A Holistic Fire Management Ecosystem for Prevention, Detection and Restoration of Environmental Disasters

TREEADS D.3.8 Survey for building and validating TREEADS platform V1

Work package	WP3: Organisational, Structural, and Sociotechnical Factors for TREEADS Ecosystem Building and modular approach
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2.0	22/11/2023	K3Y	Revised based on reviewers' comments (see details in table below).

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GLOSSARY OF TERMS

Term	Description
Agroforestry Index	Agroforestry systems can be evaluated and assessed using various indicators, metrics, and indices that measure different aspects of their performance and sustainability.
webGIS	WebGIS, also known as Web Geographic Information System, is a web-based application that allows users to access, analyse and visualise geographic data through the internet.

LIST OF ABBREVIATIONS AND ACRONYMS

Abbreviation	Meaning
2FA	Two-factor Authentication
AMQP	Advanced Message Queuing Protocol
BaaS	Backend-as-a-Service
BAER	Burned Area Emergency Response
CCS	Command and Control System
CFD	Computational Fluid Dynamics
CLI	Command Line Interface
COAP	Constrained Application Protocol
DAC	Discretionary Access Control
DSS	Decision Support System
FDS	Fire Dynamics Simulator
GIS	Geographic Information System
GUI	Graphical User Interface
HAPS	High-altitude Platforms Station
ICC	International Code Council
JRC	Joint Research Centre
KISS	Keep It Simple, Stupid
MAC	Mandatory Access Control
MCC	Mobile Command Centre
MFA	Multi-factor Authentication
MQTT	Message Queuing Telemetry Transport
NFIRS	National Fire Incident Reporting Systems
NFPA	National Fire Protection Association

ODC	OpenDataCube
PMF	Positive Matrix Factorisation
RBAC	Role-Based Access Control
RMS	Resource Management System
SSO	Single Sign-On
UAVs	Unmanned Aerial Vehicles
VTK	Visualisation ToolKit
WFA	Wildfire Analyst
WRF	Weather Research and Forecasting
WTK	Weather Research and Forecasting Toolkit

EXECUTIVE SUMMARY

TREEADS is a European project co-funded by the H2020 research and innovation programme under the Grant Agreement No 101036926. In particular, TREEADS aims to develop new products and integrate them into a holistic Fire Management platform aimed at optimising and reusing the existing socio-technological resources. To this end, TREEADS consists of ten Work Packages (WPs) that define the administrative and technical activities. This deliverable is part of WP3, which aims to define Organisational, Structural, and Sociotechnical Factors for TREEADS Ecosystem Building and modular approach.

In the context of Task 3.1, Deliverable 3.8 (D3.8) aims to gather important data on the environmental, social, and techno-economic factors that play a role in the management of wildfires, providing a clear roadmap for the definition and implementation of the TREEADS models and services during the lifecycle of the project. To achieve this, a survey is conducted four times during the project's lifetime, targeting a minimum of 300 stakeholders, including representatives from civil protection, fire brigades, and the advisory board, among others.

This report consists of seven sections. Section 1 provides an introduction to the deliverable, including its purpose and structure. Section 2 details the methodology followed in creating and conducting the survey for building and validating the TREEADS platform. Section 3 provides an analysis of existing wildfire management platforms and architectural frameworks, focusing on three main categories: (a) Prevention and Preparedness, (b) Detection and Response, and (c) Restoration and Adaptation. Section 4 gives an overview of the TREEADS architecture, providing a detailed description and diagram of the system's components, interfaces, and data flow, as well as the technologies and protocols used to implement the system. Section 5 presents the questionnaire design and creation process, along with the main findings of the survey conducted for building and validating the TREEADS platform. Section 6 summarises the key takeaways and insights gained from the study, including any challenges encountered and the solutions applied, as well as any recommendations for future work or improvements on each Pilot country surveyed separately. Finally, Section 7 concludes this report by emphasising how the information gathered from these stakeholders will inform the development of an action plan that effectively addresses the unique challenges faced by stakeholders in this field, providing a comprehensive picture of the various factors that impact the management of wildfires.

INTRODUCTION

PURPOSE OF THE DELIVERABLE

The purpose of this deliverable is to gather important data on the environmental, social, and techno-economic factors that play a role in the management of wildfires. The information gathered will be used to revise the action plan and offer a thorough knowledge of the most recent ecological and environmental models relevant to this field.

The surveys will be conducted four times during the lifetime of the project and will target a minimum of 300 stakeholders, including representatives from civil protection, fire brigades, and the advisory board, among others. The information gathered from these stakeholders will provide a clear understanding of the challenges faced by those involved in wildfire management and inform the decisions on how to address these challenges effectively.

The surveys will be repeated over the course of the project to ensure that the action plan remains up to date with the latest environmental models. This will enable TREEADS to adapt to changes and proactively manage wildfires in a way that minimises their impact on the environment and local communities.

Overall, this deliverable will provide a comprehensive picture of the various factors that impact the management of wildfires and inform the development of an action plan that effectively addresses the unique challenges faced by stakeholders in this field.

RELATION WITH OTHER WPS, TASKS AND DELIVERABLES

This deliverable is related to the following WPs, tasks, and deliverables based on the Grant Agreement.

WP3/ Deliverable D3.5 - Live doc TREEADS Platform technological, Architecture and data model and fusion V1. D3.8 will validate the first version of D3.5 and aim to provide valuable info for building the TREEAD Platform.

WP3/ Deliverable D3.6 - Live doc TREEADS Platform technological, Architecture and data model and fusion V2. D3.8 will provide feedback from the stakeholders to be taken into consideration in the creation of D3.6.

STRUCTURE OF THE DELIVERABLE

This report is structured as follows.

