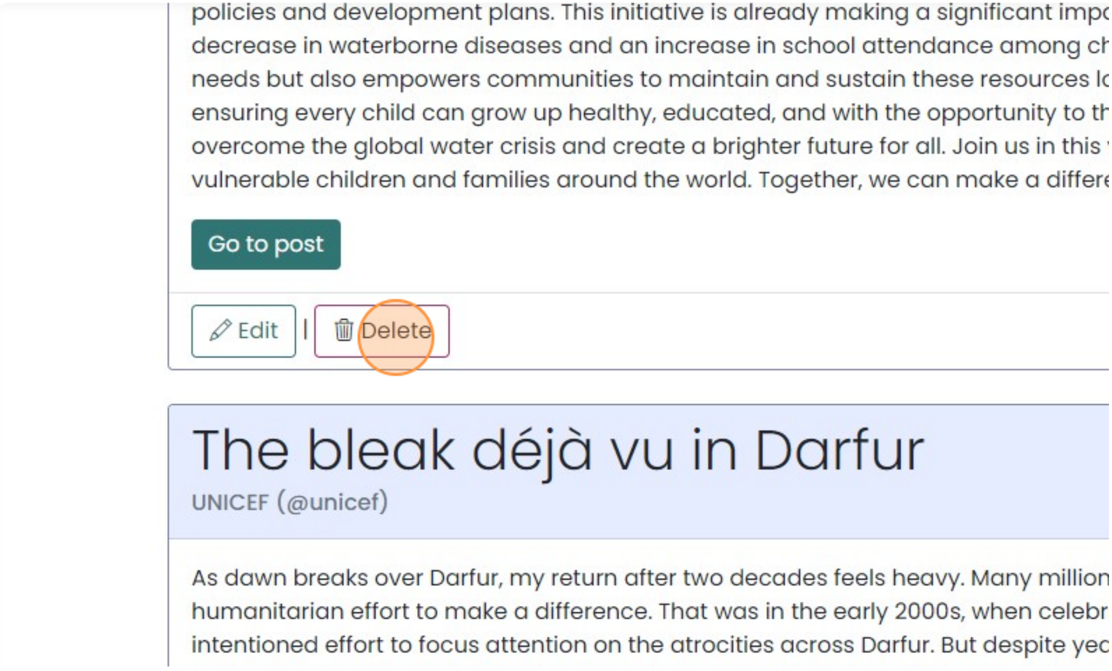


scarcity and hygiene issues in some of the world's most underserved re

Access to clean water is a fundamental human right, yet millions of chil the globe are deprived of this basic necessity. Contaminated water sou problems, including life-threatening diseases like cholera and dysenter affects education, as children, particularly girls, often spend hours fetch school.

Delete Post

1. Click “Delete” on any post you wish to delete



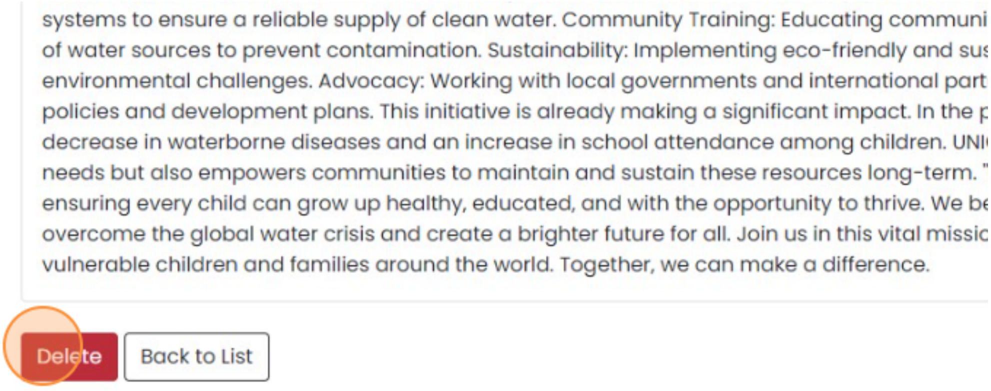
policies and development plans. This initiative is already making a significant imp decrease in waterborne diseases and an increase in school attendance among ch needs but also empowers communities to maintain and sustain these resources l ensuring every child can grow up healthy, educated, and with the opportunity to th overcome the global water crisis and create a brighter future for all. Join us in this vulnerable children and families around the world. Together, we can make a differe

The bleak déjà vu in Darfur

UNICEF (@unicef)

As dawn breaks over Darfur, my return after two decades feels heavy. Many million humanitarian effort to make a difference. That was in the early 2000s, when celebr intentioned effort to focus attention on the atrocities across Darfur. But despite yea

2. Click “Delete”

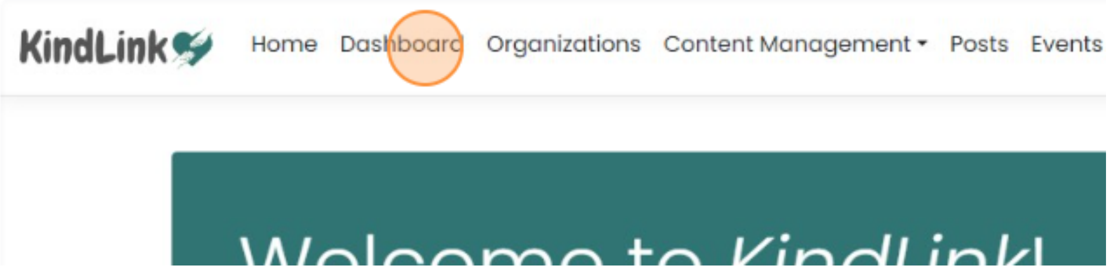


systems to ensure a reliable supply of clean water. Community Training: Educating communi
of water sources to prevent contamination. Sustainability: Implementing eco-friendly and sus
environmental challenges. Advocacy: Working with local governments and international part
policies and development plans. This initiative is already making a significant impact. In the p
decrease in waterborne diseases and an increase in school attendance among children. UNI
needs but also empowers communities to maintain and sustain these resources long-term. "
ensuring every child can grow up healthy, educated, and with the opportunity to thrive. We be
overcome the global water crisis and create a brighter future for all. Join us in this vital missic
vulnerable children and families around the world. Together, we can make a difference.

