

ҚАЗАҚСТАН РЕСПУБЛИКАСЫНЫҢ ҒЫЛЫМ ЖӘНЕ ЖОҒАРЫ БІЛІМ МИНИСТРЛІГІ
МИНИСТЕРСТВО НАУКИ И ВЫСШЕГО ОБРАЗОВАНИЯ РЕСПУБЛИКИ КАЗАХСТАН
MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE REPUBLIC OF KAZAKHSTAN



**ХАЛЫҚАРАЛЫҚ АҚПАРАТТЫҚ ЖӘНЕ
КОММУНИКАЦИЯЛЫҚ ТЕХНОЛОГИЯЛАР
ЖУРНАЛЫ**

**МЕЖДУНАРОДНЫЙ ЖУРНАЛ
ИНФОРМАЦИОННЫХ И
КОММУНИКАЦИОННЫХ ТЕХНОЛОГИЙ**

**INTERNATIONAL JOURNAL OF INFORMATION
AND COMMUNICATION TECHNOLOGIES**

2023 (16) 4
Қазан – желтоқсан

ISSN 2708–2032 (print)
ISSN 2708–2040 (online)

БАС РЕДАКТОР:

Хикметов Аскар Кусупбекович — басқарма төрағасы, Халықаралық ақпараттық технологиялар университетінің ректоры, физика-математика ғылымдарының кандидаты (Қазақстан)

БАС РЕДАКТОРДЫҢ ОРЫНБАСАРЫ:

Колесникова Катерина Викторовна — техника ғылымдарының докторы, Халықаралық ақпараттық технологиялар университеті, «Ақпараттық жүйелер» кафедрасының проректоры (Қазақстан)

ҒАЛЫМ ХАТШЫ:

Ипалакова Мадина Тулегеновна — техника ғылымдарының кандидаты, қауымдастырылған профессор, «Халықаралық ақпараттық технологиялар университеті» АҚ, Ғылыми-зерттеу жұмыс департаментінің директоры (Қазақстан)

РЕДАКЦИЯЛЫҚ АЛҚА:

Разак Абдул — PhD, Халықаралық ақпараттық технологиялар университетінің профессоры (Қазақстан)

Лучио Томмазо де Паолис — Саленто университетінің (Италия) инновациялар және технологиялық инженерия департаменті AVR зертханасының зерттеу және әзірлеу бөлімінің директоры

Лиз Бэкон — профессор, Абертей университеті вице-канцлердің орынбасары (Ұлыбритания)

Микеле Пагано — PhD, Пиза университетінің профессоры (Италия)

Отелбаев Мухтарбай Отелбаевич — физика-математика ғылымдарының докторы, ҚР ҰҒА академигі, Халықаралық ақпараттық технологиялар университеті, «Математикалық және компьютерлік модельдеу» кафедрасының профессоры (Қазақстан)

Рысбайұлы Болатбек — физика-математика ғылымдарының докторы, Халықаралық ақпараттық технологиялар университеті, «Математикалық және компьютерлік модельдеу» кафедрасының профессоры (Қазақстан)

Дайнеко Евгения Александровна — PhD, қауымдастырылған профессор, Халықаралық ақпараттық технологиялар университетінің Жабандық серіктестік және қосымша білім беру жөніндегі проректоры (Қазақстан)

Дузбаев Нуржан Токсужаевич — PhD, Халықаралық ақпараттық технологиялар университетінің Цифрландыру және инновациялар жөніндегі проректоры (Қазақстан)

Синчев Бахтгерей Куспанович — техника ғылымдарының докторы, Халықаралық ақпараттық технологиялар университетінің «Ақпараттық жүйелер» кафедрасының профессоры (Қазақстан)

Сейлова Нүргүл Абдуллаевна — техника ғылымдарының кандидаты, Халықаралық ақпараттық технологиялар университетінің «Компьютерлік технологиялар және киберқауіпсіздік» факультетінің деканы (Қазақстан)

Мухамедиева Ардак Габитовна — экономика ғылымдарының кандидаты, Халықаралық ақпараттық технологиялар университетінің «Цифрлық трансформациялар» факультетінің деканы (Қазақстан)

Ыдырыс Айжан Жұмабайқызы — PhD, Халықаралық ақпараттық технологиялар университетінің «Математикалық және компьютерлік модельдеу» кафедрасының менгерушісі (Қазақстан)

Шильдибеков Ерлан Жаржанович — PhD, Халықаралық ақпараттық технологиялар университетінің «Экономика және бизнес» кафедрасының менгерушісі (Қазақстан)

Аманжолова Сауле Токсановна — техника ғылымдарының кандидаты, Халықаралық ақпараттық технологиялар университетінің «Киберқауіпсіздік» кафедрасының менгерушісі (Қазақстан)

Ниязгулова Айгүл Аскарбековна — филология ғылымдарының кандидаты, Халықаралық ақпараттық технологиялар университетінің «Медиакоммуникациялар және Қазақстан тарихы» кафедрасының менгерушісі (Қазақстан)

Айтмағамбетов Алтай Зуфарович — техника ғылымдарының кандидаты, Халықаралық ақпараттық технологиялар университетінің «Радиотехника, электроника және телекоммуникация» кафедрасының профессоры (Қазақстан)

Алмисреб Али Абд — PhD, Халықаралық ақпараттық технологиялар университетінің қауымдастырылған профессоры (Қазақстан)

Мохамед Ахмед Хамада — PhD, Халықаралық ақпараттық технологиялар университетінің «Ақпараттық жүйелер» кафедрасының қауымдастырылған профессоры (Қазақстан)

Янг Им Чу — PhD, Гачон университетінің профессоры (Оңтүстік Корея)

Тадеуш Валлас — PhD, Адам Мицкевич атындағы университеттің проректоры (Польша)

Мамырбаев Өркен Жұмажанұлы — Ақпараттық жүйелер саласындағы техника ғылымдарының (PhD) докторы, ҚР БҒМ ҚҰО ақпараттық және есептеу технологиялары институты директорының ғылым жөніндегі орынбасары (Қазақстан)

Бушуев Сергей Дмитриевич — техника ғылымдарының докторы, профессор, Украинаның «УКРПНЕТ» жобаларды басқару қауымдастығының директоры, Киев ұлттық құрылыс және сәулет университетінің «Жобаларды басқару» кафедрасының менгерушісі (Украина)

Белошицкая Светлана Васильевна — техника ғылымдарының докторы, доцент, Астана IT университетінің деректер жөніндегі есептеу және ғылым кафедрасының профессоры (Қазақстан)

ЖАУАПТЫ РЕДАКТОР:

Ералы Диана Русланқызы — «Халықаралық ақпараттық технологиялар университеті» АҚ (Қазақстан)

Халықаралық ақпараттық және коммуникациялық технологиялар журналы

ISSN 2708–2032 (print)

ISSN 2708–2040 (online)

Меншіктенуші: «Халықаралық ақпараттық технологиялар университеті» АҚ (Алматы қ.)

Қазақстан Республикасы Ақпарат және әлеуметтік даму министрлігінің Ақпарат комитетінде – 20.02.2020 жылы берілген.

№ KZ82VPY00020475 мерзімдік басылым тіркеуіне қойылу туралы куәлік.

Тақырыптық бағыты: ақпараттық технологиялар, әлеуметтік-экономикалық жүйелерді дамытудағы цифрлық технологиялар, ақпараттық қауіпсіздік және коммуникациялық технологияларға арналған.

Мерзімділігі: жылына 4 рет.

Тиражы: 100 дана

Редакцияның мекенжайы: 050040, Алматы қ-сы, Манас к-сі, 34/1, 709-кабинет, тел: +7 (727) 244-51-09.