- Section 1 – Introduction: Section 1 introduces this deliverable.
- Section 2 – Methodology: Section 2 provides the methodological framework used for this deliverable and creating a survey for building and validating TREEADS platform
- Section 3 – Analysis of Existing Wildfire Management Platforms and Architectural Frameworks: Section 3 provides an analysis on existing wildfire management platforms and architectural frameworks.

- Section 4 – Overview of TREEADS Architecture: Section 4 provides a detailed description and diagram of the architecture of the TREEADS system, including the components, interfaces, and data flow, as well as the technologies and protocols used to implement the system.
- Section 5 – Survey for building and validating TREEADS platform: Section 5 describes the questionnaire design and creation process, presents the questionnaire that was distributed to the TREEADS Stakeholders as well as presenting the main findings
- Section 6 – Lessons Learned: Section 6 summarises the key takeaways and insights gained from the study, including any challenges encountered and the solutions applied, as well as any recommendations for future work or improvements on each Pilot country separate that was surveyed.
- Section 7 – Conclusions: Section 7 concludes this report.

METHODOLOGY

The methodology used in this study involved several steps to achieve its objectives. The first step was an analysis of existing wildfire management platforms and architectural frameworks. This step involved reviewing and analysing various platforms and frameworks used in managing wildfires to identify their strengths, weaknesses, and opportunities for improvement. The information obtained from this analysis was used to inform the design of the new wildfire management platform.

The second step involved an overview of TREEADS architecture. This step provided a detailed explanation of the architecture of the new wildfire management platform. It highlighted the various components of the platform, how they are interconnected, and how they work together to achieve the platform's objectives. This step was crucial in providing a clear understanding of how the new platform differs from existing platforms.

The third step in the methodology was the questionnaire design and creation process. This step involved creating a questionnaire that would be used to collect data from users of the new wildfire management platform. The questionnaire was designed to gather information on the user experience, the ease of use of the platform, and the effectiveness of the platform in managing wildfires. After creating the questionnaire, it was translated into the languages of the pilot countries. This step was important in ensuring that the questionnaire could be used in the pilot countries where the platform will be tested.

Finally, the last step was the analysis of the main findings and lessons learned for each pilot. This step involved analysing the data collected from the questionnaire to identify the strengths and weaknesses of the platform. The lessons learned from this analysis will be used to improve the platform and make it more effective in managing wildfires.

In conclusion, the methodology used in this study involved several steps that were crucial in the development of the new wildfire management platform and can be seen in Figure 1. The analysis of existing platforms and frameworks provided valuable insights that were used to inform the design of the new platform. The questionnaire design and creation process helped to gather important data that was used to improve the platform's effectiveness, while the analysis of the main findings and lessons learned helped to make the platform more efficient in managing wildfires.

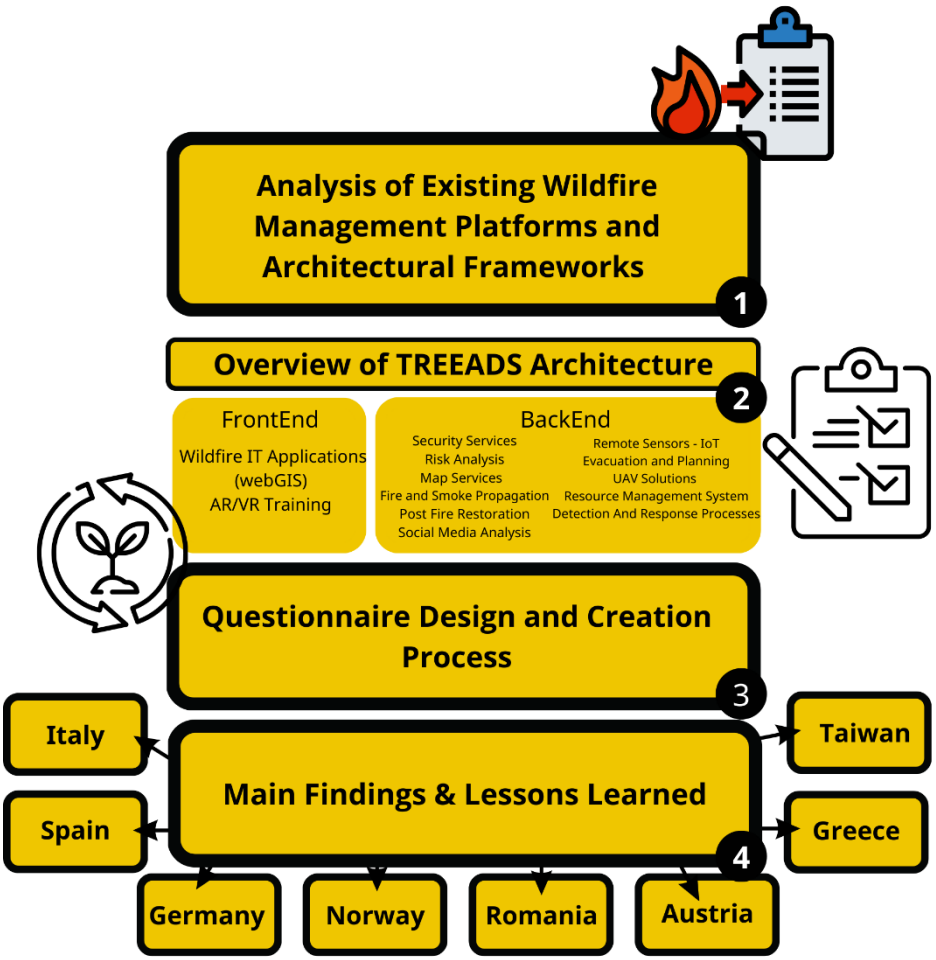

Figure 1. D3.8 Methodology Overview

ANALYSIS OF EXISTING WILDFIRE MANAGEMENT PLATFORMS AND ARCHITECTURAL FRAMEWORKS

Wildfire Management Platforms

Wildfire management has become a critical issue due to the increasing frequency and severity of wildfires. As a result, there is a growing need for effective wildfire management platforms and architectural frameworks. These platforms and frameworks are used to manage and respond to wildfire incidents, and they play a crucial role in reducing the impact of these incidents on communities and the environment.