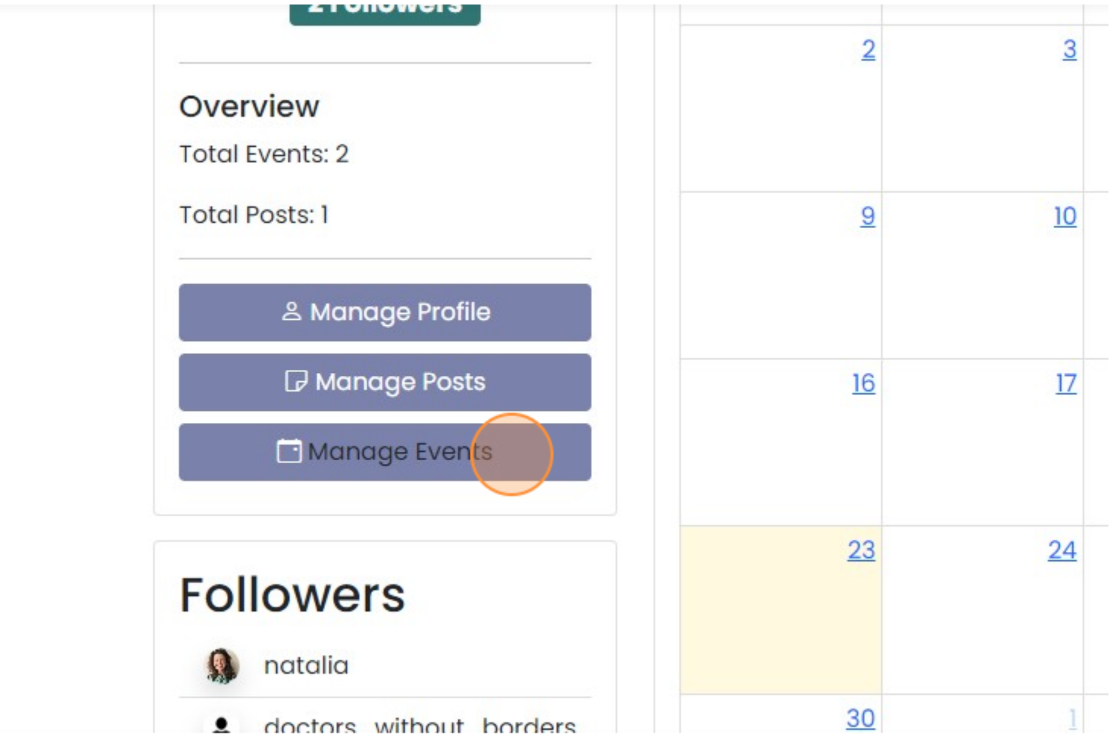
3. The post is deleted

Managing Events

1. Navigate to “Dashboard”



2. Click "Manage Events"



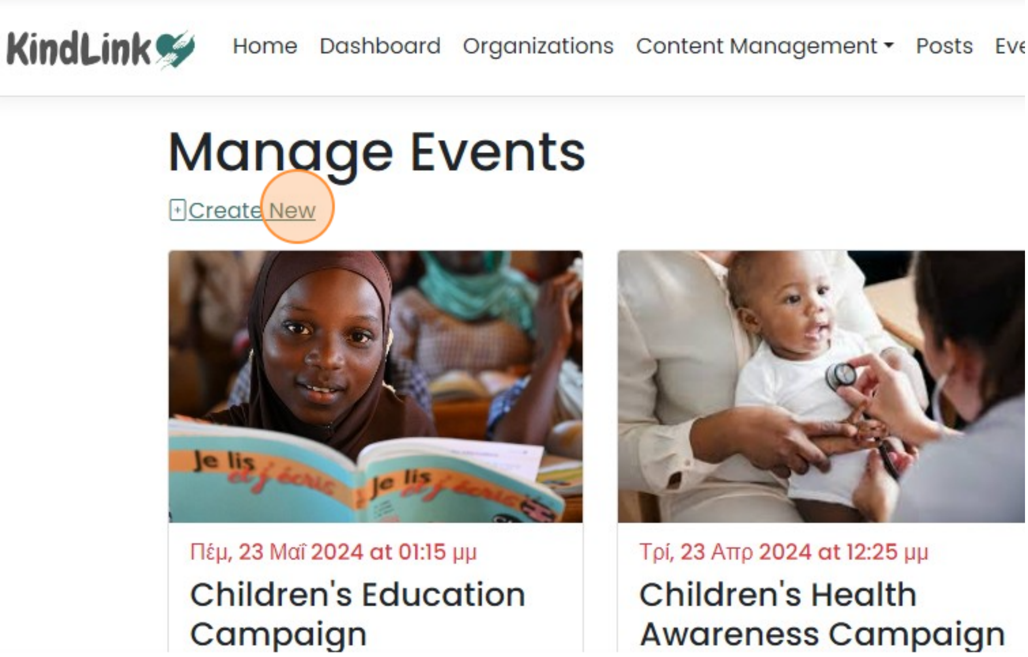
Overview

Total Events: 2

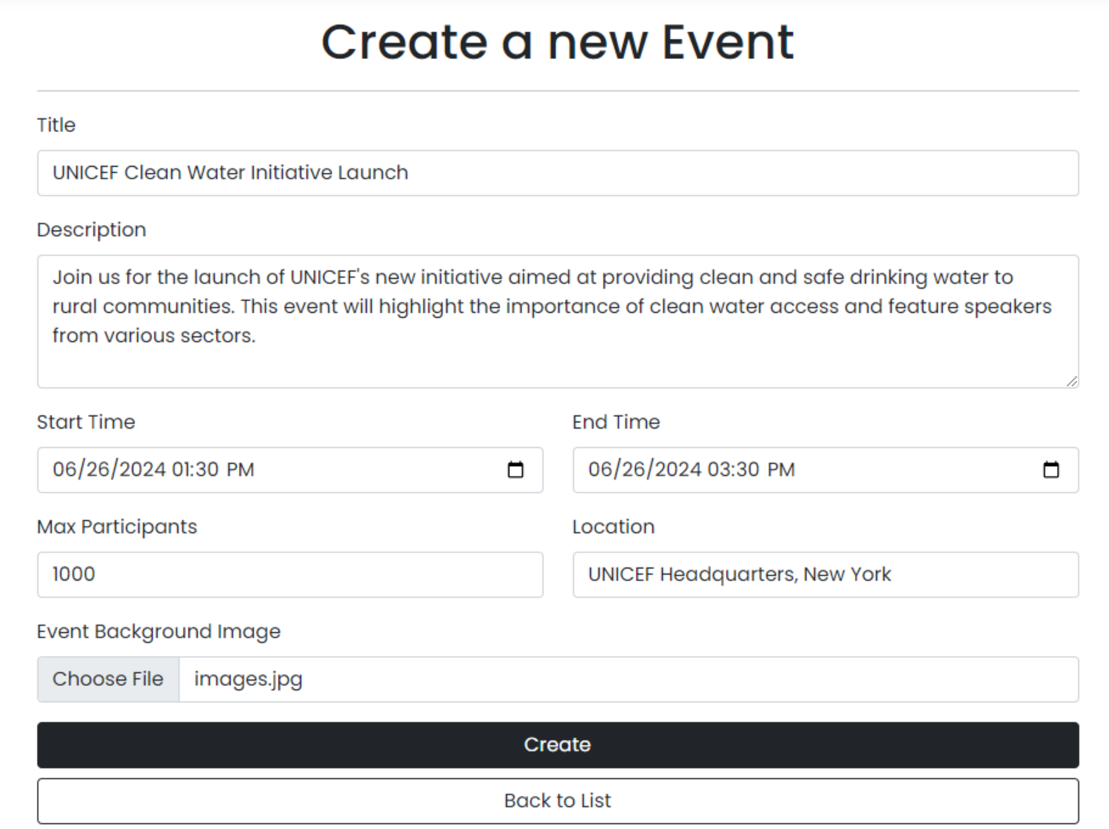
Total Posts: 1

Create events

1. Click "Create New"


KindLink
Home
Dashboard
Organizations
Content Management
Posts
Eve
Manage Events
Create New
Πέμ, 23 Μαΐ 2024 at 01:15 μμ
Children's Education Campaign
Τρί, 23 Απρ 2024 at 12:25 μμ
Children's Health Awareness Campaign

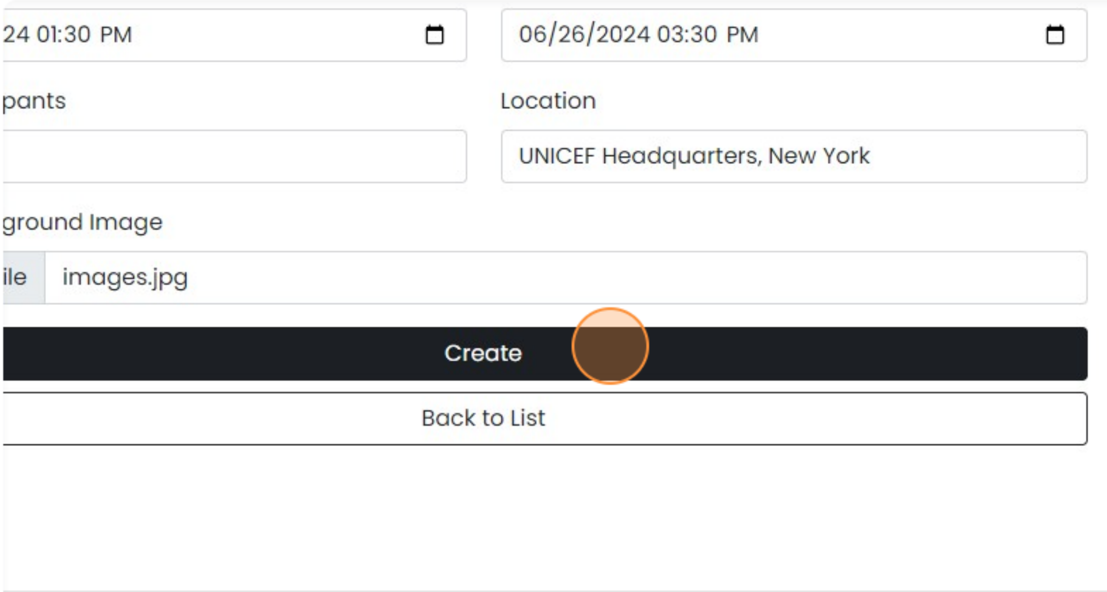
2. Fill in the fields



Create a new Event

Title	UNICEF Clean Water Initiative Launch
Description	Join us for the launch of UNICEF's new initiative aimed at providing clean and safe drinking water to rural communities. This event will highlight the importance of clean water access and feature speakers from various sectors.
Start Time	06/26/2024 01:30 PM
End Time	06/26/2024 03:30 PM
Max Participants	1000
Location	UNICEF Headquarters, New York
Event Background Image	Choose File images.jpg

3. Click on “Create”



24 01:30 PM

06/26/2024 03:30 PM

pants

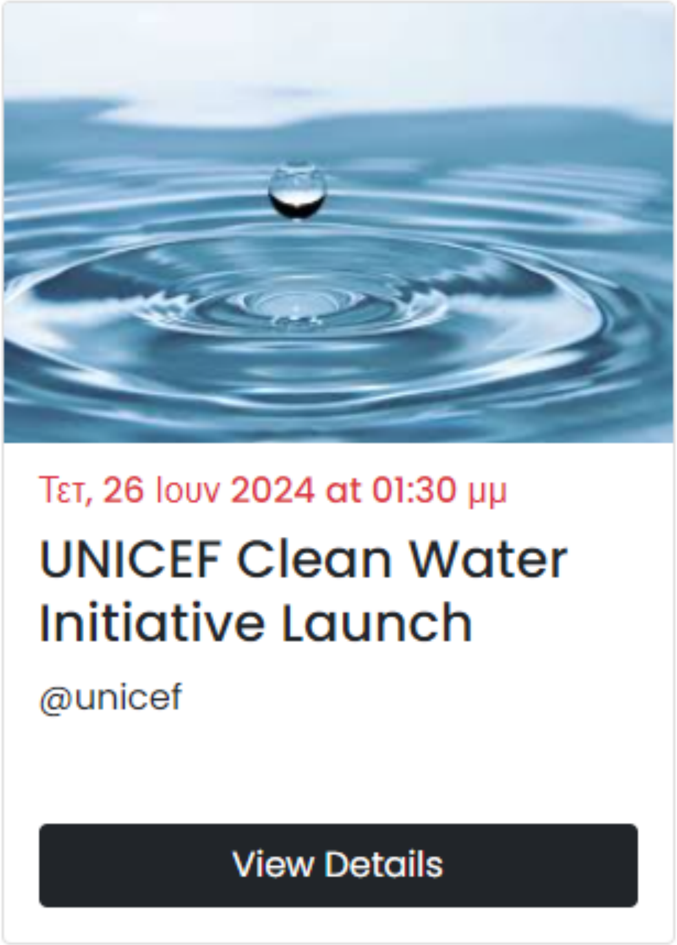
Location

UNICEF Headquarters, New York

ground Image

ile images.jpg

4. The event is created



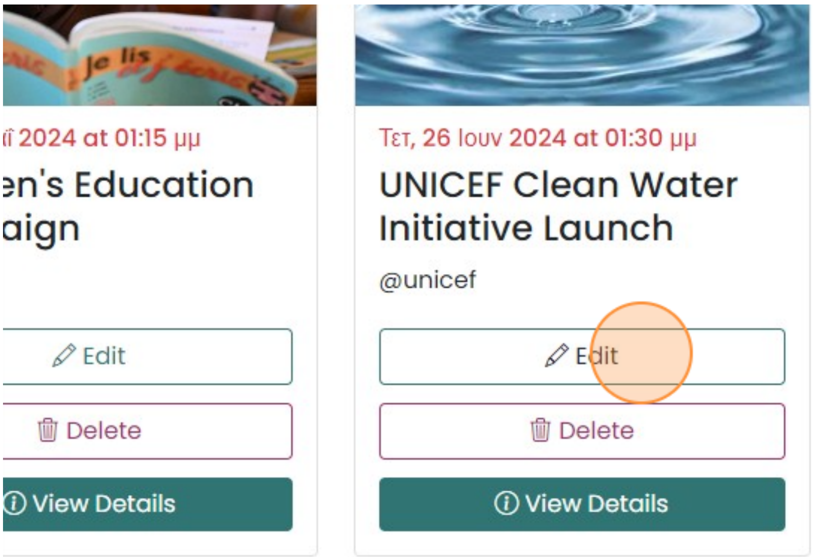
Τετ, 26 Ιουν 2024 at 01:30 μμ

UNICEF Clean Water Initiative Launch

@unicef

Edit event

1. Click “Edit”



ί 2024 at 01:15 μμ

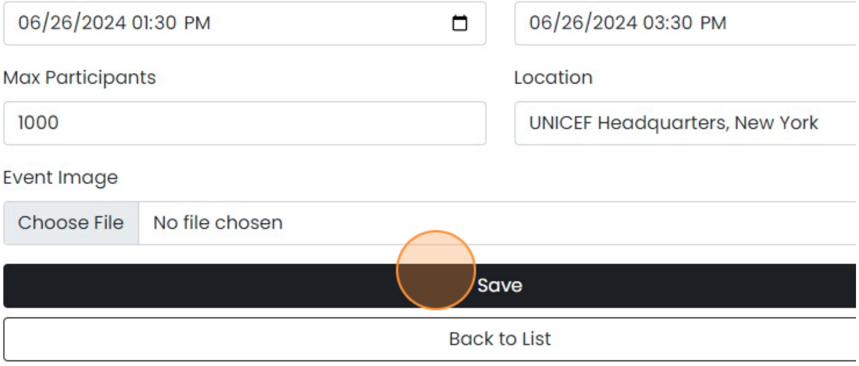
en's Education aign

Τετ, 26 Ιουν 2024 at 01:30 μμ

UNICEF Clean Water Initiative Launch

@unicef

2. Make the changes
3. Click “Save”



06/26/2024 01:30 PM

06/26/2024 03:30 PM

Max Participants: 1000

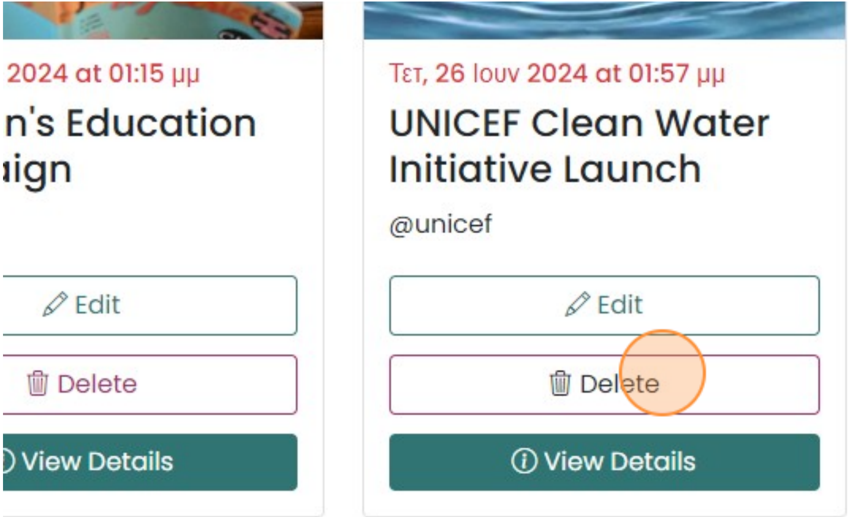
Location: UNICEF Headquarters, New York

Event Image: No file chosen

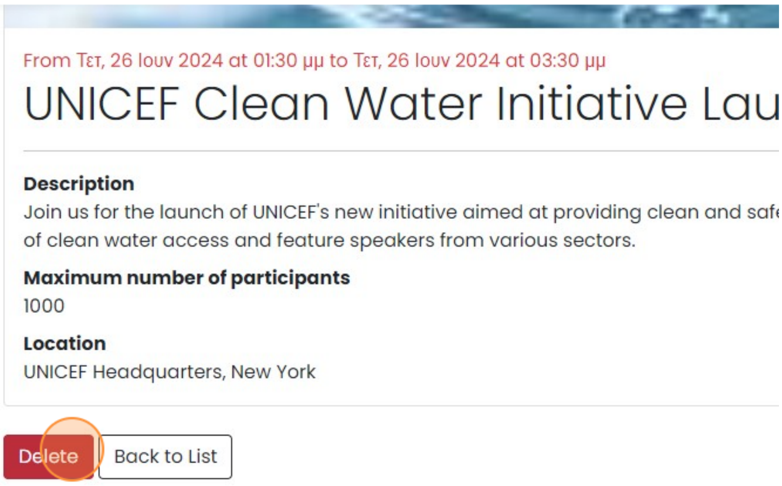
4. The changes in event details are saved

Delete event

1. Click "Delete” on any event you wish to delete



2. Click “Delete”


From Τετ, 26 Ιουν 2024 at 01:30 μμ to Τετ, 26 Ιουν 2024 at 03:30 μμ

UNICEF Clean Water Initiative Lau

Description
Join us for the launch of UNICEF's new initiative aimed at providing clean and safe
of clean water access and feature speakers from various sectors.