E-mail: ijict@iitu.edu.kz

Журнал сайты: <https://journal.iitu.edu.kz>

© Халықаралық ақпараттық технологиялар университеті АҚ, 2023

© Авторлар ұжымы, 2023

ГЛАВНЫЙ РЕДАКТОР:

Хикметов Аскар Кусулбекович — кандидат физико-математических наук, председатель правления - ректор Международного университета информационных технологий (Казахстан)

ЗАМЕСТИТЕЛЬ ГЛАВНОГО РЕДАКТОРА:

Колесникова Катерина Викторовна — доктор технических наук, профессор, проректор по научно-исследовательской деятельности Международного университета информационных технологий (Казахстан)

УЧЕНЫЙ СЕКРЕТАРЬ:

Ипалакова Мадина Тулегеновна — кандидат технических наук, ассоциированный профессор, директор департамента по научно-исследовательской деятельности Международного университета информационных технологий (Казахстан)

РЕДАКЦИОННАЯ КОЛЛЕГИЯ:

Разак Абдул — PhD, профессор кафедры кибербезопасности Международного университета информационных технологий (Казахстан)

Лучно Томмазо де Паолис — директор отдела исследований и разработок лаборатории AVR департамента инноваций и технологического инжиниринга Университета Саленто (Италия)

Лиз Бэкон — профессор, заместитель вице-канцлера Университета Абертей (Великобритания)

Микеле Пагано — PhD, профессор Университета Пизы (Италия)

Отелбаев Мухтарбай Отелбайулы — доктор физико-математических наук, профессор, академик НАН РК, профессор кафедры математического и компьютерного моделирования Международного университета информационных технологий (Казахстан)

Рысбайулы Болатбек — доктор физико-математических наук, профессор, профессор кафедры математического и компьютерного моделирования Международного университета информационных технологий (Казахстан)

Дайнеко Евгения Александровна — PhD, ассоциированный профессор, проректор по глобальному партнерству и дополнительному образованию Международного университета информационных технологий (Казахстан)

Дузбаев Нуржан Токкужаевич — PhD, ассоциированный профессор, проректор по цифровизации и инновациям Международного университета информационных технологий (Казахстан)

Синчев Бахтгерей Куспанович — доктор технических наук, профессор, профессор кафедры информационных систем Международного университета информационных технологий (Казахстан)

Сейлова Нургуль Абадуллаевна — кандидат технических наук, декан факультета компьютерных технологий и кибербезопасности Международного университета информационных технологий (Казахстан)

Мухамедиева Ардак Габитовна — кандидат экономических наук, декан факультета цифровых трансформаций Международного университета информационных технологий (Казахстан)

Ыдырыс Айжан Жумабаевна — PhD, ассистент профессор, заведующая кафедрой математического и компьютерного моделирования Международного университета информационных технологий (Казахстан)

Шилдибеков Ерлан Жаржанович — PhD, заведующий кафедрой экономики и бизнеса Международного университета информационных технологий (Казахстан)

Аманжолова Сауле Токсановна — кандидат технических наук, заведующая кафедрой кибербезопасности Международного университета информационных технологий (Казахстан)

Ниязгулова Айгуль Аскарбековна — кандидат филологических наук, доцент, заведующая кафедрой медиакоммуникаций и истории Казахстана Международного университета информационных технологий (Казахстан)

Айтмагамбетов Алтай Zufарович — кандидат технических наук, профессор кафедры радиотехники, электроники и телекоммуникаций Международного университета информационных технологий (Казахстан)

Алмисреб Али Абд — PhD, ассоциированный профессор кафедры кибербезопасности Международного университета информационных технологий (Казахстан)

Мохамед Ахмед Хамада — PhD, ассоциированный профессор кафедры информационных систем Международного университета информационных технологий (Казахстан)

Янг Им Чу — PhD, профессор университета Гачон (Южная Корея)

Тадеш Валлас — PhD, проректор университета имен Адама Мицкевича (Польша)

Мамырбаев Оркен Жумажанович — PhD, заместитель директора по науке РГП Института информационных и вычислительных технологий Комитета науки МНВО РК (Казахстан)

Бушуев Сергей Дмитриевич — доктор технических наук, профессор, директор Украинской ассоциации управления проектами «УКРНЕТ», заведующий кафедрой управления проектами Киевского национального университета строительства и архитектуры (Украина)

Белошицкая Светлана Васильевна — доктор технических наук, доцент, профессор кафедры вычислений и науки о данных Astana IT University (Казахстан)

ОТВЕТСТВЕННЫЙ РЕДАКТОР:

Ералы Диана Русланқызы — АО «Международный университет информационных технологий» (Казахстан).

Международный журнал информационных и коммуникационных технологий

ISSN 2708–2032 (print)

ISSN 2708–2040 (online)

Собственник: АО «Международный университет информационных технологий» (г. Алматы).

Свидетельство о постановке на учет периодического печатного издания в Министерство информации и общественного развития Республики Казахстан № KZ82VPY00020475, выданное от 20.02.2020 г.

Тематическая направленность: информационные технологии, информационная безопасность и коммуникационные технологии, цифровые технологии в развитии социо-экономических систем.

Периодичность: 4 раза в год.

Тираж: 100 экземпляров.

Адрес редакции: 050040 г. Алматы, ул. Манаса 34/1, каб. 709, тел: +7 (727) 244-51-09.

E-mail: ijict@iitu.edu.kz

Сайт журнала: <https://journal.iitu.edu.kz>

© АО Международный университет информационных технологий, 2023

© Коллектив авторов, 2023

EDITOR-IN-CHIEF:

Khikmetov Askar Kusupbekovich — Candidate of Physical and Mathematical Sciences, Chairman of the Board, Rector of International Information Technology University (Kazakhstan)

DEPUTY CHIEF DIRECTOR:

Kolesnikova Katerina Viktorovna — Doctor of Technical Sciences, Vice-Rector of Information Systems Department, International Information Technology University (Kazakhstan)

SCIENTIFIC SECRETARY:

Ipalakova Madina Tulegenovna — Candidate of Technical Sciences, Associate Professor, Director of the Research Department, International University of Information Technologies (Kazakhstan)

EDITORIAL BOARD:

Razaq Abdul — PhD, Professor of International Information Technology University (Kazakhstan)

Lucio Tommaso de Paolis — Director of Research and Development, AVR Laboratory, Department of Innovation and Process Engineering, University of Salento (Italy)

Liz Bacon — Professor, Deputy Director, and Deputy Vice-Chancellor of the University of Abertay. (Great Britain)

Michele Pagano — Ph.D., Professor, University of Pisa (Italy)

Otelbaev Mukhtarbay Otelbayuly — Doctor of Physical and Mathematical Sciences, Academician of the National Academy of Sciences of the Republic of Kazakhstan, Professor of the Department of Mathematical and Computer Modeling of International Information Technology University (Kazakhstan)

Rysbayuly Bolatbek — Doctor of Physical and Mathematical Sciences, Professor of the Department of Mathematical and Computer Modeling, International Information Technology University (Kazakhstan)

Daineko Yevgeniya Alexandrovna — PhD, Associate Professor, Vice-Rector for Global Partnership and Continuing Education, International Information Technology University (Kazakhstan)

Duzbaev Nurzhan Tokkuzhaevich — Candidate of Technical Sciences, Vice-Rector for Digitalization and Innovations, International Information Technology University (Kazakhstan)

Sinchev Bakhtgerey Kuspanuly — Doctor of Technical Sciences, Professor of the Department of Information Systems, International Information Technology University (Kazakhstan)

Seilova Nurgul Abdullaevna — Candidate of Technical Sciences, Dean of the Faculty of Computer Technologies and Cybersecurity, International Information Technology University (Kazakhstan)

Mukhamedieva Ardak Gabitovna — Candidate of Economic Sciences, Dean of the Faculty of Digital Transformations, International Information Technology University (Kazakhstan)