Existing wildfire management platforms and architectural frameworks can be classified into two categories: hardware-based and software-based. Hardware-based platforms typically use sensors, drones, and other physical devices to gather data and provide real-time information about the location, spread, and severity of wildfires. Software-based platforms, on the other hand, use computer algorithms and data analytics to provide decision-making support for incident commanders and other stakeholders. There have been several wildfire management platforms that are widely used and can be seen in Table 1.

Platform	Developer	Description
EFFIS (European Forest Fire Information System) [1]	The European Commission	EFFIS provides a range of information and tools to support forest fire management, including real-time monitoring of forest fires, prediction of fire risk and danger, and assessment of the potential impact of fires on the environment and people. The system gathers data from a variety of sources, including satellite imagery, weather reports, reports from municipal authorities, and reports from fire services, and processes and analyses the data using cutting-edge algorithms and models. In order to control and prevent forest fires, national and regional authorities in Europe frequently use EFFIS. When making decisions, it offers helpful information on where to allocate resources for firefighting and prevention as well as where to evacuate people if required. The system also supports collaboration between different countries and organisations in Europe, facilitating the exchange of information and expertise in the field of forest fire management. Overall, EFFIS is an important tool for protecting Europe's forests from the devastating effects of forest fires, and for ensuring the safety of people and the environment in the face of this critical threat.

Firemap [2]	The National Science Foundation, in partnership with the Los Angeles Fire Department	Firemap is a powerful tool for real-time environmental data visualisation, fire behaviour modelling, and forecasting. It was originally developed as part of a research project funded by the National Science Foundation, in partnership with the Los Angeles Fire Department, and has been in use since 2015. Today, Firemap is an operational tool used to help mitigate the risks posed by wildfires. Firemap makes it easy to execute fire models, with options for running ensembles that take into account the uncertainty of the available information. This enables users to explore "what-if?" scenarios and to better understand the potential behaviour of a fire. The results are easily viewable, sharable, and repeatable, allowing users to analyse trends over time and to identify patterns in fire behaviour. One of the key benefits of Firemap is its ability to provide real-time data visualisation. This enables users to quickly assess the current state of a wildfire, and to make informed decisions about how to respond. The tool is also highly flexible, allowing users to customise the parameters used in the fire models to reflect the specific conditions of a given wildfire. In summary, Firemap is a highly sophisticated and valuable tool for managing the risks posed by wildfires. Its ability to provide real-time data visualisation, fire behaviour modelling, and forecasting make it an essential tool for firefighters, emergency responders, and others working to mitigate the effects of wildfires.

Sistema Nacional de Información Forestal (SNIF) [3]	Comisión Nacional Forestal	SNIF, which stands for the National Forest Information System, is a computer tool designed for the assembly and operation of the forest monitoring program's information system. Its goal is to capture, analyse, process, and disseminate information on forest ecosystems with transparency, quality, objectivity, and efficiency of the institutions involved. SNIF is supported by an alphanumeric database that collects information from various entities related to the forestry sector. This includes information related to forest product exploitation, mobilisation, confiscation, protective plantation establishment, and forest fires. This data is obtained from Regional Autonomous Corporations, Sustainable Development and Environmental Authorities, Environmental Authorities of large urban centers, ANLA, and the Ministry of Environment and Sustainable Development, in accordance with Decree 1655 of 2017. Keeping SNIF up-to-date allows the generation of figures such as the annual volume of granted timber and non-timber products, the annual volume mobilised and remobilised of timber and non-timber products and the annual area reforested and the type of plantation. Overall, SNIF is an essential tool for the management and monitoring of forest ecosystems providing reliable and up-to-date information to support decision-making processes for forestry sector stakeholders.

Burned Area Emergency Response (BAER) [4]	U.S. FOREST SERVICE	The Burned Area Emergency Response (BAER) program is an initiative of the Forest Service that aims to prevent further problems that may arise after a wildfire. While many wildfires do not cause significant damage to the land or pose threats to wildlife and people downstream, some fires create situations that require special efforts to mitigate potential risks. For example, loss of vegetation due to the fire can expose the soil to erosion, increase runoff and cause flooding, and put endangered species and community water supplies at risk. The BAER program addresses such situations on Forest Service lands by focusing on guarding the safety of Forest visitors and employees, protecting Federal property, maintaining water quality, and preserving critical natural or cultural resources from further damage after the fire is out. Information collected by the Forest Service BAER teams is shared with other Federal, State, and local emergency response agencies to provide assistance to communities and private landowners who may also be affected by potential post-fire damage. Overall, the BAER program plays a vital role in managing the impacts of wildfires and minimising potential risks to people and the environment. By focusing on proactive measures to prevent further damage, the program helps ensure the long-term health and sustainability of forests and other natural resources.
FireSense Technology [5]	NASA's Earth Science Technology Office	ESTO's Technology Development for support of Wildfire Science, Management, and Disaster Mitigation (FireSense Technology) program aims to develop innovative Earth system observation capabilities to predict and manage wildfires and their impacts. This program will work with interagency partners such as NOAA, the U.S. Forestry Service, the California Department of Forestry and Fire Protection, the National Interagency Fire Center, and others to improve wildfire management. Over the next 5-6 years, FireSense Technology will conduct airborne field campaigns to test new technologies for reducing the impact of wildfires, using a variety of instrument and information technologies and observing platforms. At the end of this period, FireSense Technology will launch a capstone mission to demonstrate the full value of its researched technologies.