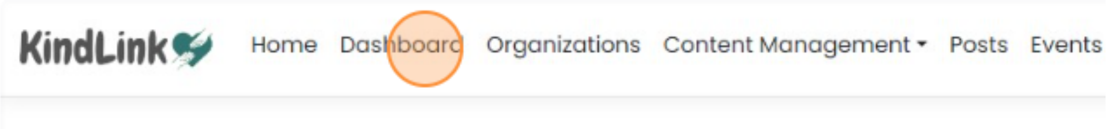
Maximum number of participants
1000

Location
UNICEF Headquarters, New York

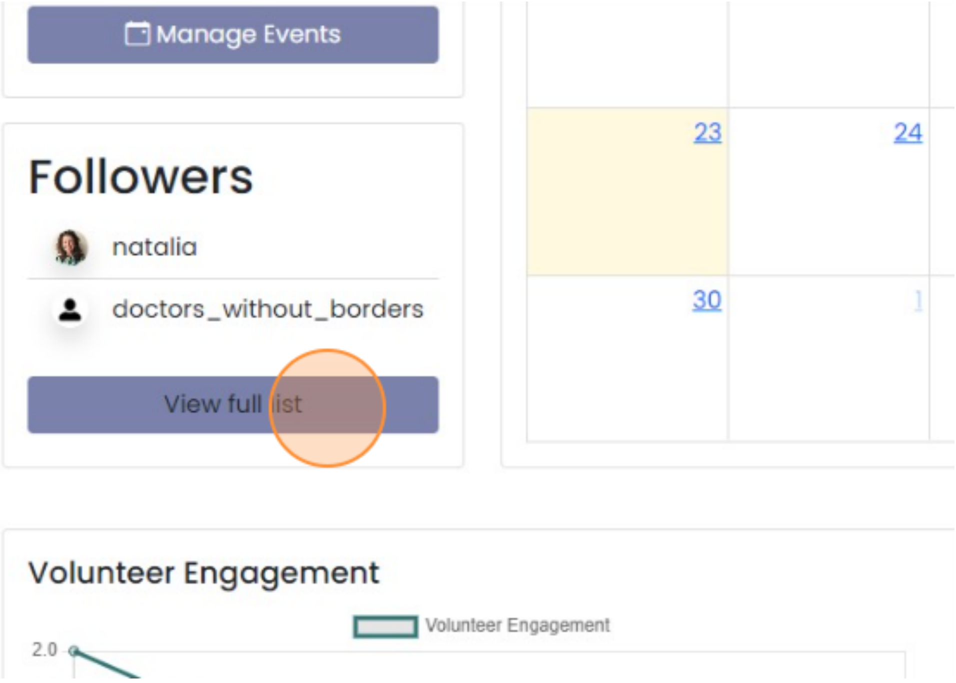
3. The event is deleted

Messaging Volunteers

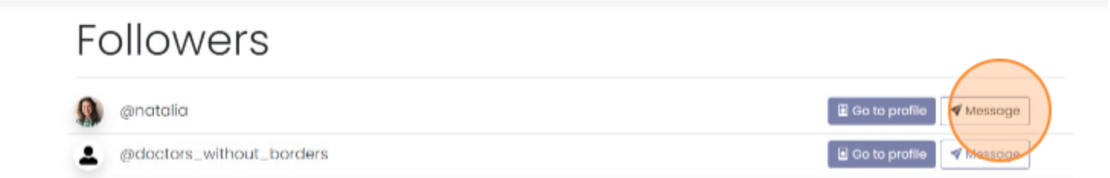
1. Navigate to “Dashboard”



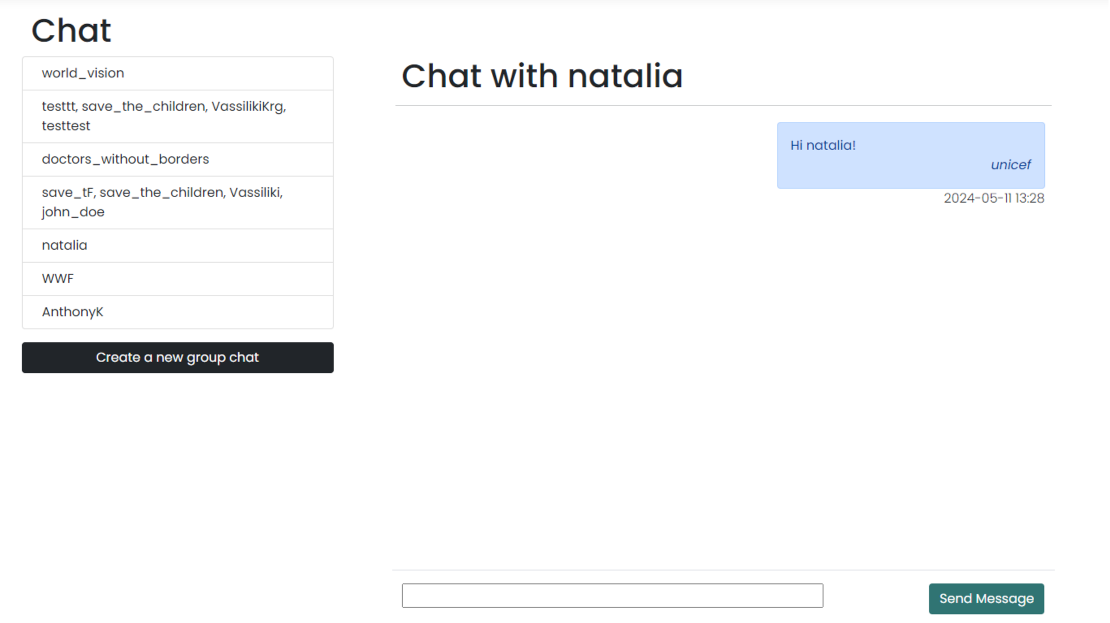
2. Click "View full list"



3. Click "Message"



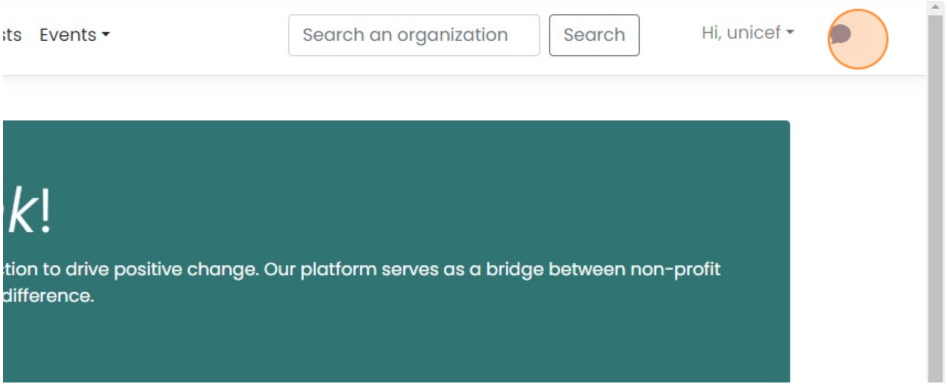
4. You can now message the selected user



Hi natalia!
unicef
2024-05-11 13:28

Creating Group Chats

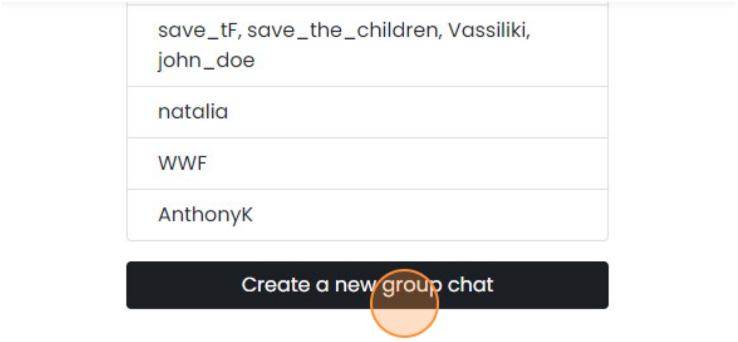
1. Click on “Message’ icon of the navbar



k!

tion to drive positive change. Our platform serves as a bridge between non-profit difference.

2. Click "Create a new group chat"



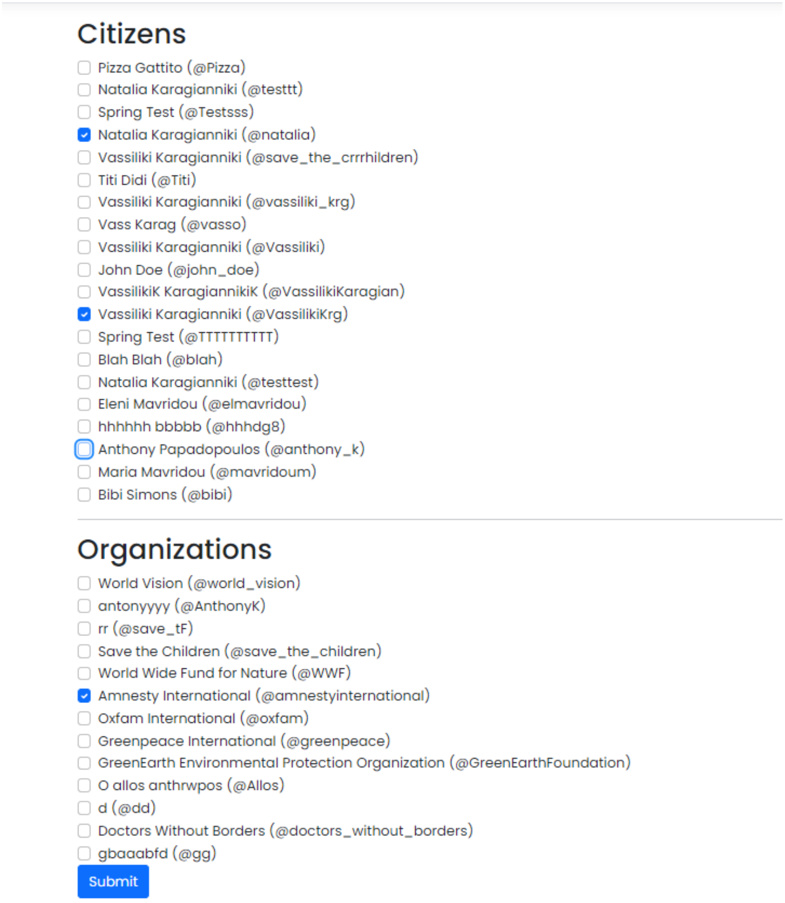
save_tF, save_the_children, Vassiliki, john_doe