Idyrys Aizhan Zhumabaevna — PhD, Head of the Department of Mathematical and Computer Modeling, International Information Technology University (Kazakhstan)

Shildibekov Yerlan Zharzhanuly — PhD, Head of the Department of Economics and Business, International Information Technology University (Kazakhstan)

Amanzholova Saule Toksanovna — Candidate of Technical Sciences, Head of the Department of Cyber Security, International Information Technology University (Kazakhstan)

Niyazgulova Aigul Askarbekovna — Candidate of Philology, Head of the Department of Media Communications and History of Kazakhstan, International Information Technology University (Kazakhstan)

Aitmagambetov Altai Zufarovich — Candidate of Technical Sciences, Professor of the Department of Radioengineering, Electronics and Telecommunication, International Information Technology University (Kazakhstan)

Almisreb Ali Abd — PhD, Associate Professor, International Information Technology University (Kazakhstan)

Mohamed Ahmed Hamada — PhD, Associate Professor, Department of Information systems, International Information Technology University (Kazakhstan)

Young Im Choo — PhD, Professor, Gachon University (South Korea)

Tadeusz Wallas — PhD, University of Dr. Litt Adam Miskevich in Poznan (Poland)

Mamyrbayev Orken Zhumazhanovich — PhD in Information Systems, Deputy Director for Science, Institute of Information and Computing Technologies CS MSHE RK (Kazakhstan)

Bushuyev Sergey Dmitriyevich — Doctor of Technical Sciences, Professor, Director of Удoктoр тeхнических наук, профессор, директор Ukrainian Association of Project Management UKRNET, Head of Project Management Department, Kyiv National University of Construction and Architecture (Ukraine)

Beloshitskaya Svetlana Vasilyevna — Doctor of Technical Sciences, Associate Professor, Professor of the Department of Computing and Data Science, Astana IT University (Kazakhstan)

EXECUTIVE EDITOR

Eraly Diana Ruslankyzy — International Information Technology University (Kazakhstan)

«International Journal of Information and Communication Technologies»

ISSN 2708–2032 (print)

ISSN 2708–2040 (online)

Owner: International Information Technology University JSC (Almaty).

The certificate of registration of a periodical printed publication in the Ministry of Information and Social Development of the Republic of Kazakhstan, Information Committee No. KZ82VPY00020475, issued on 20.02.2020.

Thematic focus: information technology, digital technologies in the development of socio-economic systems, information security and communication technologies

Periodicity: 4 times a year.

Circulation: 100 copies.

Editorial address: 050040. Manas st. 34/1, Almaty. +7 (727) 244-51-09. E-mail: ijict@iitu.edu.kz

Journal website: <https://journal.iitu.edu.kz>

© International Information Technology University JSC, 2023

© Group of authors, 2023

МАЗМҰНЫ

ӘЛЕУМЕТТІК-ЭКОНОМИКАЛЫҚ ЖҮЙЕЛЕРДІ ДАМУДАҒЫ ЦИФРЛЫҚ ТЕХНОЛОГИЯЛАР

С. Бушуев, К. Пилюхина, Ч. Элами

ЖОҒАРЫ ТЕХНОЛОГИЯЛЫҚ ЖОБАЛАРДА ЦИФРАНДЫРУДЫ ҚҰНДЫЛЫҚҚА
БАҒДАРЛАНҒАН БАСҚАРУ.....8

А.Х. Мухаметкали, Н.Қ. Саматова, Р.К. Рахымбекова, Т.А. Абдрахман
ЕРІКТІЛЕРДІ БАЛАЛАР МЕН ҚАРТТАРҒА КҮТІМ ЖАСАУ ОРТАЛЫҚТАРЫМЕН
БАЙЛАНЫСТЫРУДЫҢ ЦИФРЛЫҚ ШЕШІМІ.....20

А.М. Омар, Ж.Б. Кальпеева
БЛОКЧЕЙН НЕГІЗІНДЕГІ ДАУЫС БЕРУ ЖҮЙЕСІ: ЖҮЙЕЛІ ӘДЕБИЕТТЕРГЕ
ШОЛУ.....33

АҚПАРАТТЫҚ ТЕХНОЛОГИЯЛАР

В.Ж. Әлле, Ж. Абсаттар, М. Баден, А. Берік
2GIS, ZENLY ЖӘНЕ GOOGLE MAPS МҮМКІНДІКТЕРІН БІРІКТІРЕТІН
ИНТЕГРАЦИЯЛАНҒАН МОБИЛЬДІ ҚОСЫМШАНЫ ЖОБАЛАУ ЖӘНЕ ҚҰРУ.....40

А. Ерланқызы
АЗЫҚ-ТҮЛІК ТҰТЫНУДЫ БОЛЖАУ ӘДІСТЕРІН ТАЛДАУ.....56

АҚПАРАТТЫҚ ҚАУІПСІЗДІК ЖӘНЕ КОММУНИКАЦИЯЛЫҚ ТЕХНОЛОГИЯЛАРҒА АРНАЛҒАН

Н.О. Бабенко, А.Ш. Шермухамедов, И.Л. Хлевна
ЖАҒАНДАНУ ЖӘНЕ КОРПОРАТИВТІК ОРТАДАҒЫ DEVOPS МӘДЕНИЕТІН
БЕЙІМДЕУ: ҚИЫНДЫҚТАР МЕН ПЕРСПЕКТИВАЛАР.....66

Б.С. Есенбаев, К.М. Сагиндыков
ZIMBRA ПОШТАЛЫҚ СЕРВЕРІНІҢ СОҒҒЫ ЖЫЛДАРДАҒЫ ОСАЛДЫҚТАРЫ.....76

В.К. Клёнов, Ж.Л. Таиров, А.Т. Омаров
АРНАЙЫ МАҚСАТТАҒЫ БАЙЛАНЫС ЖҮЙЕЛЕРІ.....84

**Мұхаммед А. Салех, Әли Абд Алмисреб, С.Т. Аманжолова, А.О. Сағымбекова,
А. Заурбек**
БІЛІМ БЕРУ САЛАСЫНДА БЛОКЧЕЙНДІ ҚОЛДАНУ: ПЕРСПЕКТИВАЛАР
МЕН ҚИЫНДЫҚТАР.....92

Ж.Л. Таиров, Клёнов, А.Т. Омаров
ЕЕ 802.16e СТАНДАРТТЫ ЖЕЛІЛЕРІНДЕГІ КІЛТТЕР МЕН ҚҰПИЯЛЫЛЫҚТЫ
БАСҚАРУ (WIMAX ТИПТІ СЫМСЫЗ КЕҢ ЖОЛАҚТЫ ЖЕЛІЛЕРІНДЕ).....101

Б.М. Божеев
АҚПАРАТТЫҚ ҚАУІПСІЗДІКТІ ҚАМТАМАСЫЗ ЕТУДЕ БІЛІМДІ БАСҚАРУ
ЖҮЙЕЛЕРІН ИНТЕГРАЦИЯЛАУ: KAZTRANS SERVICE GROUP ЖШС
ТӘЖІРИБЕСІ.....110