SAFERS [6]	The Horizon 2020-funded project SAFERS	The SAFERS platform is an integrated and open system created by the Horizon 2020-funded project SAFERS. It is designed to support societies in becoming more resilient when dealing with forest fires. The platform features a Decision Support System (DSS) that uses data from various sources including earth observations from Copernicus and GEOSS, fire sensors in forests, topographic data, weather forecasts, and crowdsourced data from social media and other apps that can be used by citizens and first responders to provide situational in-field information. The platform is intended to provide a comprehensive and integrated approach to forest fire management, allowing decision-makers to quickly and effectively respond to forest fire emergencies.
FIRE INFORMATION EXCHANGE PLATFORM (FIEP) [7]	The European Commission DG Grow	The Fire Information Exchange Platform (FIEP) is an initiative by the European Commission DG Grow with support from the Estonian Council Presidency, created in 2017 to promote cooperation among Member States and stakeholders in the field of fire safety. Its main objectives are to facilitate the exchange of best practices, lessons learned, and knowledge in different areas of fire safety. Initially, the priority areas identified for FIEP activities and cooperation were common terminology and fire statistics, regulatory approaches for new products and high-rise buildings, exchange of experience from fire accidents, and fire safety engineering approaches in building regulations. The Technical Secretary of FIEP, Efectis, has organised webinars on topics such as battery fires, fire safety knowledge and awareness, and environmental sustainability. The FIEP welcomes the participation of regulatory and non-regulatory stakeholders, and encourages the sharing of success stories, ongoing fire studies, developments in national regulations, and questions related to fire safety.

Global Wildfire Information System (GWIS) [8]	The GEO and the Copernicus Work Programs	The Global Wildfire Information System (GWIS) is an initiative of the Group on Earth Observations (GEO) and the Copernicus Work Programs. It aims to bring together existing information sources at regional and national levels to provide a comprehensive view and evaluation of fire regimes and effects globally. Its main objective is to provide tools to support operational wildfire management at national to global scales. GWIS builds on the ongoing activities of the European Forest Fire Information System (EFFIS), the Global Terrestrial Observing System (GTOS), Global Observation of Forest Cover- Global Observation of Land Dynamics (GOFC-GOLD) Fire Implementation Team (GOFC Fire IT), and the associated regional networks. The development of GWIS is supported by partner organisations and space agencies, and it receives support from NASA through its GEO-GWIS activities in the ROSES program.

Sistema Nacional de Información Ambiental [9]	El Ministerio del Ambiente	SINIA stands for Sistema Nacional de Información Ambiental or National Environmental Information System. It is a network that integrates technology, institutions, and human resources to facilitate the systematisation, access, and distribution of environmental information. The purpose of SINIA is to serve as a tool to support the implementation of the National Environmental Management System in Peru, as indicated in the General Environmental Law. SINIA is managed by the Ministry of the Environment and provides free access to environmental information generated by public and private entities. The information is organised into four categories: 1. Statistical environmental information: composed of statistical series that cover the main environmental dynamics in the territory and over time. These are built from various sources, such as administrative records, surveys, monitoring stations, remote sensing, estimates, and models. 2. Documentary bibliographic environmental information: composed of bibliographic material, technical reports, scientific publications, studies, projects, newspapers, magazines, and other materials of environmental relevance. 3. Regulatory documentary environmental information: composed of regulatory devices and resolution acts related to environmental issues. 4. Geospatial environmental information: composed of data or data sets linked to a position on the ground, such as maps, images, photographs, files, descriptions, or any element of environmental relevance that is georeferenced. Digital geospatial information is represented in geospatial layers and data. Overall, SINIA is a valuable tool to support decision-making processes and environmental management in Peru.

Table 1 Wildfire Management Platforms

Currently, most platforms and frameworks focus on specific aspects of wildfire management, such as fire detection and mapping, but they lack the ability to provide a complete picture of the incident. Moreover, there is a need for greater collaboration and

sharing of data and information between different stakeholders, including firefighting agencies, land management agencies, and communities.

In conclusion, there are several varied wildfire management platforms and there is a need for a more integrated and comprehensive approach. The evaluation of current technologies and platforms provides valuable information that can be used to inform the design of a proposed solution that is capable of meeting the evolving needs of wildfire management. A well-designed and integrated solution should include advanced data analytics, real-time information, and collaboration capabilities to provide an effective response to wildfires.

Wildfire GIS platforms

In addition to the hardware-based and software-based platforms, there are also several wildfire GIS (Geographic Information System) platforms that have been developed for wildfire management. SIGPAC is a GIS platform developed by the Spanish government that provides information about land use and forestry. This information is useful for wildfire management, as it allows incident commanders to identify areas at high risk for wildfires, and to plan prevention and response strategies accordingly [10]. Arc-GIS is a community engagement platform that helps organisations of any type and size to organise people, data, and tools through information-driven initiatives [11]. Q-GIS is an open-source GIS platform that is widely used in wildfire management due to its flexibility and customisation capabilities. It provides tools for data visualisation, analysis, and cartography, and allows users to develop customised workflows and applications for wildfire management [12]. WFA (Wildfire Analyst) is a GIS platform that provides fire behaviour analysis and simulation capabilities. It allows incident commanders to model different scenarios and predict the behaviour of wildfires under different conditions. This information can be used to develop effective response strategies and to ensure the safety of firefighters and communities [13]. FlamMap is a fire behaviour modelling system that has been developed by the US Forest Service. It provides detailed information about fire behaviour, including flame length, rate of spread, and heat release. This information is useful for incident commanders in developing effective response strategies and ensuring firefighter safety [14]. NIBIO is a Norwegian research institute that has developed a GIS platform for wildfire management. The platform provides information about vegetation, topography, and other factors that can influence the spread of wildfires. It also allows for real-time monitoring and analysis of wildfire incidents and supports collaboration between different stakeholders involved in wildfire management [15].