natalia

WWF

AnthonyK

3. Select the members of the group chat



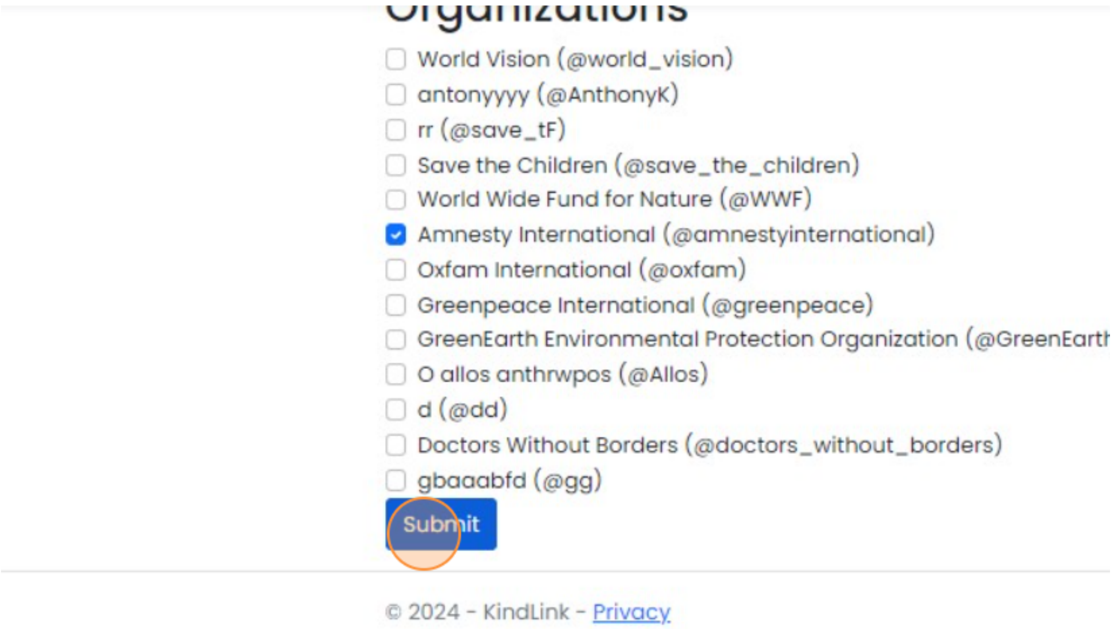
Citizens

□ Pizza Gattito (@Pizza)
□ Natalia Karagianniki (@testtt)
□ Spring Test (@Testsss)
☑ Natalia Karagianniki (@natalia)
□ Vassiliki Karagianniki (@save_the_crrrhildren)
□ Titi Didi (@Titi)
□ Vassiliki Karagianniki (@vassiliki_krg)
□ Vass Karag (@vasso)
□ Vassiliki Karagianniki (@Vassiliki)
□ John Doe (@john_doe)
□ VassilikiK KaragiannikiK (@VassilikiKaragian)
☑ Vassiliki Karagianniki (@VassilikiKrg)
□ Spring Test (@TTTTTTTTTT)
□ Blah Blah (@blah)
□ Natalia Karagianniki (@testtest)
□ Eleni Mavridou (@elmavridou)
□ hhhhhh bbbbb (@hhhdg8)
□ Anthony Papadopoulos (@anthony_k)
□ Maria Mavridou (@mavridoum)
□ Bibi Simons (@bibi)

Organizations

□ World Vision (@world_vision)
□ antonyyyy (@AnthonyK)
□ rr (@save_tF)
□ Save the Children (@save_the_children)
□ World Wide Fund for Nature (@WWF)
☑ Amnesty International (@amnestyinternational)
□ Oxfam International (@oxfam)
□ Greenpeace International (@greenpeace)
□ GreenEarth Environmental Protection Organization (@GreenEarthFoundation)
□ O allos anthrwpos (@Allos)
□ d (@dd)
□ Doctors Without Borders (@doctors_without_borders)
□ gbaaabfd (@gg)

4. Click “Submit”



Organizations

□ World Vision (@world_vision)
□ antonyyyy (@AnthonyK)
□ rr (@save_tF)
□ Save the Children (@save_the_children)
□ World Wide Fund for Nature (@WWF)
☑ Amnesty International (@amnestyinternational)
□ Oxfam International (@oxfam)
□ Greenpeace International (@greenpeace)
□ GreenEarth Environmental Protection Organization (@GreenEartl
□ O allos anthrwpos (@Allos)
□ d (@dd)
□ Doctors Without Borders (@doctors_without_borders)
□ gbaaabfd (@gg)

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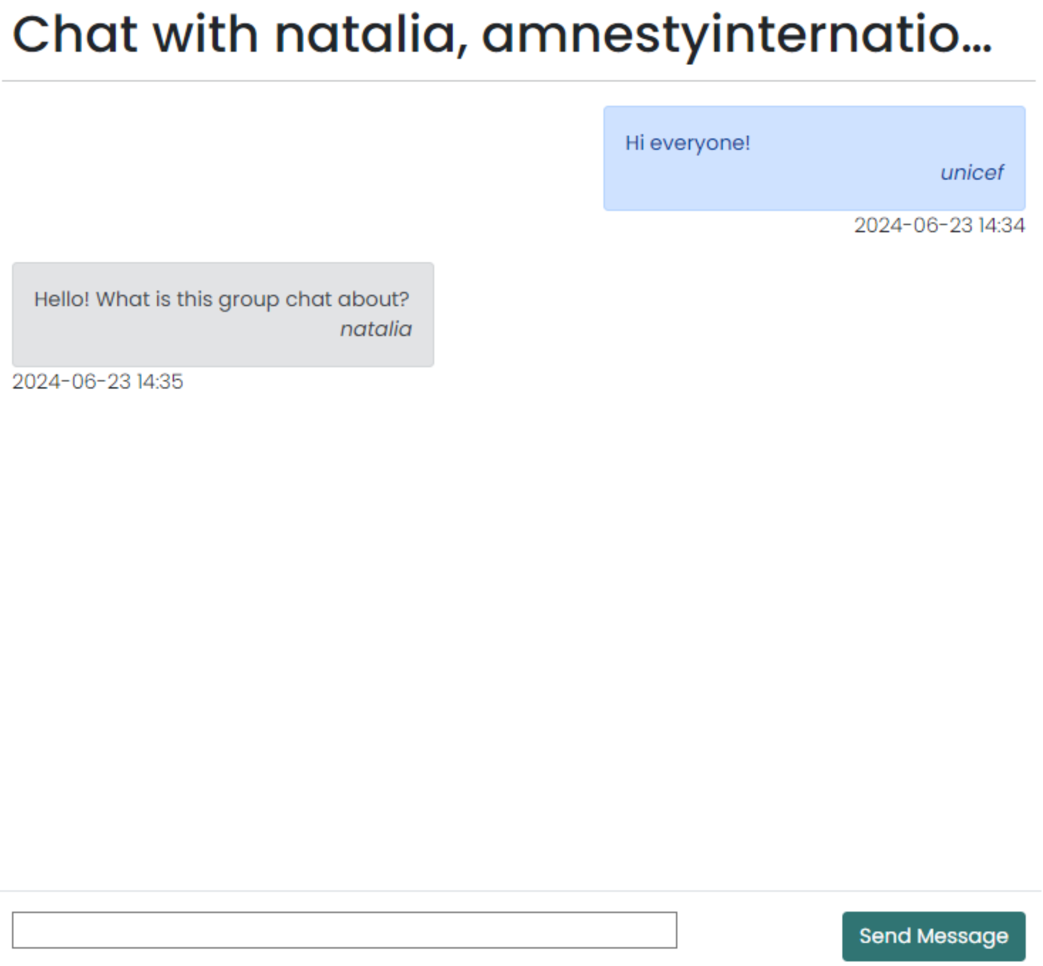
5. The group chat is created



Chat with natalia, amnestyinternatio...

Hi everyone!
unicef
2024-06-23 14:34

Hello! What is this group chat about?
natalia
2024-06-23 14:35

5 Application Architecture

KindLink is one well thought and structured application. The *backend* is written in **C#** and uses the **.NET Core 8** development platform, while the *frontend* primarily employs **HTML**, **CSS** and **Vanilla JavaScript** along with the **Bootstrap** framework. In terms of the *database*, it relies on **SQL Server,** and for the data manipulation, utilizes the powerful tool of **Entity Framework Core** (EF Core).

5.1 Backend

5.1.1 Technology Stack

.NET Core

The application utilizes the modern web development framework of ASP.NET Core, which offers high performance and swift responses. ASP.NET Core is a cross-platform framework, providing flexibility and scalability for web applications. It is particularly suited for building cloud-based and internet-connected applications, making it a strong competitor against frameworks like Java Servlet and Node.js.

ASP.NET Core supports the implementation of various architectural patterns, including the Model-View-Controller (MVC) pattern, which is used extensively in the application to ensure a clean separation of concerns.

SignalR

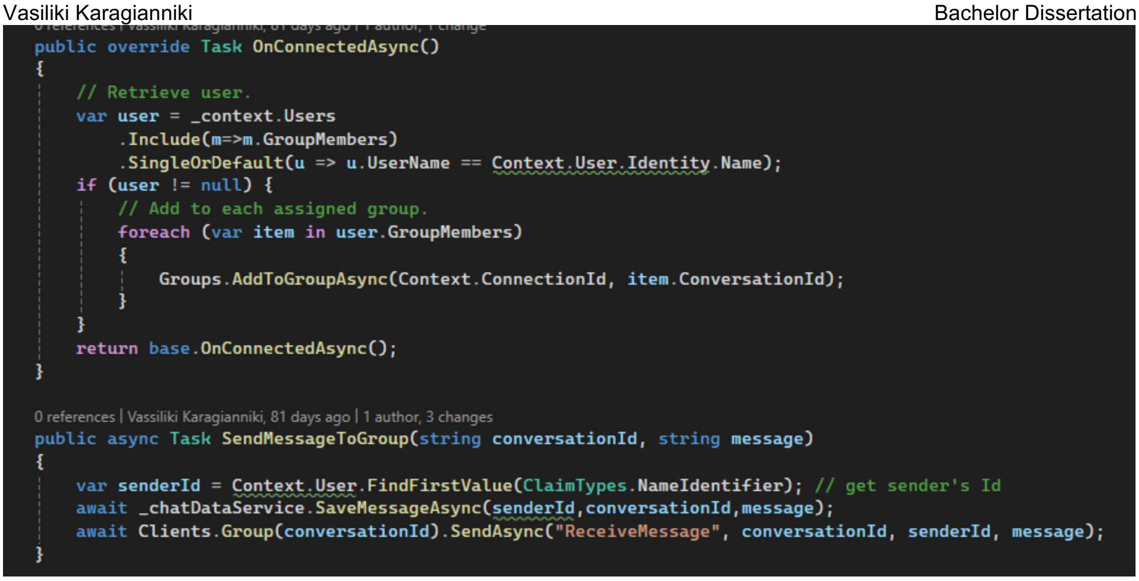
SignalR hubs are used for the purposes of real-time data exchange in the chat functionality of KindLink.

Instead of using the HTTP Polling mechanism where the client would request the server at regular intervals to check if there were new messages (a costly and not efficient approach), the application uses the capabilities of SignalR for enabling simultaneous two-way communication as it maintains a continuous connection between client and server.

A *hub* represents a class functioning as a high-level pipeline responsible for managing the communication between clients and servers. The **ChatHub** class inherits from the SignalR Hub class and manages connection, groups, and messaging.