СОДЕРЖАНИЕ
ЦИФРОВЫЕ ТЕХНОЛОГИИ В РАЗВИТИИ СОЦИО-ЭКОНОМИЧЕСКИХ
СИСТЕМ

С. Бушуев, К. Пилюхина, Ч. Элам ЦЕННОСТНО-ОРИЕНТИРОВАННОЕ УПРАВЛЕНИЕ ЦИФРОВИЗАЦИЕЙ В ВЫСОКОТЕХНОЛОГИЧНЫХ ПРОЕКТАХ.....	8
А.Х. Мухаметкали, Н.Қ. Саматова, Р.К. Рахымбекова, Т.А. Абдрахман ЦИФРОВОЕ РЕШЕНИЕ ДЛЯ ВЗАИМОДЕЙСТВИЯ ВОЛОНТЕРОВ С ЦЕНТРАМИ ЗАБОТЫ О ДЕТЯХ И ПОЖИЛЫХ ЛЮДЯХ.....	20
А.М. Омар, Ж.Б. Кальпеева СИСТЕМА ГОЛОСОВАНИЯ НА ОСНОВЕ БЛОКЧЕЙНА: СИСТЕМАТИЧЕСКИЙ ОБЗОР ЛИТЕРАТУРЫ.....	33

ИНФОРМАЦИОННЫЕ ТЕХНОЛОГИИ

В.Ж. Элле, Ж. Абсатгар, М. Баден, А. Берік ПРОЕКТИРОВАНИЕ И РАЗРАБОТКА ИНТЕГРИРОВАННОГО МОБИЛЬНОГО ПРИЛОЖЕНИЯ, ОБЪЕДИНЯЮЩЕГО ВОЗМОЖНОСТИ 2ГИС, ZENLY И GOOGLE MAPS.....	40
А. Ерланкызы АНАЛИЗ МЕТОДОВ ПРОГНОЗИРОВАНИЯ ПОТРЕБЛЕНИЯ ПРОДУКТОВ ПИТАНИЯ.....	56

**ИНФОРМАЦИОННАЯ БЕЗОПАСНОСТЬ И КОММУНИКАЦИОННЫЕ
ТЕХНОЛОГИИ**

Н.О. Бабенко, А.Ш. Шермухамедов, И.Л. Хлевна ГЛОБАЛИЗАЦИЯ И АДАПТАЦИЯ КУЛЬТУРЫ DEVOPS В КОРПОРАТИВНОЙ СРЕДЕ: ВЫЗОВЫ И ПЕРСПЕКТИВЫ.....	66
Б.С. Есенбаев, К.М. Сагиндыков УЯЗВИМОСТИ ПОЧТОВОГО СЕРВЕРА ZIMBRA ЗА ПОСЛЕДНИЕ ГОДЫ.....	76
В.К. Клёнов, Ж.Л. Таиров, А.Т. Омаров СИСТЕМЫ СВЯЗИ СПЕЦИАЛЬНОГО НАЗНАЧЕНИЯ.....	84
Мохаммед А. Салех, Али Абд Алмисреб, С.Т. Аманжолова, А.О. Сагымбекова, А. Заурбек ИСПОЛЬЗОВАНИЕ БЛОКЧЕЙНА В СЕКТОРЕ ОБРАЗОВАНИЯ: ПЕРСПЕКТИВЫ И ВЫЗОВЫ.....	92
Ж.Л. Таиров, В.К. Клёнов, А.Т. Омаров УПРАВЛЕНИЕ КЛЮЧАМИ И ПРИВАТНОСТЬЮ В СЕТЯХ СТАНДАРТА IEEE 802.16e (БЕСПРОВОДНЫХ ШИРОКОПОЛОСНЫХ СЕТЯХ ТИПА WiMAX).....	101
Б.М. Божеев ИНТЕГРАЦИЯ СИСТЕМ УПРАВЛЕНИЯ ЗНАНИЯМИ В ОБЕСПЕЧЕНИЕ ИНФОРМАЦИОННОЙ БЕЗОПАСНОСТИ: ОПЫТ TOO KAZTRANSERVICE GROUP.....	110

CONTENTS
**DIGITAL TECHNOLOGIES IN THE DEVELOPMENT OF SOCIO-ECONOMIC
SYSTEMS**

S. Bushuyev, K. Piliuhina, Ch. Elams
VALUE-ORIENTED MANAGEMENT OF DIGITALIZATION IN HIGH-TECH
PROJECTS.....8

A.Kh. Mukhametkali, T.A. Abdrakhman, R.K. Rakhymbekova, N.K. Samatova
DIGITAL SOLUTION FOR CONNECTING VOLUNTEERS WITH ORPHANAGES
AND NURSING HOMES.....20

A.M. Omar, Z.B. Kalpeyeva
BLOCKCHAIN-BASED VOTING SYSTEM: A SYSTEMATIC LITERATURE
REVIEW.....33

INFORMATION TECHNOLOGY

V.Zh. Elle, J. Absattar, M. Baden, A. Berik
DESIGN AND DEVELOPMENT OF AN INTEGRATED MOBILE APPLICATION
COMBINING THE FEATURES OF 2GIS, ZENLY, AND GOOGLE MAPS.....40

A. Yerlankyzy
ANALYSIS OF METHODS FOR FORECASTING FOOD CONSUMPTION.....56

INFORMATION SECURITY AND COMMUNICATION TECHNOLOGIES

N.O. Babenko, A.Sh. Shermukhamedov, I. Khlevna
GLOBALIZATION AND ADAPTATION OF DEVOPS CULTURE IN THE CORPORATE
ENVIRONMENT: CHALLENGES AND PERSPECTIVES.....66

B.S. Yessenbayev, K.M. Sagindykov
ZIMBRA MAIL SERVER VULNERABILITIES IN RECENT YEARS.....76

V.K. Klenov, J.L. Tairov, A.T. Omarov
SPECIAL PURPOSE COMMUNICATION SYSTEMS.....84

**Mohammed A. Saleh, Ali Abd Almisreb, S.T. Amanzholova, A.O. Sagymbekova,
A. Zaurbek**
BLOCKCHAIN UTILIZATION IN THE EDUCATION SECTOR: PROSPECTS
AND CHALLENGES.....92

J.L. Tairov, V.K. Klenov, A.T. Omarov
KEY AND PRIVACY MANAGEMENT IN IEEE 802.16e STANDARD NETWORKS
(IN WIMAX TYPE WIRELESS BROADBAND NETWORKS).....101

B.M. Bozheev
INTEGRATION OF KNOWLEDGE MANAGEMENT SYSTEMS INTO ENSURING
INFORMATION SECURITY: EXPERIENCE OF KAZTRANSERVICE GROUP.....110

INTERNATIONAL JOURNAL OF INFORMATION AND COMMUNICATION TECHNOLOGIES
ISSN 2708–2032 (print)
ISSN 2708–2040 (online)
Vol. 4. Is. 4. Number 16 (2023). Pp. 20–32
Journal homepage: <https://journal.iitu.edu.kz>
<https://doi.org/10.54309/IJICT.2023.16.4.002>

UDC 004.58

DIGITAL SOLUTION FOR CONNECTING VOLUNTEERS WITH ORPHANAGES AND NURSING HOMES

*A.Kh. Mukhametkali**, *T.A. Abdrakhman*, *R.K. Rakhymbekova*, *N.K. Samatova*

International Information Technology University, Almaty, Kazakhstan.

E-mail: 29228@iitu.edu.kz

Mukhametkali Alisher Khanatuly — senior-lecturer of the «Information Systems» department, International Information Technology University

ORCID: 0009-0000-2701-5040;

Samatova Nazerke Kuangalikyzy — student of the «Information Systems» department, International Information Technology University

ORCID: 0009-0005-9220-2981;

Rakhymbekova Rakhimbubi Kadirbekqyzy — student of the «Information Systems» department, International Information Technology University

ORCID: 0009-0006-0632-8308;

Abdrakhman Toktar Abdrakhmanuly — student of the «Information Systems» department, International Information Technology University

ORCID: 0009-0009-7904-7138.