Architectural Frameworks

Wildfire management architectural frameworks are a set of guidelines and principles that provide a structure for designing and implementing effective wildfire management systems. These frameworks help to define the roles and responsibilities of different stakeholders involved in wildfire management and provide a basis for coordinating and integrating their efforts.

The SILVANUS reference architecture and the FIRE-RES project are two other programs that follow a similar approach with TREEADS [16] [17]. The SILVANUS architecture focuses on the use of different technologies to prevent, detect, and respond to forest fires. Like TREEADS, SILVANUS is designed to be modular, allowing different modules to be

integrated to provide a comprehensive response. The SILVANUS architecture includes eight different use cases that demonstrate the capabilities of the system, including an AR/VR training toolkit for trainers, fire danger risk assessment, fire detection based on social sensing, fire detection from IoT devices, fire detection from UAV/UGV, fire spread forecast, biodiversity profile mobile application, and a citizen's engagement program and mobile app.

One aspect of the SILVANUS architecture that validates the TREEADS approach is the focus on fire detection from multiple sources, including IoT devices, UAV/UGV, and social sensing. This is similar to the TREEADS approach, which also integrates different types of sensors and data sources to provide a comprehensive response to forest fires. The SILVANUS architecture also includes a fire spread forecast module, which is similar to the TREEADS architecture's prediction and modelling module. By providing accurate fire spread forecasts, both architectures can help prevent and mitigate the effects of forest fires.

Similarly, the FIRE-RES project also validates the TREEADS approach by focusing on a holistic fire management approach that considers multiple factors, including policy and governance, technology, social and health/safety, administrative, ecological, and economic factors. By taking a comprehensive approach, FIRE-RES aims to promote the implementation of a more resilient landscape and communities to extreme weather events. The TREEADS architecture also takes a similar approach, focusing on prevention and preparedness, detection and response, and restoration and adaptation.

Furthermore, the FIRE-RES project also includes a focus on raising societal awareness and engagement on wildfire risk prevention, preparedness, and response. This is similar to the TREEADS architecture, which includes a front-end component that provides web interfaces for users to interact with the system, including a citizen's engagement program and mobile app. By engaging citizens, both architectures aim to increase awareness of the importance of forest fire management and improve the effectiveness of response efforts.

In conclusion, the TREEADS architecture, the SILVANUS reference architecture, and the FIRE-RES project all share a similar goal of managing forest fires through a comprehensive and holistic approach. The validation of different aspects of the TREEADS architecture in the SILVANUS architecture and the FIRE-RES project demonstrates the effectiveness of the TREEADS approach and highlights the importance of a modular, integrated, and comprehensive response to forest

OVERVIEW OF TREEADS ARCHITECTURE

The TREEADS architecture is a comprehensive system designed to manage forest fires across all three phases of action, including prevention and preparedness, detection and response, and restoration and adaptation. The architecture is composed of different modules, each with its own set of artifacts and functionalities, which work together to provide a specific response to the system. The design of the architecture is based on both hardware and software components, and it includes differentiating elements such as passive protection and response processes.

To facilitate the exchange of information and services, the system is organised into components, which act as independent containers providing microservices. These components have been represented as a container where they solve an application need, and they can exchange data with other components and higher structures, such as modules, allowing for a block design of the system that confers scalability.

The architecture is based on a main access endpoint called the TREEADS OpenAPI, which manages the different endpoints of specific services, orchestrating modules, organising information, access, and execution. Through a set of web services, the system provides access to tools and information, as well as the orchestration of services to provide a holistic response.

The system architecture is distributed into four main blocks, each with its own set of functionalities and applications. The FrontEnd block contains the web interfaces to interact with the TREEADS system, including web applications for the visualisation of resources, a webGIS for spatial information, a Manager Dashboard for configuration control and data exchange, and a 3D viewer for virtual training of scenarios. The BackEnd block describes the web services required to support the TREEADS data and tools, which form the logic of the TREEADS ecosystem accessible through microservices and/or command line interface (CLI) to communicate between modules. The Data Storage block combines the storage of data in the cloud and the storage of databases for information exploitation and queries. Finally, the Hardware Support block represents mainly external data sources from cameras located in satellites, zeppelins, and drones, as well as mobile communication and IoT sensor network devices, intelligent sensing, and edge learning developments.

Overall, the TREEADS architecture is a comprehensive and scalable system designed to manage forest fires across all three phases of action. The modular design of the system allows for flexibility and scalability, and the integration of hardware and software components, as well as differentiating elements such as passive protection and response processes, ensures a comprehensive and effective response to forest fires.

The front-end of an application or website is the part that users see and interact with directly. It's the graphical user interface (GUI) that allows users to input data, navigate the application, and view the output. In this essay, we'll be discussing the front-end of the TREEADS platform, which includes four web interfaces: WildFire App (webGIS), Manager Dashboard, VR/AR Client App, and Sensor Dashboard and can be seen in Figure 2.