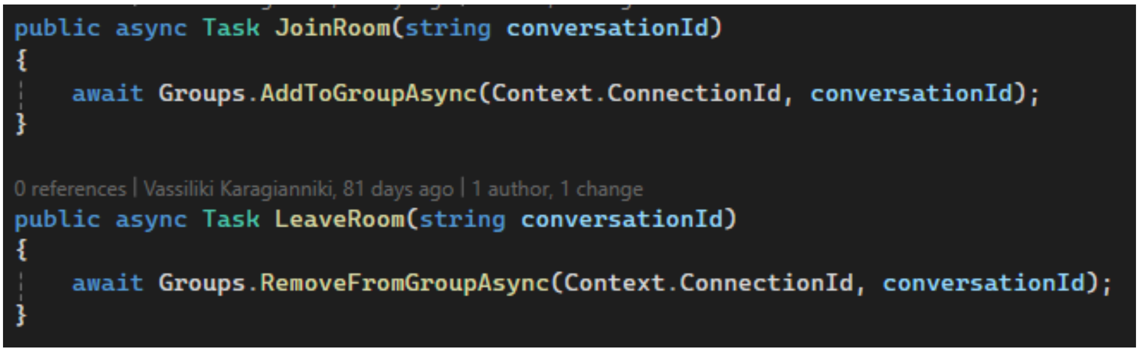
Upon connection establishment, the *OnConnectedAsync* method is invoked to authenticate the user and assign them to relevant conversation groups. This ensures that users receive messages intended for the groups they are part of.

To handle message transmission, the *SendMessageToGroup* method allows users to send messages to specific conversation groups. Upon invocation, this method saves the message to the database and broadcasts it to all members/connections of the specified target group using the *Clients.Group*.



```
0 references | Vassiliki Karagianniki, 81 days ago | 1 author, 1 change
public override Task OnConnectedAsync()
{
    // Retrieve user.
    var user = _context.Users
        .Include(m=>m.GroupMembers)
        .SingleOrDefault(u => u.UserName == Context.User.Identity.Name);
    if (user != null) {
        // Add to each assigned group.
        foreach (var item in user.GroupMembers)
        {
            Groups.AddToGroupAsync(Context.ConnectionId, item.ConversationId);
        }
    }
    return base.OnConnectedAsync();
}

0 references | Vassiliki Karagianniki, 81 days ago | 1 author, 3 changes
public async Task SendMessageToGroup(string conversationId, string message)
{
    var senderId = Context.User.FindFirstValue(ClaimTypes.NameIdentifier); // get sender's Id
    await _chatDataService.SaveMessageAsync(senderId,conversationId,message);
    await Clients.Group(conversationId).SendAsync("ReceiveMessage", conversationId, senderId, message);
}
```

Additionally, the *JoinRoom* and *LeaveRoom* methods enable users to join or leave conversation groups dynamically, ensuring seamless participation in multiple chat sessions.



```
public async Task JoinRoom(string conversationId)
{
    await Groups.AddToGroupAsync(Context.ConnectionId, conversationId);
}

0 references | Vassiliki Karagianniki, 81 days ago | 1 author, 1 change
public async Task LeaveRoom(string conversationId)
{
    await Groups.RemoveFromGroupAsync(Context.ConnectionId, conversationId);
}
```

Data Annotations

Data annotations are used to provide metadata about the properties of a model or viewmodel class, helping to define validation rules, database mappings, and display formatting. In the app, some of the data annotations used are the following:

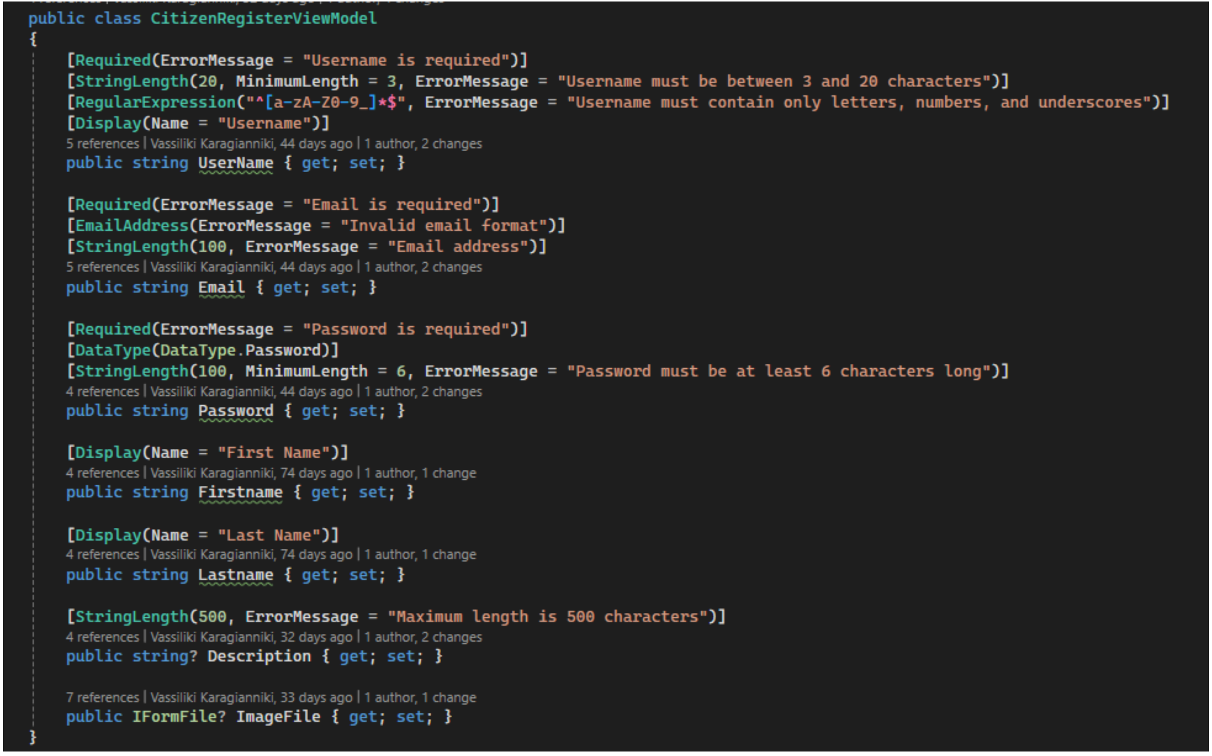
Database Related:

- [Table]: Specifies the name of the table to which the Entity class is mapped in the database schema.
- [Key]: Indicates that the Id property is the primary key for the entity.
- [DatabaseGenerated(DatabaseGeneratedOption.Identity)]: Specifies that the Id property is automatically generated by the database upon insertion.
- [Required]: Specifies that the specific property is required field in the database, ensuring it cannot be null.
- [StringLength]: Sets a maximum length constraint on that certain field.
- [RegularExpression]: Validates the format of the field, allowing only the format instructed by the regex specified.

Presentation and Validation related:

- [Display (Name =)]: Provides a display name for the field, which can be used when generating UI elements.
- [EmailAddress]: Validates that the field contains a valid email address format.
- [DataType(DataType.Password)]: Specifies that the Password field should be treated as a password input in the UI.

A good example is that of the view model used during the registration process for the citizen:

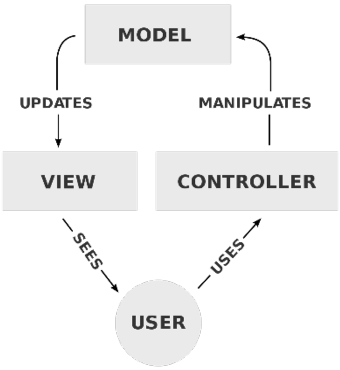


```
public class CitizenRegisterViewModel
{
    [Required(ErrorMessage = "Username is required")]
    [StringLength(20, MinimumLength = 3, ErrorMessage = "Username must be between 3 and 20 characters")]
    [RegularExpression("^[a-zA-Z0-9_]*$", ErrorMessage = "Username must contain only letters, numbers, and underscores")]
    [Display(Name = "Username")]
    5 references | Vassiliki Karagianniki, 44 days ago | 1 author, 2 changes
    public string UserName { get; set; }

    [Required(ErrorMessage = "Email is required")]
    [EmailAddress(ErrorMessage = "Invalid email format")]
    [StringLength(100, ErrorMessage = "Email address")]
    5 references | Vassiliki Karagianniki, 44 days ago | 1 author, 2 changes
    public string Email { get; set; }

    [Required(ErrorMessage = "Password is required")]
    [DataType(DataType.Password)]
    [StringLength(100, MinimumLength = 6, ErrorMessage = "Password must be at least 6 characters long")]
    4 references | Vassiliki Karagianniki, 44 days ago | 1 author, 2 changes
    public string Password { get; set; }

    [Display(Name = "First Name")]
    4 references | Vassiliki Karagianniki, 74 days ago | 1 author, 1 change
    public string Firstname { get; set; }

    [Display(Name = "Last Name")]
    4 references | Vassiliki Karagianniki, 74 days ago | 1 author, 1 change
    public string Lastname { get; set; }

    [StringLength(500, ErrorMessage = "Maximum length is 500 characters")]
    4 references | Vassiliki Karagianniki, 32 days ago | 1 author, 2 changes
    public string? Description { get; set; }

    7 references | Vassiliki Karagianniki, 33 days ago | 1 author, 1 change
    public IFormFile? ImageFile { get; set; }
}
```

5.1.2 Design Patterns

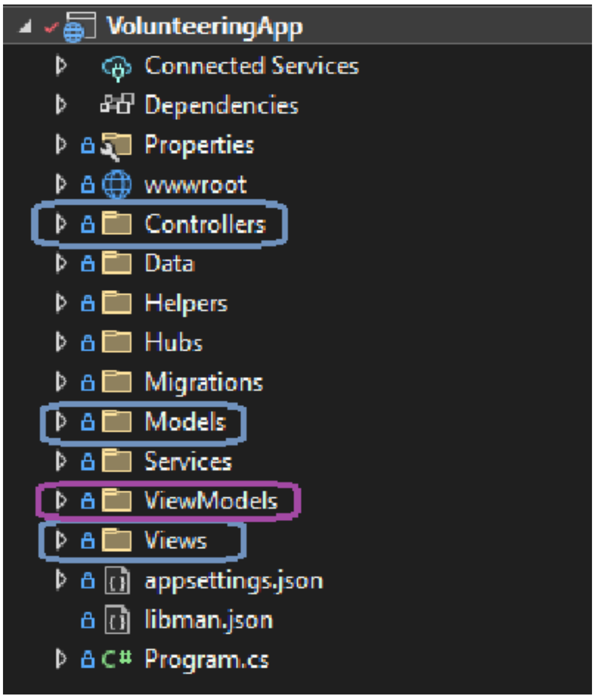
Model-View-Controller pattern

MVC is a Design Pattern based on the principle of separation of concerns. It is used to disassociate user-interface (view), data (model), and application logic (controller) for a cleaner structure.



- <u>*Model*</u>: The *Model* represents the data and business logic of the application. It encapsulates the data structure, storage, and manipulation operations, ensuring a consistent and reliable representation of the underlying data.
- <u>*View*</u>: The *View* is responsible for presenting the data to the user in a human-readable format. It encloses the user interface elements, layout, and visual presentation logic.
- <u>*Controller*</u>: The *Controller* acts as an intermediary between the *Model* and the *View*. It receives input from the user via the *View*, processes requests, interacts with the *Model* to retrieve or manipulate data, and determines the appropriate *View* to render the response.

Inside the project, this separation is represented by 3 different folders:



```
VolunteeringApp
    Connected Services
    Dependencies
    Properties
    wwwroot
    Controllers
    Data
    Helpers
    Hubs
    Migrations
    Models
    Services
    ViewModels
    Views
    appsettings.json
    libman.json
    Program.cs
```

ViewModels folder contains *ViewModel* classes that are used just to render data to the views in the project and <u>do not handle any data-related operations</u> like Models do.