© A.Kh. Mukhametkali, T.A. Abdrakhman, R.K. Rakhymbekova, N.K. Samatova, 2023

Abstract. This article presents an overview and analysis of the digital solution "HelpingHands", developed for effective communication and cooperation of volunteers with orphanages and nursing homes. The Helping Hands solution is an innovative platform that provides an opportunity for volunteers and organizations to establish effective interaction to support those who need help. The article describes the functionality of HelpingHands, the platform provides convenience of interaction between volunteers and organizations, which contributes to more effective coordination of volunteer work. The goal of HelpingHands is to facilitate the volunteering process and improve the lives of children in orphanages and elderly people in nursing homes. The article emphasizes the importance of this digital solution in providing communication between volunteers and institutions, contributing to the creation of a strong and supported volunteer network for charity and social support.

Keywords: volunteering, digital platform, orphanages, nursing homes, social support, interaction of volunteers, organizations, network of volunteers, cooperation, charity, innovative solutions



For citation: A.Kh. Mukhametkali, T.A. Abdrakhman, R.K. Rakhymbekova, N.K. Samatova. DIGITAL SOLUTION FOR CONNECTING VOLUNTEERS WITH ORPHANAGES AND NURSING HOMES//INTERNATIONAL JOURNAL OF INFORMATION AND COMMUNICATION TECHNOLOGIES. 2023. Vol.4. No.4. Pp.20–32 (In Eng.). <https://doi.org/10.54309/IJICT.2023.16.4.002>

ЕРІКТІЛЕРДІ БАЛАЛАР МЕН ҚАРТТАРҒА КҮТІМ ЖАСАУ ОРТАЛЫҚТАРЫМЕН БАЙЛАНЫСТЫРУДЫҢ ЦИФРЛЫҚ ШЕШІМІ

А.Х. Мухаметкали, Н.Қ. Саматова, Р.К. Рахымбекова, Т.А. Абдрахман*

Мухаметкали Алишер Ханатұлы — «Ақпараттық жүйелер» кафедрасының сениор-лекторы, Халықаралық ақпараттық технологиялар университеті
ORCID: 0009-0000-2701-5040;

Саматова Назерке Қуанғалиқызы — «Ақпараттық жүйелер» кафедрасының студенті, Халықаралық ақпараттық технологиялар университеті
ORCID: 0009-0005-9220-2981;

Рахымбекова Рахымбүбі Кадирбекқызы — «Ақпараттық жүйелер» кафедрасының студенті, Халықаралық ақпараттық технологиялар университеті
ORCID: 0009-0006-0632-8308;

Абдрахман Токтар Абдрахманұлы — «Ақпараттық жүйелер» кафедрасының студенті, Халықаралық ақпараттық технологиялар университеті
ORCID: 0009-0009-7904-7138.

© А.Х. Мухаметкали, Н.Қ. Саматова, Р.К. Рахымбекова, Т.А. Абдрахман, 2023

Аннотация. Бұл мақала еріктілердің балалар үйлерімен және қарттар үйлерімен тиімді байланысы мен ынтымақтастығы үшін әзірленген "HelpingHands" цифрлық шешіміне шолу мен талдауды ұсынады. Helping Hands шешімі еріктілер мен ұйымдарға көмекке мұқтаж адамдарды қолдау үшін тиімді өзара әрекеттесу мүмкіндігін қамтамасыз ететін инновациялық платформа болып табылады. Мақалада HelpingHands функционалдығы сипатталған, платформа еріктілер мен ұйымдар арасындағы өзара әрекеттесудің ыңғайлылығын қамтамасыз етеді, бұл еріктілер жұмысын тиімдірек үйлестіруге ықпал етеді. HelpingHands-тің мақсаты-еріктілік процесін жеңілдету және балалар үйлеріндегі балалар мен қарттар үйіндегі қарттардың өмірін жақсарту. Мақала қайырымдылық пен әлеуметтік қолдау үшін күшті және қолдау көрсетілетін еріктілер желісін құруға ықпал ете отырып, осы цифрлық шешімнің еріктілер мен мекемелер арасындағы байланысты қамтамасыз етудегі маңыздылығын көрсетеді.

Түйін сөздер: еріктілік, цифрлық платформа, балалар үйі, қарттар үйі, әлеуметтік қолдау, еріктілердің өзара әрекеті, ұйымдар, еріктілер желісі, ынтымақтастық, қайырымдылық, инновациялық шешімдер

Дәйексөз үшін: А.Х. Мухаметкали, Н.Қ. Саматова, Р.К. Рахымбекова, Т.А. Абдрахман. ЕРІКТІЛЕРДІ БАЛАЛАР МЕН ҚАРТТАРҒА КҮТІМ ЖАСАУ ОРТАЛЫҚТАРЫМЕН БАЙЛАНЫСТЫРУДЫҢ ЦИФРЛЫҚ ШЕШІМІ//Ақпараттық



және коммуникациялық технологиялардың халықаралық журналы. 2023. V.4. № 4. Бет 20-32 (ағылшын тілінде). <https://doi.org/10.54309/IJICT.2023.16.4.002>

ЦИФРОВОЕ РЕШЕНИЕ ДЛЯ ВЗАИМОДЕЙСТВИЯ ВОЛОНТЕРОВ С ЦЕНТРАМИ ЗАБОТЫ О ДЕТЯХ И ПОЖИЛЫХ ЛЮДЯХ

А.Х. Мухаметкали, Н.Қ. Саматова, Р.К. Рахымбекова, Т.А. Абдрахман*

Мухаметкали Алишер Ханатұлы — сениор-лектор кафедры «Информационные системы», Международный университет информационных технологий
ORCID: 0009-0000-2701-5040;

Саматова Назерке Қуанғалиқызы — студент кафедры «Информационные системы», Международный университет информационных технологий
ORCID: 0009-0005-9220-2981;

Рахымбекова Рахымбүбі Кадирбекқызы — студент кафедры «Информационные системы», Международный университет информационных технологий
ORCID: 0009-0006-0632-8308;

Абдрахман Тоқтар Абдрахманұлы — студент кафедры «Информационные системы», Международный университет информационных технологий
ORCID: 0009-0009-7904-7138.

© А.Х. Мухаметкали, Н.Қ. Саматова, Р.К. Рахымбекова, Т.А. Абдрахман, 2023

Аннотация. Данная статья представляет обзор и анализ цифрового решения "HelpingHands", разработанного для эффективной связи и сотрудничества волонтеров с детскими домами и домами престарелых. Решение Helping Hands представляет собой инновационную платформу, обеспечивающую возможность волонтерам и организациям установить эффективное взаимодействие для поддержки тех, кто нуждается в помощи. Статья описывает функционал HelpingHands: платформа обеспечивает удобство взаимодействия между волонтерами и организациями, что способствует более эффективной координации волонтерской работы. Статья подчеркивает значимость данного цифрового решения в обеспечении связи между волонтерами и учреждениями, способствуя созданию сильной волонтерской сети для благотворительности и социальной поддержки.

Ключевые слова: волонтерство, цифровая платформа, детские дома, дома престарелых, социальная поддержка, взаимодействие волонтеров, организации, сеть волонтеров, сотрудничество, благотворительность, инновационные решения

Для цитирования: А.Х. Мухаметкали, Н.Қ. Саматова, Р.К. Рахымбекова, Т.А. Абдрахман. ЦИФРОВОЕ РЕШЕНИЕ ДЛЯ ВЗАИМОДЕЙСТВИЯ ВОЛОНТЕРОВ С ЦЕНТРАМИ ЗАБОТЫ О ДЕТЯХ И ПОЖИЛЫХ ЛЮДЯХ//Международный журнал информационных и коммуникационных технологий. 2023. Т. 04. № 4. Стр. 20–32 (На англ.). <https://doi.org/10.54309/IJICT.2023.16.4.002>

Introduction

"HelpingHands" is a digital platform that has laid the foundations for more effective interaction between volunteers and institutions working with orphanages and nursing



homes. The platform aims to overcome the existing problems facing volunteering and simplify the process of finding and participating in important social projects. Orphanages and nursing homes play a crucial role in our society, serving as a refuge for those who need care, support and, above all, sincere compassion. These institutions provide shelter to vulnerable groups of the population who are looking for love and health, education and emotional well-being.