The WildFire App (webGIS) is the primary interface for end-users to access the TREEADS platform. It's a web-based map viewer that allows users to manage spatial information,

including maps, risk indices, and routes. The app serves as a dashboard for connecting with the main tools involved in the three phases of intervention during wildland fires, which are prevention and preparation, detection and response, and restoration and adaptation. The WildFire App's main modules include a user profile, a map module for viewing and managing spatial data, and tools such as the Risk Analysis Tool, Forest Fire Spread Simulation, Atmospheric Pollutants Dispersion Simulation, and Evacuation and Planning Tools.

The Manager Dashboard is a web interface designed for system administrators to manage the TREEADS platform. It includes modules such as User Manager for managing users, roles, and sessions; Viewer Data Model for data management; Webhooks for integrating with external systems; Logs for monitoring system activity; Config for managing system configurations; and Managing Layers and Load Data for managing layers and loading data into the system.

The VR/AR Client App is a virtual reality and augmented reality training and modelling system. It allows users to build experience using pre-built VR training resources, as well as create interactive training content for training purposes. The app includes modules such as Simulations, which includes at least two virtual locations that look photorealistic and include topological map data, actual flora and fauna, and the ability to simulate environmental parameters; Lessons, which include short training materials for handling specific tools such as chainsaws, fire extinguishers, fire truck functions, drone piloting, mapping procedures, and cutting procedures; Scenario Builder, which allows trainers to assemble custom simulations based on existing environments; and Reporting, which allows users to view their progress and statistics.

Finally, the Sensor Dashboard is a web interface that provides access to time-series data collected by IoT sensors in the field. This interface visually presents data through different graphical dashboards and stores them in a database.

To develop these web interfaces, the project team will evaluate the most popular frameworks for web development in JavaScript, such as Angular, React, and Vue. They will also evaluate the most popular web map libraries, including OpenLayers, Leaflet, Mapbox, Google Maps, and Cesium, to identify which one suits the needs of the TREEADS project best.

In conclusion, the front-end of the TREEADS project will consist of several web interfaces that provide different functions and roles for users. The interfaces include the WildFire App (webGIS), Manager Dashboard, VR/AR Client App, and Sensor Dashboard. The project team will evaluate popular frameworks and libraries to develop these interfaces and ensure they provide the best possible user experience.

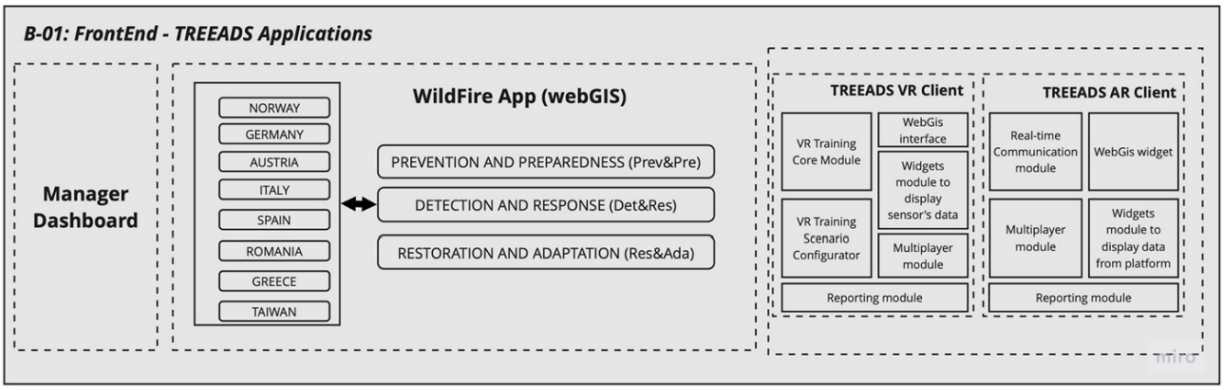

Figure 2: The front-end of the TREEADS platform containing various web interfaces.

TREEADS is a complex software ecosystem designed to provide an effective response to wildfires. This system comprises different modules that work together to fulfill its objectives. The back-end of TREEADS is the part of the system that manages the components and services running on servers, including authentication and security, resource management, and the Risk Analysis Tool and is depicted in Figure 3.

The TREEADS back-end has been designed as a modular architecture that ensures independence and computational scalability for each section. The use of containers allows for the exchange of information between different tools and processes available in the platform. The components are designed as business pieces of logic and interact through data input and output microservices.

The authentication and security services are a crucial component of TREEADS, ensuring that the system's functionalities are adapted to the stakeholders' different roles. The back-end uses a backend-as-a-service (BaaS) architecture to provide generic features of a comprehensive back-end model that provides modular solutions for common infrastructure functions such as user authentication, database integration, notification services, or scalability, among others. BaaS allows for an agile way to build OpenAPI TREEADS features, enabling communications and data validation to be secured through access verification middleware in all components of the system.

The risk analysis tool module is a set of tools and risk indicators that monitor fuel, atmosphere, and ground in real-time. The module combines data from different sources such as the Copernicus Land Monitoring Service, multispectral and LiDAR sensors, and historical wildfire data to improve the decision-making process. The module uses deep learning models that forecast fire hazards using satellite, meteorological, and biomass data as input.

The Fire Hazard Forecasting component uses satellite data and machine learning models to provide next-day fire hazard predictions at a local level. It uses a "traffic light" approach based on key values of surface temperature and soil moisture values, as well as socio-economic aspects of the municipalities, such as human activities and festivities, that increase the risk of fire. The output of this component also includes uncertainty estimates for better decision making.

The Fire Prevention System uses different risk indicators to delimit urban-forest zones/interfaces and monitor their condition, and to generate risk and priority maps for

cleaning and maintenance purposes in these areas. The aim of this tool is to identify critical areas and help generate risk maps for cleaning and maintenance purposes.