5.1.3 Authentication mechanisms

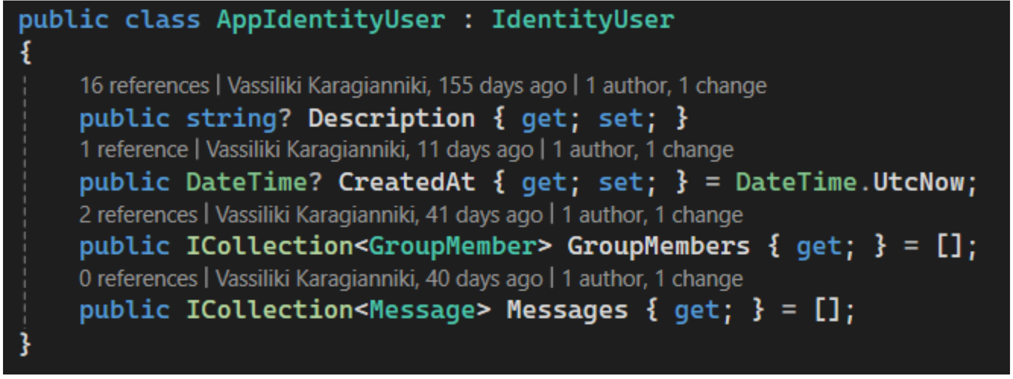
ASP.NET Core Identity

ASP.NET Core Identity is an API designed to facilitate user interface (UI) login features and functionalities. Inside the app it manages users, passwords, profile data and roles.

IdentityUser Class

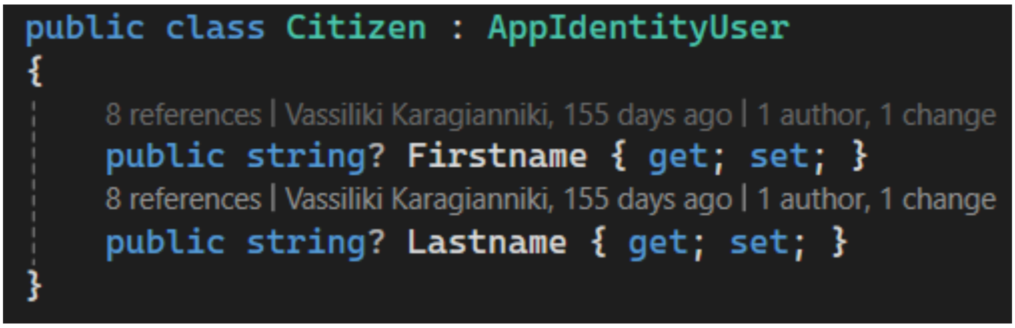
The main class used is *IdentityUser<TKey> Class* which represents a user in the identity system and contains attributes such as Id (string),UserName, Email, PhoneNumber and Roles.

In the application, the *AppIdentityUser* inherits from *IdentityUser* to include custom user properties and then *AppIdentityUser* is extended in order to create the *Citizen* and *Organization* user entity, that represent different roles and access to the app's features.



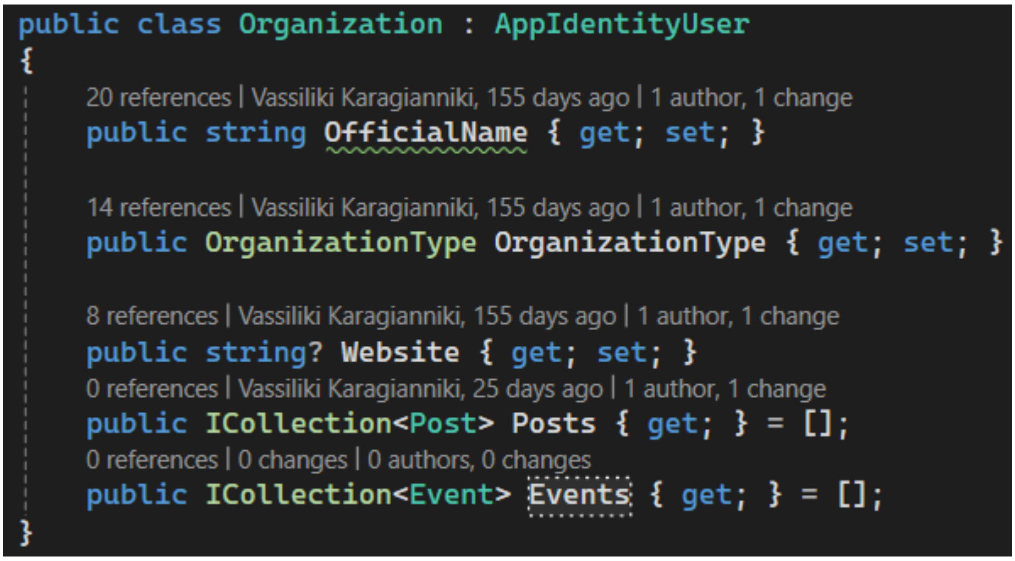
```
public class AppIdentityUser : IdentityUser
{
    16 references | Vassiliki Karagianniki, 155 days ago | 1 author, 1 change
    public string? Description { get; set; }
    1 reference | Vassiliki Karagianniki, 11 days ago | 1 author, 1 change
    public DateTime? CreatedAt { get; set; } = DateTime.UtcNow;
    2 references | Vassiliki Karagianniki, 41 days ago | 1 author, 1 change
    public ICollection<GroupMember> GroupMembers { get; } = [];
    0 references | Vassiliki Karagianniki, 40 days ago | 1 author, 1 change
    public ICollection<Message> Messages { get; } = [];
}
```

Models/Identity/AppIdentityUser.cs



```
public class Citizen : AppIdentityUser
{
    8 references | Vassiliki Karagianniki, 155 days ago | 1 author, 1 change
    public string? Firstname { get; set; }
    8 references | Vassiliki Karagianniki, 155 days ago | 1 author, 1 change
    public string? Lastname { get; set; }
}
```

Models/Identity/Citizen.cs



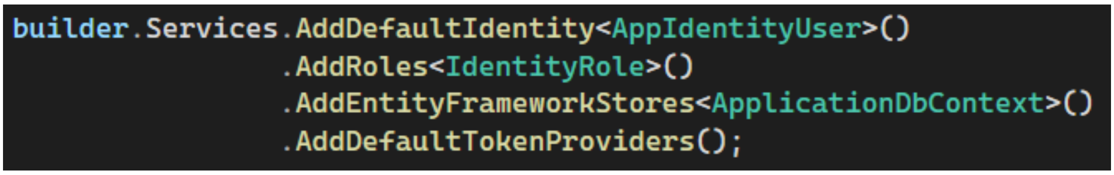
```
public class Organization : AppIdentityUser
{
    20 references | Vassiliki Karagianniki, 155 days ago | 1 author, 1 change
    public string OfficialName { get; set; }

    14 references | Vassiliki Karagianniki, 155 days ago | 1 author, 1 change
    public OrganizationType OrganizationType { get; set; }

    8 references | Vassiliki Karagianniki, 155 days ago | 1 author, 1 change
    public string? Website { get; set; }
    0 references | Vassiliki Karagianniki, 25 days ago | 1 author, 1 change
    public ICollection<Post> Posts { get; } = [];
    0 references | 0 changes | 0 authors, 0 changes
    public ICollection<Event> Events { get; } = [];
}
```

Models/Identity/Organization.cs

Configuration inside Program.cs

- Adding Identity Services:

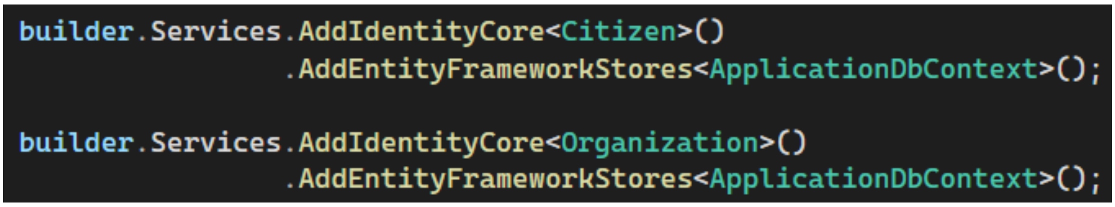
The first line adds ASP.NET Core Identity services with a default UI for the *AppIdentityUser* class. It configures the default behaviour for user management, including registration, login, and password management. The *AddRoles* method adds role-based authorization support to Identity, allowing users to be assigned to different roles for access control purposes. Then we specify the EF database context (*ApplicationDbContext*) to be used for storing user and role data and finally we configure the default token providers for generating security tokens used for things like password reset and email confirmation.



```
builder.Services.AddDefaultIdentity<AppIdentityUser>()
                .AddRoles<IdentityRole>()
                .AddEntityFrameworkStores<ApplicationDbContext>()
                .AddDefaultTokenProviders();
```

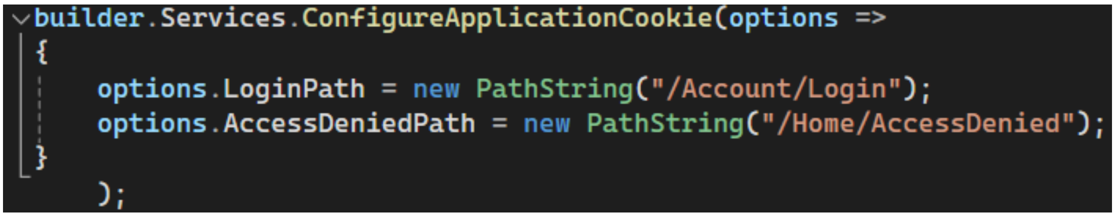
- Identity Configuration:

These lines configure *Identity* for additional user types (Citizen and Organization) in addition to the default *AppIdentityUser*.



```
builder.Services.AddIdentityCore<Citizen>()
                .AddEntityFrameworkStores<ApplicationDbContext>();

builder.Services.AddIdentityCore<Organization>()
                .AddEntityFrameworkStores<ApplicationDbContext>();
```

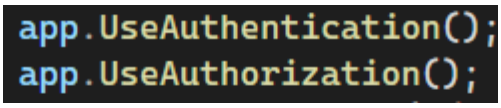
This method configures options for the application's cookie-based authentication, such as login path and access denied path.



```
builder.Services.ConfigureApplicationCookie(options =>
{
    options.LoginPath = new PathString("/Account/Login");
    options.AccessDeniedPath = new PathString("/Home/AccessDenied");
}
    );
```

- HTTP Pipeline Configuration:

These middleware components are used to enable authentication and authorization, respectively, in the ASP.NET Core application pipeline. Authentication verifies the identity of users, while authorization determines what resources they are allowed to access.



```
app.UseAuthentication();
app.UseAuthorization();
```

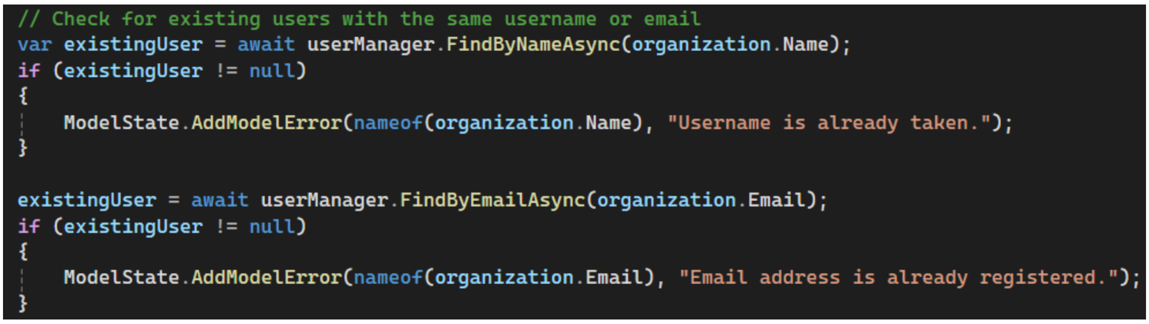
UserManager and SignInManager

UserManager provides the APIs for managing user in a persistence store while SignInManager provides the APIs for user sign in.