The relevance of our platform is to create an IT solution to meet the urgent need to connect volunteers to nursing homes and orphanages, optimize the recruitment process of volunteers and improve the quality of care and support provided.

The goal of this project is to offer an innovative solution that will bridge this communication gap and increase the effectiveness of volunteer activities. Our work is focused on developing the HelpHands platform, a digital ecosystem that connects volunteers with orphanages and nursing homes. This innovative platform is designed to optimize the process of recruiting and managing volunteers, which ultimately improves the quality of care and support provided to residents and beneficiaries. The main mission of the HelpHands platform is to solve this problem with the help of technology to create a more interconnected, compassionate and effective society that meets the needs of those who most deserve care and support.

The object of the study is a system for finding volunteers for nursing homes and orphanages using information technology.

The subject of this research is the development, implementation and evaluation of the platform as an innovative tool that uses information technology to improve the experience of volunteering and the quality of care and support provided to children and the elderly.

The novelty of this research lies in the creation of a specialized platform that not only acts as a digital bridge connecting volunteers with agencies, but also offers a user-friendly interface and functions adapted to the needs of users.

Material and methods

1. Literature review

Analysis of the article "User-Centered Development of a Web Platform Supporting Community-Based Health Care Organizations for Older Persons in Need of Support " (2021)

Ensuring dignified aging and providing care for older persons in need of support has become increasingly relevant. Community-based health care (CBHC) organizations play a crucial role in developing sustainable strategies for organizing and delivering care to older individuals. Digitalization is key to enhancing the efficiency and effectiveness of these organizations. This literature review examines the article "User-Centered Development of a Web Platform Supporting Community-Based Health Care Organizations for Older Persons in Need of Support: Qualitative Focus Group Study," which is part of the European Active and Assisted Living (AAL) project known as "ICareCoops." The article explores the concepts, approaches, and workflows of CBHC organizations to gain a comprehensive understanding of their services and the requirements for supporting them through information and computer technology (ICT) solutions.

One of the central aspects of the study is its commitment to a user-centered approach. By involving various stakeholders, including care receivers, their significant others, and care providers, the research recognizes the importance of considering the needs and preferences of the end users in the development of ICT solutions for CBHC organizations. This aligns with best practices in information systems development, emphasizing user engagement and co-design as critical factors for successful implementation.

The study reveals that the needs and requirements of the three stakeholder groups vary significantly. Care receivers prioritize accessibility and ease of use, emphasizing the importance of user-friendly interfaces. Significant others are concerned with the platform's ability to facilitate communication and coordination, supporting their involvement in the care process. In contrast, care providers and managers focus on the platform's ability to streamline operations, optimize resource allocation, and enhance service quality. These diverse perspectives underscore the complexity of designing a web platform that can satisfy the demands of all stakeholders.

The article "User-Centered Development of a Web Platform Supporting Community-Based Health Care Organizations for Older Persons in Need of Support" presents a comprehensive exploration of the requirements and needs of stakeholders involved in CBHC organizations. By adopting a user-centered approach and using focus groups to capture insights, the study provides valuable input for the development of web platforms that can enhance the provision of care for older individuals. The research highlights the complexity of meeting the diverse needs of care receivers, significant others, and care providers, emphasizing the importance of customization and adaptability in information system design for this domain. Furthermore, the use of user stories is a practical and effective means of translating user requirements into technical specifications, ensuring that the resulting web platform meets the expectations of all stakeholders. This study contributes to the broader field of information systems by emphasizing the importance of user engagement and user-centric design in the development of healthcare-related ICT solutions, ultimately striving for more dignified and efficient care for aging populations.

Analysis of the article "Effective Volunteerism: Helping Child Caregivers in Developing Countries - An Information System Perspective" (2016)

This literature review explores the article titled "Effective Volunteerism: Helping Child Caregivers in Developing Countries," which focuses on the application of mental health consultation to child caregivers in developing countries. The article outlines a method of volunteering that is characterized by episodic visits and the establishment of long-term relationships.

The article emphasizes the significance of the consultant's role in providing mental health consultation to child caregivers in developing countries. The consultant serves as a knowledgeable guide who imparts essential information and skills to the caregivers. This role aligns with the principles of information systems, where information is seen as a valuable resource for decision-making and problem-solving. The consultant acts as a source of information, offering guidance on effective caregiving practices, strategies to address mental health issues, and resources that can be utilized by caregivers. Their role can be likened to that of an information system that facilitates the flow of valuable information to end-users.



The article underscores the importance of establishing long-term relationships with caregivers as a key element of effective volunteerism. In the context of information systems, the development of enduring relationships is essential for the exchange of information. A long-term connection allows for the accumulation of knowledge, trust, and the transfer of information over time. This aligns with the notion of information systems that aim to create databases and repositories of knowledge for ongoing use. Moreover, maintaining long-term relationships enhances the sustainability and impact of the volunteer work, which is crucial for the effectiveness of the proposed method.

The article "Effective Volunteerism: Helping Child Caregivers in Developing Countries" offers a valuable method for mental health consultation in developing countries, focusing on episodic visits and long-term relationships with caregivers. From an information system perspective, the article's emphasis on the consultant's role, the establishment of long-term relationships, the method's adaptability in different settings, and the recognition of challenges all align with the core principles of information systems.

The proposed method exemplifies how information can be effectively harnessed to improve the well-being of neglected and traumatized children in developing countries. It highlights the importance of a well-structured and sustained approach that can be further enriched by the principles of information systems, enabling the efficient exchange of knowledge and resources to benefit child caregivers and, ultimately, the children they care for.

2. Comparative analysis

There are several platforms similar to ours that connect volunteers and organizations.

1. VolunteerMatch is an organization that connects volunteers with non-profit organizations. Volunteers can use the app to find offers tailored to their location, industry, and skills, as well as additional volunteer training resources.

2. Idealist.org is an online community that connects volunteers with community organizations. Here you can not only become a volunteer but also find job or internship offers from non-profit organizations.

3. BeMyNeighbor.org is a website that matches volunteers with elderly neighbors who need help with transportation, yard work, and socializing.

4. DoSomething.org is an organization that provides opportunities for young people who want to volunteer, address social issues, and offer prizes and scholarships for their work.

5. Catchafire.org is a website that connects volunteers with specific skills and experience to non-profit organizations.

Table 1 – “Comparative analysis”

Feature/ Aspect	Helping Hands	VolunteerMatch	Idealist.org	BeMy-Neighbor.org	DoSomething.org	Catchafire.org
User Registration	Streamlined registration process	Well-established and trusted platform Lengthy registration process	Simple and intuitive registration Limited advanced features	User-friendly registration Limited customization	Easy sign-up process Limited profile customization	User-friendly registration Limited user customization