Map Services allow for the on-map visualisation and on-the-fly operations of Earth Observation datasets. TREEADS uses an OpenDataCube (ODC) to connect N satellite image data cubes and facilitate processing. The ODC will store layers, base information, forest mapping of pilot areas, topographic data, and historical data, among others. The central spatial database, that will feed the data cube, will be a PostGIS type geospatial database, which will contain the spatial data model and all the necessary information for raster image cubes and vector layers management, including base information, administrative boundaries, protected areas, hydrants, service stations, etc. The map publication standards of the TREEADS services will follow OGC standards, where mainly WMS, WMS Time and GeoJSON will be employed for vector data.

The Fire and Smoke Propagation Tool is a toolbox that simulates some of the most important physical processes in the framework of forest fires. It includes a fire spread model, a smoke dispersion model, and a high-definition wind field model. These tools can work independently or coupled and be used to support the complex decision-making process, depending on the size of the simulation area and the level of precision. The output of the Fire and Smoke Propagation Tool can be used for generating fire and smoke propagation maps, which are vital for fire management activities and actions from the authorities.

Air Pollution Modelling for Source Apportionment uses receptor models to reconstruct the contribution of emissions from different sources of atmospheric pollutants based on ambient measurement data. Positive Matrix Factorisation (PMF) is one of the most successfully applied receptor models. It introduces a weighting scheme that takes into account errors of the data points, which are used as point-by-point weights. PMF can analyse a wide range of environmental sample data, and it provides robust uncertainty estimates and diagnostics.

Air Quality and Health Impacts Estimation using Chemical Transport Models (WRF-CHEM) is the Weather Research and Forecasting (WRF) model coupled with Chemistry. The model simulates the emission, transport, mixing, and chemical transformation of trace gases and aerosols simultaneously with the meteorology. The WRF/Chem model has the advantage of being totally integrated into the whole WRF system, which eliminates the meteorological/air quality interface in terms of CPU and computational time.

The Analysis of Fire Behaviour and Spread for the Development of Safety Measures, Machine Learning for Fire Risk Analysis and Fire Spread tool is a combination of experimental and numerical investigation to understand the fire behaviour, especially for fires moving on the ground. Experiments of specimens of forest and grassland ground specimens with a variation of parameters is the basis for detailed modelling of the mechanisms of fire. The underlying physical phenomena in a combustion process are complex and three-dimensional, requiring the use of a Computational Fluid Dynamics (CFD) Code to predict fluid flow field variables. The Fire Dynamics Simulator (FDS) is a field model based on the finite difference method, and it includes sub models for involving combustion, heat radiation, and flow turbulence. Machine learning is also used for fire risk analysis and fire spread prediction.

The iCrowd platform is an agent-based crowd simulator capable of simulating crowds of different scales in bounded areas, such as buildings, stadiums, open-air festivals, and public areas. It utilises behaviour trees, a modelling technique widely used in artificial intelligence and game development domains, and offers fully customisable experiments. The platform is based on an extensible architecture designed for high-performance and stability and can be used in several domains of knowledge, including social behaviour simulation and modelling, non-player character AI for game-oriented applications, and crowd behaviour simulation during in/out door evacuation.

The UAV deployable air command and control system manages the airship command and control system (CCS) that serves as the main interface for users to access the functionalities deployed in the high-altitude platforms station (HAPS) via mobile command center (MCC). It enables users to monitor the airship, request multispectral images, and process images. The CCS API uses telemetry to collect system information, such as operational status, location, orientation, battery level, and service history. The CCS specifies, designs, integrates, and tests all on-board and ground communication hardware, software, and protocol components for a consistent and versatile airship connectivity and communication infrastructure based on 4G/5G and satellite communication technologies.

The resource management system (RMS) enables end-users to coordinate resources and efficiently manage the available material and human resources in an area for optimal situational awareness during a fire. The RMS acts transversally during the three main phases of a fire and requires the results and information from different modules of the system. The data foundation of the RMS may be provided by the ISO 10303 repository, and managing and browsing RMS data is possible through the web-client of the repository or through its REST API.

The restoration tools module comprises the tools to create pre-fire condition models for accurate post-fire restoration and key indicators in the evaluation of burned areas and soil restoration. The restoration decision support system (DSS) for adaptive post-fire management is a central component of the ecosystem. The DSS takes post-fire mapping, satellite and drone imagery, cartographic databases, on-site environmental measurements, social factors, and management objectives as input to estimate fire severity and environmental vulnerability of the burned area. The DSS generates early post-fire management maps with recommended interventions depending on the main objectives of managers and landowners and defines a methodology for sampling and monitoring wildlife in burned areas.

The “agroforestry for restoration” component develops a wildfire model that utilises UAVs to provide evaluating indicators for soil. This component seeks to restore degraded land, promote environmental sustainability, and provide socioeconomic benefits to local communities.

The back-end components of modern software systems play a critical role in ensuring their success. The use of modular architecture provides independence and scalability, allowing for flexibility and adaptability to changing needs. The implementation of security measures such as BaaS is essential to ensure the protection of sensitive data and system functionalities. Furthermore, modules such as risk analysis tools help to forecast potential risks and provide decision-making support. Overall, a well-designed back-end is crucial to the success of a system, and with the integration of the latest technologies and best

practices, modern systems can effectively address complex problems and provide effective solutions.