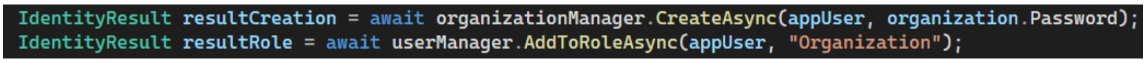
<u>During the register and sign in process (in the *AccountController*):</u>

The UserManager<AppIdentityUser> instance is injected via constructor injection. It is used to manage users of type AppIdentityUser (base Identity user) and perform operations such as creating users, finding users by username or email, adding users to roles, and more.

During ***user registration***, the UserManager is used to create new user entities (Citizen or Organization), validate user input, and perform operations related to user creation and role assignment.



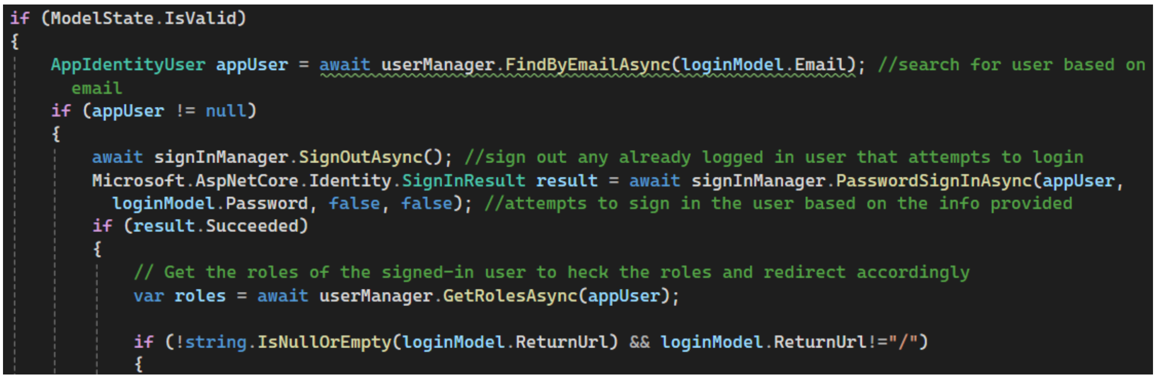
```
// Check for existing users with the same username or email
var existingUser = await userManager.FindByNameAsync(organization.Name);
if (existingUser != null)
{
    ModelState.AddModelError(nameof(organization.Name), "Username is already taken.");
}

existingUser = await userManager.FindByEmailAsync(organization.Email);
if (existingUser != null)
{
    ModelState.AddModelError(nameof(organization.Email), "Email address is already registered.");
}
```



```
IdentityResult resultCreation = await organizationManager.CreateAsync(appUser, organization.Password);
IdentityResult resultRole = await userManager.AddToRoleAsync(appUser, "Organization");
```

The SignInManager<AppIdentityUser> instance is also injected via constructor injection. It is used to authenticate users during the login process and manage user sign-in sessions.

During ***user login***, the SignInManager is used to validate user credentials (email and password), sign in the user if the credentials are valid, and handle authentication-related tasks such as redirecting users to their respective landing pages based on their roles.

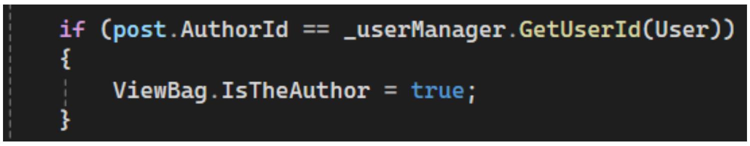


```
if (ModelState.IsValid)
{
    AppIdentityUser appUser = await userManager.FindByEmailAsync(loginModel.Email); //search for user based on
      email
    if (appUser != null)
    {
        await signInManager.SignOutAsync(); //sign out any already logged in user that attempts to login
        Microsoft.AspNetCore.Identity.SignInResult result = await signInManager.PasswordSignInAsync(appUser,
          loginModel.Password, false, false); //attempts to sign in the user based on the info provided
        if (result.Succeeded)
        {
            // Get the roles of the signed-in user to heck the roles and redirect accordingly
            var roles = await userManager.GetRolesAsync(appUser);

            if (!string.IsNullOrEmpty(loginModel.ReturnUrl) && loginModel.ReturnUrl!="/")
            {
```

<u>Throughout the app:</u>

UserManager is used inside the different controller methods to acquire the current logged in user’s Id and Entity or search for users based on a certain Id, UserName or Email and perform further actions.

For example, inside the *Details* action of the *Posts Controller*, we check if the current user is the one that has written the post, so that 'Edit' and 'Delete' buttons are displayed in the view.



```
if (post.AuthorId == _userManager.GetUserId(User))
{
    ViewBag.IsTheAuthor = true;
}
```

5.1.4 API for statistics retrieval

The application includes a dedicated API for providing various statistics about platform usage. This API is built using ASP.NET Core and integrates seamlessly with the rest of the backend systems. It offers several endpoints that return crucial metrics, such as:

- Total Users: The total number of users registered on the platform.
- Total Events: The total count of events organized through the platform.
- Total Volunteers: The total number of volunteers registered on the platform.
- Total Organizations: The total number of organizations registered on the platform.
- Average Participants per Event: The average number of participants attending each event.
- Average Events per Organization: The average number of events hosted by each organization

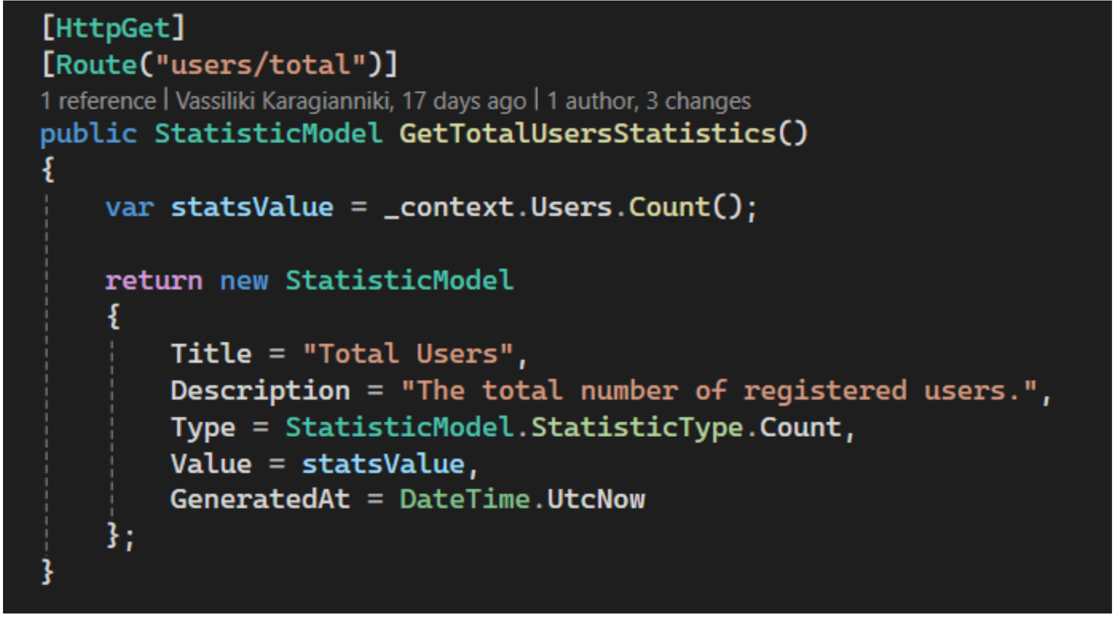
This API is essential for generating insights, ensuring access to up-to-date information about the platform's activity and growth.

Here are the key endpoints provided by the Volunteering API:

- /api/Statistics/GetTotalUsersStatistics: Returns the total number of users.
- /api/Statistics/GetTotalEventsStatistics: Returns the total number of events.
- /api/Statistics/GetTotalVolunteersStatistics: Returns the total number of volunteers.
- /api/Statistics/GetTotalOrganizationsStatistics: Returns the total number of organizations.
- /api/Statistics/GetAverageParticipantsPerEventStatistics: Returns the average number of participants per event.
- /api/Statistics/GetAverageEventsPerOrganizationStatistics: Returns the average number of events per organization.

The API utilizes the ASP.NET Core framework for efficient and scalable performance. It uses Entity Framework Core to interact with the SQL Server database, ensuring that the statistics are accurate and up to date.

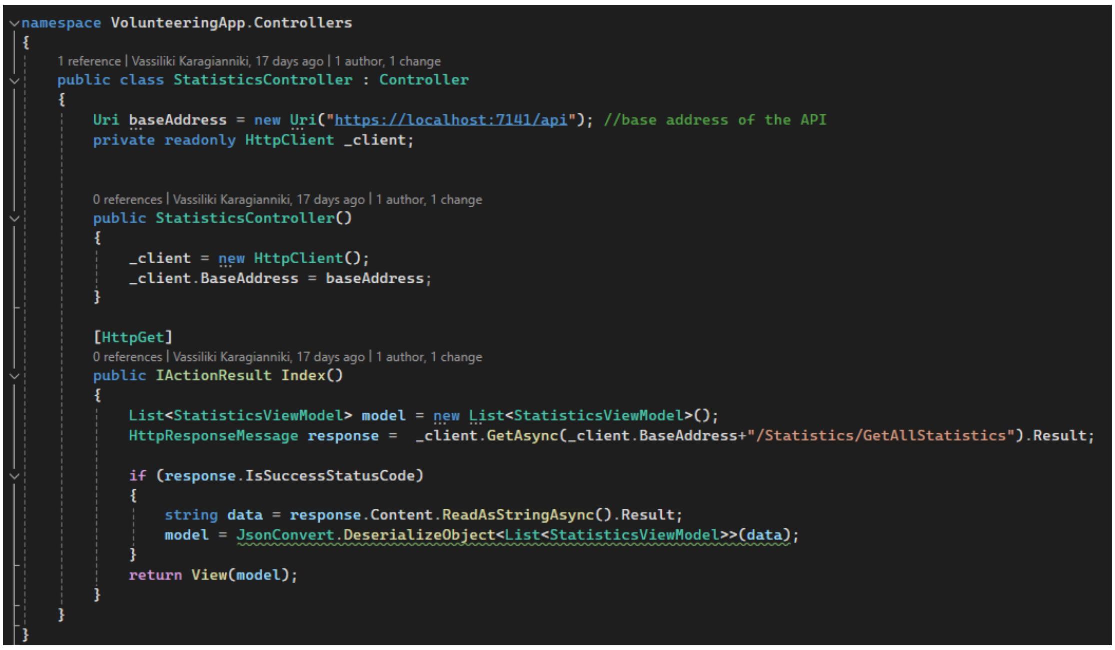
For example, the ***GetTotalUsersStatistics*** endpoint retrieves the total number of users by querying the Users table in the database and returns a structured response with the count and additional metadata.



```
[HttpGet]
[Route("users/total")]
1 reference | Vassiliki Karagianniki, 17 days ago | 1 author, 3 changes
public StatisticModel GetTotalUsersStatistics()
{
    var statsValue = _context.Users.Count();

    return new StatisticModel
    {
        Title = "Total Users",
        Description = "The total number of registered users.",
        Type = StatisticModel.StatisticType.Count,
        Value = statsValue,
        GeneratedAt = DateTime.UtcNow
    };
}
```

Similarly, the other endpoints perform relevant queries and calculations to provide meaningful insights.

In the MVC application, a controller fetches these statistics from the API and renders them in the view. The *StatisticsController* in the MVC application calls the API endpoints, deserializes the JSON response, and passes the data to the view for display.