Volunteer Search	Comprehensive search options	Extensive database of volunteer opportunities Overwhelming choice	Vast database with diverse opportunities Limited advanced search options	Easy-to-navigate search functionality Less diverse opportunities	Search based on interests Limited advanced search options	Search based on skills and interests Less diverse opportunities
Institution Profiles	Specialized for orphanages and nursing homes	Offers a wide range of organizations May lack a specialized focus	Hosts a variety of nonprofit organizations May lack a specialized focus	Broad spectrum of institutions Limited focus	Focus on social impact May lack a specialized focus	Focus on skills-based volunteering Limited focus
Secure Messaging	In-platform communication for user	In-platform messaging for ease of communication Basic messaging features	Integrated messaging for user interaction Limited advanced features	In-app chat for easy communication Limited features	Messaging for coordination Limited customization	In-platform messaging for collaboration Limited customization
Admin Panel	Efficient management and moderation	Robust admin tools for organization management Complex admin interface	Admin features for organization management Limited customization	User-friendly admin panel Limited customization	Admin tools for platform management Limited customization	Admin dashboard for managing projects Limited customization
Scalability	Built with scalability in mind for future expansion	Proven scalability and reach May experience slower growth	Expansive network and scalability Potential for information overload	Potential for growth and scaling Limited regional reach	National reach and growth potential Limited focus on specific sectors	Scalability and expansion possibilities Limited focus on skills-based volunteering
Social Impact	Focused on elderly care and children in need	Broader focus with extensive reach Less specialization	Supports various social causes May lack specific sector focus	Focus on local community engagement Less global impact	Empowers young activists Limited focus on specialized skills	Focus on skills-based volunteering May lack a broad focus

Differences for each platform:

1. VolunteerMatch has a much larger volunteer base than HelpingHands, but it is not designed specifically for orphanages and nursing homes.
2. Idealist.org offers a wider range of volunteer opportunities than HelpingHands, but it may lack the specialization and personalized support that HelpingHands offers to orphanages and nursing homes.
3. BeMyNeighbor.org is focused on connecting volunteers with elderly neighbors, and HelpingHands is focused on connecting volunteers with orphanages and nursing homes.
4. DoSomething.org is focused on empowering young people to make a difference through volunteering, while HelpingHands is focused on connecting volunteers with orphanages and nursing homes.



5. Catchafire.org connects nonprofits with qualified volunteers who can provide free services, while HelpingHands focuses on connecting volunteers with orphanages and nursing homes.

Advantages of HelpingHands over other applications:

HelpingHands is specially designed for orphanages and nursing homes. This means it can offer a more personalized and supportive experience for both volunteers and agencies. HelpingHands uses technology to make it easier for volunteers to find and contact orphanages and nursing homes. This helps increase the number of volunteers who can meet the needs of these institutions. Our platform provides a variety of tools and resources to support volunteer management. This helps children's homes and care homes make the most of their volunteer workforce. The platform also collects and analyzes data. This data can be used to improve the platform and better understand the needs of volunteers and institutions. Overall, HelpingHands is a unique and innovative platform that offers several advantages over other similar applications.

3. Survey-based preference research

A survey was conducted to collect information from volunteers and orphanages/nursing homes about their needs and experiences with volunteering platforms. Information obtained from the survey will be used to develop the functionality and overall design of the platform.

The survey asked questions for volunteers and organizations. The questions were based on their experiences as well as what problems they encountered with their needs and what would be the most effective application for them. For volunteers, motivation has been shaped by a variety of interests in health, education, and mental health, often discovered through social media and community events. They strive for simplified discovery and secure communication, valuing HelpingHands potential features such as user-friendliness and real-time notifications.

Agencies need volunteers for health care, education, and support, and face challenges in recruiting and retaining employees. Desired platform features include robust databases, efficient matching, and administrative panels. They include increased care and a wider network of volunteers through HelpingHands. Agencies value technology platforms for increased visibility and smoother volunteer interactions.

Survey results:

According to the survey results, a significant number of volunteers are motivated by the opportunity to gain specialized experience that has a positive impact on society. Challenges often include finding suitable volunteer opportunities. Volunteers noted that it is important for a platform like HelpingHands to have features such as a user-friendly interface, advanced search capabilities, and secure communication tools. And nursing homes and orphanages are having great difficulty finding volunteers. Agencies have expressed strong support for a platform like HelpingHands, noting the potential benefits of streamlined volunteer recruitment and management. Key features that agencies find valuable include a user-friendly dashboard, volunteer candidate management tools, and secure communication channels.

Problem statements

Research tasks for the Helping Hands application represent a variety of research areas necessary for more effective development and improvement of the platform.

The first task is related to understanding the specific needs of orphanages and nursing homes. This includes research to determine what types of help and support these institutions need. Such an analysis will help to identify where volunteer assistance can have the greatest effect and which areas require special attention.

Another area of research is the study of motivation and preferences of volunteers. We plan to understand what motivates people to join the volunteering program and what types of help or time they are willing to provide. This will allow us to more accurately adapt the offers for volunteers and make the participation process more attractive.

Our task is also to analyze technological needs. We want to study the existing technological solutions in the field of volunteering and their effectiveness. This will allow us to determine how to improve the accessibility and usability of our platform for volunteers and organizations.

These are just some of the aspects that we plan to explore within the framework of the Helping Hands project. These tasks will help us create more effective strategies for involving volunteers and improving the functioning of the platform aimed at supporting vulnerable groups of society.

As part of the research for the Helping Hands project, a number of hypotheses and proposed solutions are proposed aimed at improving the operation of the application and involving more volunteers and institutions.

The first hypothesis is the need for a deeper understanding of the needs of orphanages and nursing homes. To do this, it is planned to conduct a series of interviews with the heads of these institutions in order to identify specific areas where volunteer assistance will be most useful and meaningful. This will allow us to focus our efforts on providing the most valuable services.

The second hypothesis suggests that the motivation of volunteers plays a key role in their participation. It is planned to organize focus groups and conduct surveys for volunteers in order to identify their main incentives and preferences in choosing types of assistance. This will help to adapt the volunteering program, making it more attractive to potential participants.

The third hypothesis is related to the study of existing technologies and platforms in the field of volunteering. The analysis will determine which solutions already exist and identify their advantages and disadvantages. This will help to create a more convenient and effective "Helping Hands" platform.

The fourth hypothesis assumes that the collection and analysis of data on user experience and the effectiveness of the platform will identify areas for improvement. It is planned to analyze the data to assess the impact of the application on user satisfaction and the quality of services provided.

Solutions to confirm these hypotheses include conducting interviews and surveys with the management of institutions, focus groups for volunteers, as well as analyzing technological solutions on the market. In addition, it is supposed to collect data on user



experience to analyze their impact on the effectiveness of the platform. These steps will be useful to identify the most effective strategies for improving the app and attracting more volunteers and institutions.

Application architecture logic

Deployment diagram:

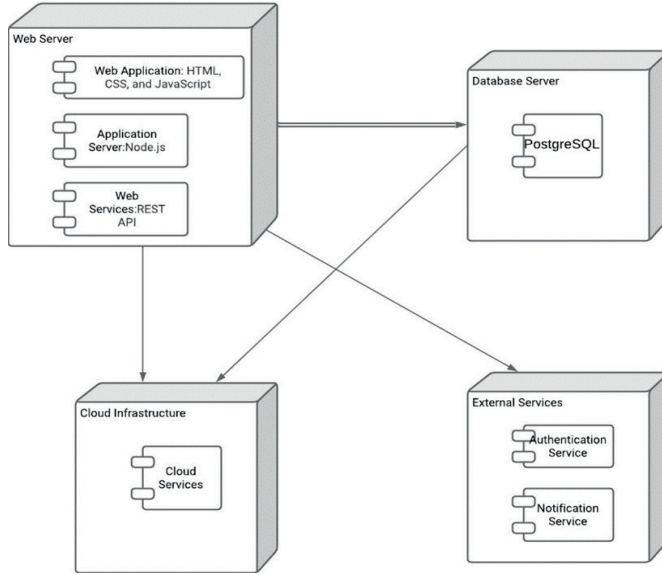


Figure 2 - "Deployment diagram"

Component diagram:

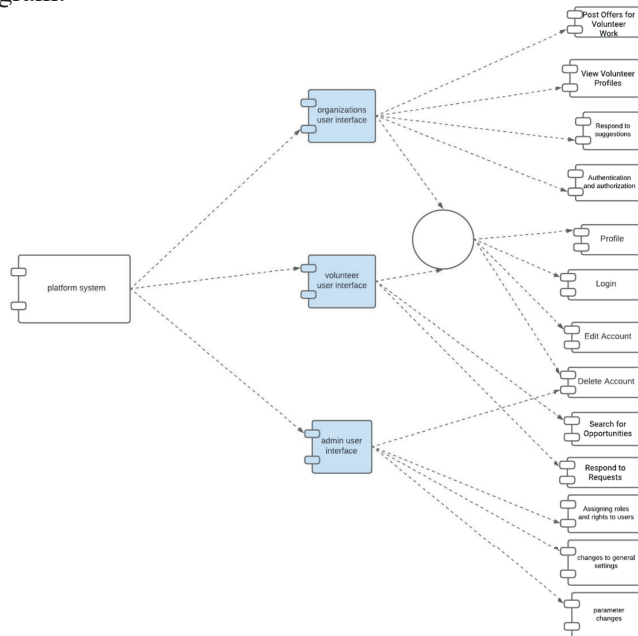


Figure 3 - "Component diagram"



Main features of the application

The main features of the HelpHands app include the following:

User Profiles: Users can create and manage profiles using personal information, skills, and qualifications.

Volunteer Search: The platform offers robust search functions that allow volunteers to find suitable positions based on location, experience, and availability.

Facility Profiles: Children's homes and nursing homes can create profiles to publish their needs, preferences, and requirements.

Admin Panel: The application includes an admin panel for efficient management, moderation, and control.

Scalability: The HelpingHands app is designed with scalability in mind, allowing it to potentially expand to other regions and service categories in the future.

Confirmation of research results

Based on surveys and interviews with potential volunteers, orphanages and nursing homes, as well as organizations, we have confirmed that there is a significant demand for such an application. There is a need to develop and launch the "Helping Hands" application to connect volunteers with organizations and places that require volunteer help.

Basic needs of volunteers: The study revealed that volunteers are looking for volunteering opportunities that match their skills, interests and specialization. The application should provide tools for personalized search and selection of volunteer activities.

Needs of orphanages and nursing homes: Orphanages and nursing homes have expressed a need for volunteers with specific skills and experience, such as medical services, psychological support and educational activities. The application should provide an opportunity for organizations to place requests for volunteer assistance with specific requirements.

The analysis of competitors showed that there are other platforms and applications for volunteering, but they may not fully meet the needs of the target audience. There is a potential to improve and add functionality to make the "Helping Hands" application more attractive and user-friendly.

During the study, it became clear that both volunteers and organizations value security and trust when working with the application. When developing an application, special attention should be paid to the aspects of security and user identification. Organizations and volunteers expressed expectations from the application related to convenience, efficiency and ease of use. The application should be intuitive and provide useful tools for organizing and searching for volunteer activities.

In general, the "Helping Hands" application has the potential to become a valuable resource for volunteers and organizations, the application provides an effective solution to the needs and problems of your audience and provides convenience and security for all users.

Conclusion

The HelpingHands platform is an innovative solution aimed at improving communication and collaboration between volunteers and institutions, in particular



orphanages and nursing homes. This platform aims to enable seamless interaction between volunteers and organizations, thereby facilitating more effective coordination of volunteer work and ultimately improving the quality of care and support offered to those in need.

Key results:

Building bridges: Research highlights the urgent need to improve interactions between volunteers and agencies, which is vital for a strong volunteer network that supports social causes.

Development goals: The project was aimed at creating HelpingHands, a specialized digital system connecting volunteers with orphanages and nursing homes, optimizing staffing, and improving the quality of care.

Research results: literature review, comparative analysis, and surveys provided key information on the needs of volunteers and institutions. The results highlighted the need for a dedicated, user-friendly platform.

Problem Statements and Hypotheses: Research objectives focus on understanding institutional needs, volunteer motivation, technology requirements, and user experience. Hypotheses focused on institutional understanding, volunteer motivation, technology analysis, and data-driven improvements.

Application Architecture: HelpingHands includes user profiles, robust volunteer matching, facility profiles, admin panels, and scalability for future expansion.

Research Validation: Surveys and interviews confirmed the demand for HelpingHands. The findings emphasized personalized searches, secure communications, and user-friendly tools for volunteers and agencies.

Future directions:

The development and launch of the HelpingHands app will address the specific needs of volunteers and agencies, offering tools for personalized volunteer searches and requests.

Continuous improvement and additional functionality must be considered to enhance the appeal and usability of the application.

Focusing on safety, trust, convenience, and efficiency is critical for both volunteers and organizations when using the app.

At its core, the HelpingHands app is a potentially valuable resource that effectively addresses the needs and concerns of its audience while providing convenience and safety for all users.

REFERENCES

- Alexandra Murray Harrison. Effective Volunteerism: Helping Child Caregivers in Developing Countries - An Information System Perspective. — 2016 Nov. — 37(6)
- Anna Narvaes (2020). The Surprising Ways Volunteering Benefits Children. — 2020 Feb 4. — <https://mountainkidslouisville.com/blog/surprising-ways-volunteering-benefits-children/>
- Ellie Sims, Jess Pidcock, Chioma Eucharia Nnajidema, Chioma Vivian Ezunu, Richard Denton, Carly Davis, Devansh Chiralayath Njalil Baburaj, Lucy Allen (2017). Developing the role of volunteers in care homes. — 2017 January 23.
https://www.researchgate.net/publication/325585674_Technology_in_Nonprofit_Organizations_and_Voluntary_Action



https://www.researchgate.net/publication/241909632_Information_Technology_and_the_Voluntary_Sector_Workplace

John McNutt, Chao Guo, Lauri Goldkind, Seongho An. Technology in Nonprofit Organizations and Voluntary Action. — 2018 June.

Judith R (2003). Saidel, Stephanie Cour. Information Technology and the Voluntary Sector Workplace. — 2003 March.

Karen Marie (2021). Volunteers do the fun stuff – Experiences from volunteer–professional caregiver cooperation in nursing homes. — 2021 July. — <https://pubmed.ncbi.nlm.nih.gov/34328234/>

Verena Biehl M.A., Heidrun Becker, Prof Dr., Alenka Ogrin, M.A., Alenka Reissner, PhD, Johannes Burger, M.A., and Andrea Glaessel, Prof Dr, MPH, MSc. User-Centered Development of a Web Platform Supporting Community-Based Health Care Organizations for Older Persons in Need of Support: Qualitative Focus Group Study. — 2021 Mar. — 23(3). — <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7991984/>



**ХАЛЫҚАРАЛЫҚ АҚПАРАТТЫҚ ЖӘНЕ
КОММУНИКАЦИЯЛЫҚ ТЕХНОЛОГИЯЛАР ЖУРНАЛЫ**

**МЕЖДУНАРОДНЫЙ ЖУРНАЛ ИНФОРМАЦИОННЫХ И
КОММУНИКАЦИОННЫХ ТЕХНОЛОГИЙ**

**INTERNATIONAL JOURNAL OF INFORMATION AND
COMMUNICATION TECHNOLOGIES**

Правила оформления статьи для публикации в журнале на сайте:

<https://journal.iitu.edu.kz>

ISSN 2708–2032 (print)

ISSN 2708–2040 (online)

Собственник: АО «Международный университет информационных технологий» (Казахстан, Алматы)

ОТВЕТСТВЕННЫЙ РЕДАКТОР

Раушан Жалиқызы

КОМПЬЮТЕРНАЯ ВЕРСТКА

Жадыранова Гульнур Даутбековна

Подписано в печать 15.12.2023.

Формат 60x881/8. Бумага офсетная. Печать - ризограф.6,5 п.л. Тираж 100
050040 г. Алматы, ул. Манаса 34/1, каб. 709, тел: +7 (727) 244-51-09).