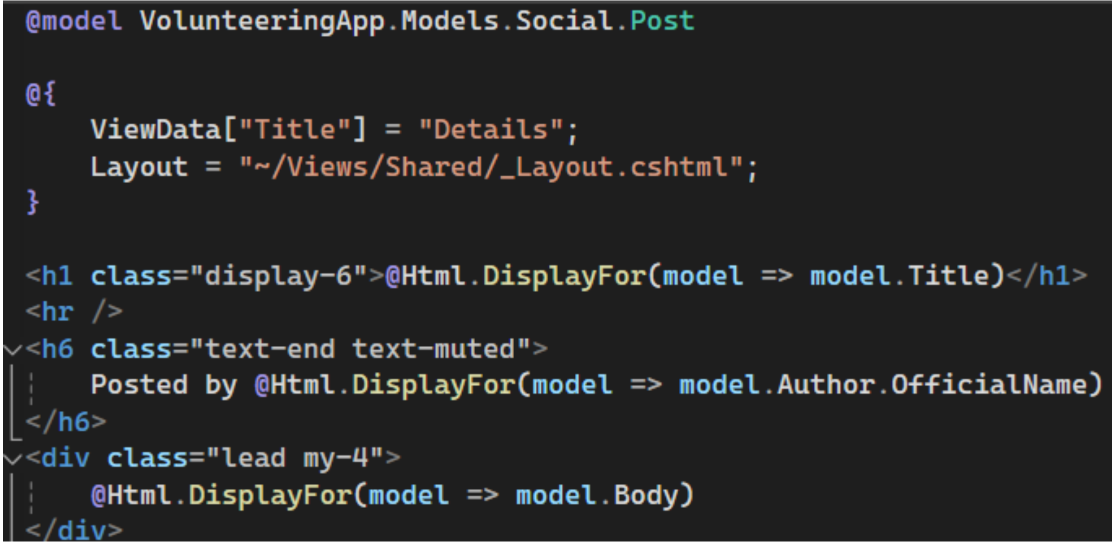


```
namespace VolunteeringApp.Controllers
{
    1 reference | Vassiliki Karagianniki, 17 days ago | 1 author, 1 change
    public class StatisticsController : Controller
    {
        Uri baseAddress = new Uri("https://localhost:7141/api"); //base address of the API
        private readonly HttpClient _client;


        0 references | Vassiliki Karagianniki, 17 days ago | 1 author, 1 change
        public StatisticsController()
        {
            _client = new HttpClient();
            _client.BaseAddress = baseAddress;
        }

        [HttpGet]
        0 references | Vassiliki Karagianniki, 17 days ago | 1 author, 1 change
        public IActionResult Index()
        {
            List<StatisticsViewModel> model = new List<StatisticsViewModel>();
            HttpResponseMessage response =  _client.GetAsync(_client.BaseAddress+"/Statistics/GetAllStatistics").Result;

            if (response.IsSuccessStatusCode)
            {
                string data = response.Content.ReadAsStringAsync().Result;
                model = JsonConvert.DeserializeObject<List<StatisticsViewModel>>(data);
            }
            return View(model);
        }
    }
}
```

5.2 Frontend

5.2.1 Razor markup

Razor markup is a syntax used in ASP.NET Core for creating dynamic web pages. It allows combining HTML markup with C# code to enable the creation of dynamic content within web applications. As a result, each view is an HTML template with embedded Razor Markup.



```
@model VolunteeringApp.Models.Social.Post

@{
    ViewData["Title"] = "Details";
    Layout = "~/Views/Shared/_Layout.cshtml";
}

<h1 class="display-6">@Html.DisplayFor(model => model.Title)</h1>
<hr />
<h6 class="text-end text-muted">
    Posted by @Html.DisplayFor(model => model.Author.OfficialName)
</h6>
<div class="lead my-4">
    @Html.DisplayFor(model => model.Body)
</div>
```

Views>Posts>Details.cshtml

5.2.2 Bootstrap

Bootstrap comes pre-packaged with ASP.NET Core applications. It is a popular front-end framework that offers developers a wide array of CSS classes, components, and JavaScript utilities for creating responsive and visually appealing user interfaces. Along with Bootstrap, inside the app are used some additional custom CSS and JS files.

5.3 Database

5.3.1 Entity framework Core

Entity Framework Core (EF Core) acts as the bridge between the application and the database, providing an efficient way to interact with relational databases like SQL Server, that is used in the app.

Database Context

The *Database Context* in EF Core serves as the central point for accessing database tables and executing queries. Thus, a DbContext instance represents a session with the database and can be used to query and save instances of the app's entities. It manages the database connection and configuration settings, facilitating the CRUD (Create, Read, Update, Delete) operations on database entities.

Additionally, EF Core supports features like *migrations*, which automate the process of schema changes, and *LINQ* (Language Integrated Query), enabling developers to write database queries using C# syntax.

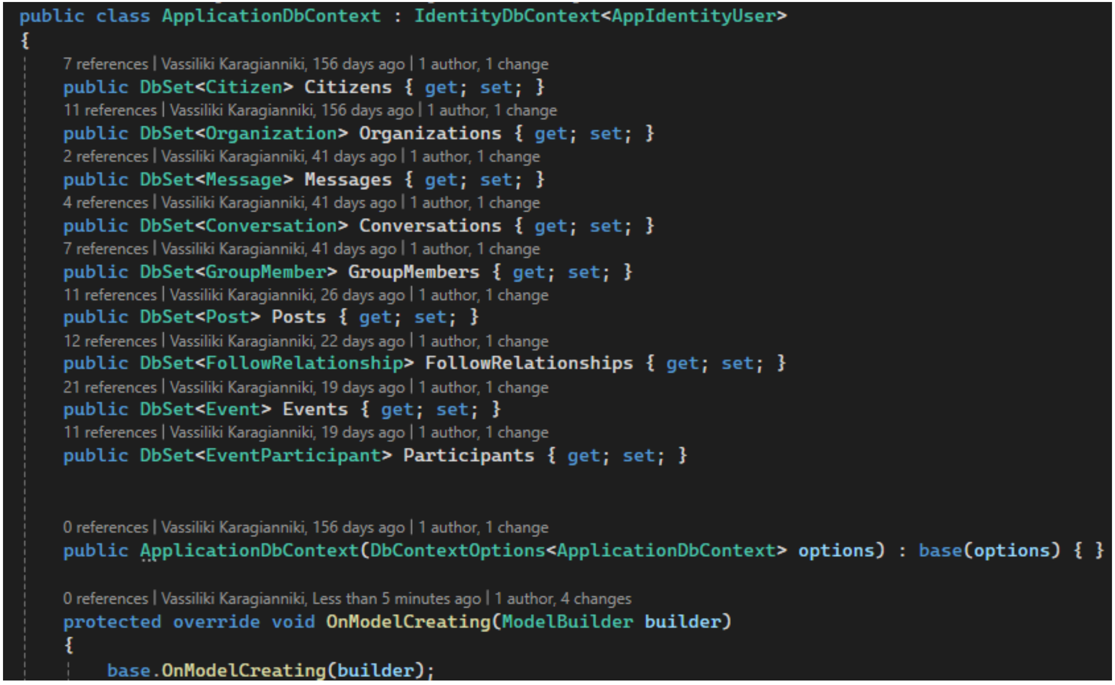
Overall, EF Core and the Database Context simplify database interactions, abstracting away the complexities of raw SQL queries and database management tasks.

- Custom DbContext:

The *ApplicationDbContext* class serves as the database context for this application and extends the *IdentityDbContext* class provided by ASP.NET Core Identity to manage user authentication and authorization.

It includes *DbSet* properties, that define collections of database entities that correspond to each entity type (that is found inside Models folder).

The constructor initializes the context with the specified *DbContextOptions*, allowing the application to connect to the underlying database.



```
public class ApplicationDbContext : IdentityDbContext<AppIdentityUser>
{
    7 references | Vassiliki Karagianniki, 156 days ago | 1 author, 1 change
    public DbSet<Citizen> Citizens { get; set; }
    11 references | Vassiliki Karagianniki, 156 days ago | 1 author, 1 change
    public DbSet<Organization> Organizations { get; set; }
    2 references | Vassiliki Karagianniki, 41 days ago | 1 author, 1 change
    public DbSet<Message> Messages { get; set; }
    4 references | Vassiliki Karagianniki, 41 days ago | 1 author, 1 change
    public DbSet<Conversation> Conversations { get; set; }
    7 references | Vassiliki Karagianniki, 41 days ago | 1 author, 1 change
    public DbSet<GroupMember> GroupMembers { get; set; }
    11 references | Vassiliki Karagianniki, 26 days ago | 1 author, 1 change
    public DbSet<Post> Posts { get; set; }
    12 references | Vassiliki Karagianniki, 22 days ago | 1 author, 1 change
    public DbSet<FollowRelationship> FollowRelationships { get; set; }
    21 references | Vassiliki Karagianniki, 19 days ago | 1 author, 1 change
    public DbSet<Event> Events { get; set; }
    11 references | Vassiliki Karagianniki, 19 days ago | 1 author, 1 change
    public DbSet<EventParticipant> Participants { get; set; }


    0 references | Vassiliki Karagianniki, 156 days ago | 1 author, 1 change
    public ApplicationDbContext(DbContextOptions<ApplicationDbContext> options) : base(options) { }

    0 references | Vassiliki Karagianniki, Less than 5 minutes ago | 1 author, 4 changes
    protected override void OnModelCreating(ModelBuilder builder)
    {
        base.OnModelCreating(builder);
```

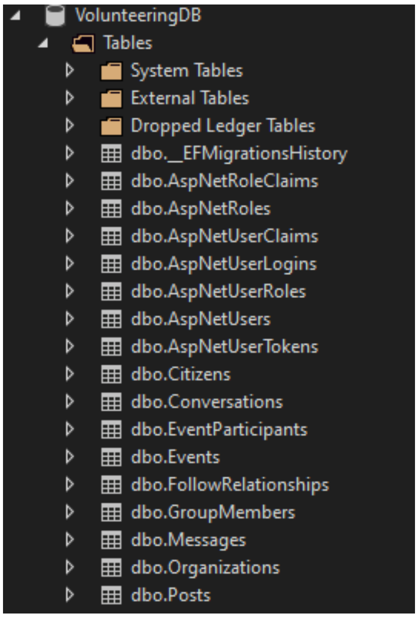
The constrains for some of the entities' properties (and thus each table's columns) are specified using Data Annotations.

Code-first approach

For the development of the KindLink, the Code-first approach was used to generate and update the database schema based on the model classes and their associated data annotations. This approach supports migrations, enabling to adapt the database schema as the application requirements evolve over time.

5.3.2 SQL Server

In the context of the application, SQL Server serves as the primary database management system, handling data storage, retrieval, and manipulation. It is easily integrated with Entity Framework Core to facilitate the interaction between the application and the database.



```
VolunteeringDB
  Tables
    System Tables
    External Tables
    Dropped Ledger Tables
    dbo.__EFMigrationsHistory
    dbo.AspNetRoleClaims
    dbo.AspNetRoles
    dbo.AspNetUserClaims
    dbo.AspNetUserLogins
    dbo.AspNetUserRoles
    dbo.AspNetUsers
    dbo.AspNetUserTokens
    dbo.Citizens
    dbo.Conversations
    dbo.EventParticipants
    dbo.Events
    dbo.FollowRelationships
    dbo.GroupMembers
    dbo.Messages
    dbo.Organizations
    dbo.Posts
```

5.4 Coding Tools

The primary IDE utilized was Visual Studio for the coding requirements of the KindLink application. Additionally, SQL Server Management Studio (SSMS) was employed for database management tasks and interactions with the SQL Server database.

These tools provided robust features and functionalities essential for efficient coding, debugging, and database management throughout the development process.

6 Conclusion and Future Implementations

In conclusion, the development of KindLink has been a significant milestone, providing a platform for connecting volunteers with nonprofit organizations.

Moving forward, there are several potential areas for future implementations. These include:

- The event's location is selected using a Google Maps map.
- Creation of algorithm for matching volunteers with organizations and events based on volunteer's interests.
- Enable users to search for nearby events based on their location.
- Notifications for social media related interactions.
- Creation of Like/Dislike system for posts.
- Sign up using external platforms (GoogleAccount, Facebook, etc).
- "Forgot password" and Email Verification functionality.

By continuously iterating and improving upon the existing basis, KindLink aims to better serve its users and fulfil its mission of fostering community involvement and social impact.

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