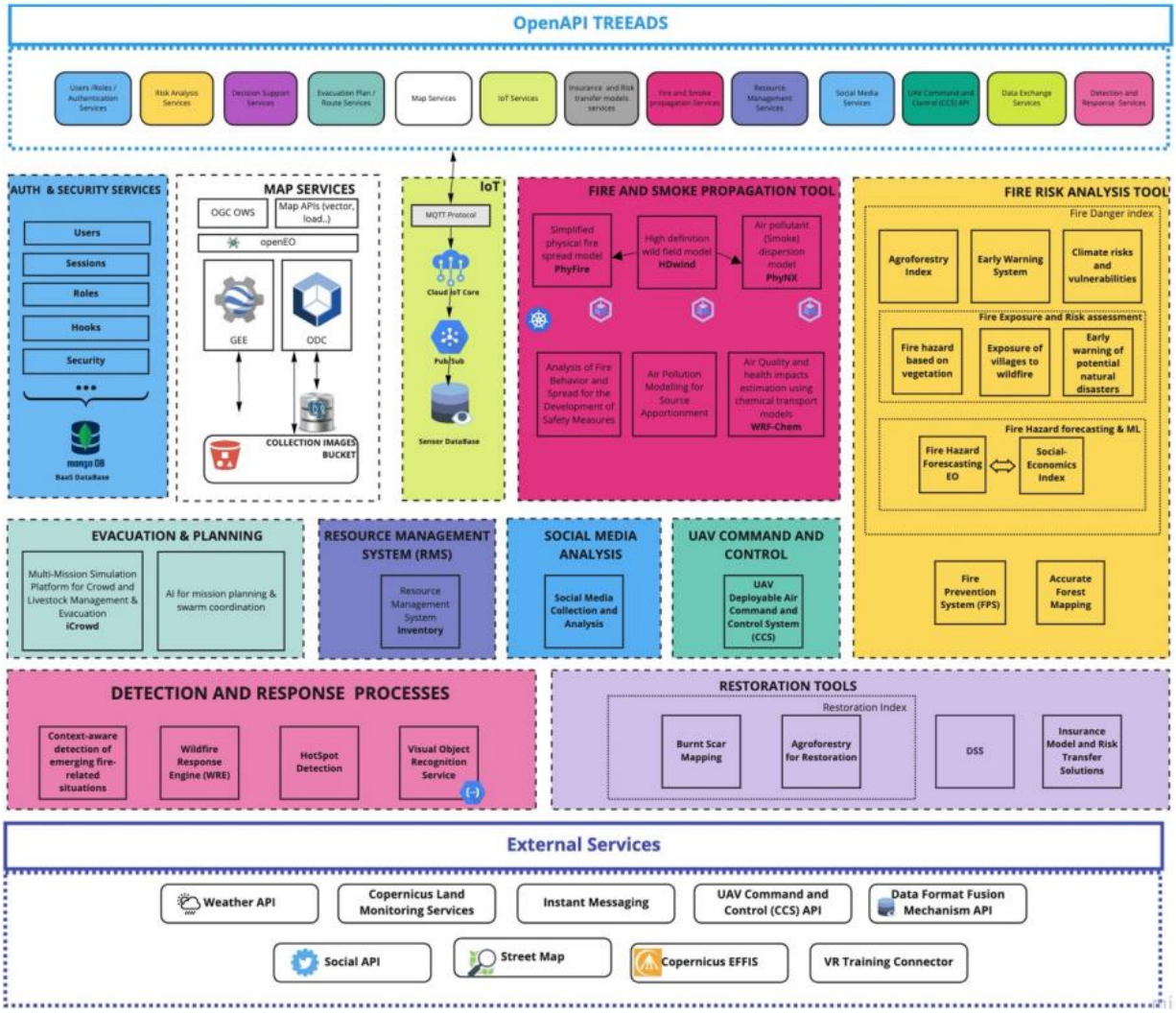

Figure 3: The back-end of the TREEADS platform containing various web services.

SURVEY FOR BUILDING AND VALIDATING TREEADS PLATFORM

A questionnaire was created to gather feedback from potential users of the TREEADS platform. The survey was available in seven languages and utilised Microsoft Forms. The questions were a mix of open-ended and multiple choice, covering various aspects of the platform's features and functionality. The main findings showed that potential users were interested in a range of tools and features, including wildfire GIS, simulation tools, and UAVs. Additionally, many respondents highlighted the importance of access control and authentication, as well as the need for real-time monitoring and communication during fire events.

QUESTIONNAIRE DESIGN AND CREATION PROCESS

The design and creation of a questionnaire involve several steps that must be followed to ensure the questionnaire is reliable and effective in gathering the required information. In the case of the TREEADS platform, the questionnaire was designed to gather feedback on the user experience, ease of use, and effectiveness of the platform in managing wildfires.

The first step in designing a questionnaire is to determine the purpose of the questionnaire and the information required. In this case, the purpose was to gather feedback from users on the TREEADS platform, and the information required included user experience, ease of use, and effectiveness. The next step is to determine the format and structure of the questionnaire. The questionnaire can be in different formats such as multiple-choice, open-ended, Likert scale, or a combination of formats. The structure of the questionnaire should be clear and easy to follow, with questions grouped according to the topic being covered.

After determining the format and structure of the questionnaire, the next step is to develop the questions. The questions should be clear and easy to understand, with no ambiguity. It is important to avoid leading questions that can influence the response of the user. Once the questions have been developed, the next step is to test the questionnaire to ensure that it is effective in gathering the required information. This involves conducting a pilot study with a small group of users to test the questionnaire and identify any areas that need to be improved.

After testing the questionnaire, it is necessary to translate it into the languages of the pilot countries, as was done in the case of the TREEADS platform. This step ensures that the questionnaire can be used by users in different countries and that the results obtained are valid and reliable.

In conclusion, the design and creation of a questionnaire require careful planning, testing, and validation to ensure that it is effective in gathering the required information. The process should be guided by the purpose of the questionnaire, and the questions should be clear, easy to understand, and free from bias. The questionnaire should also be tested to ensure its effectiveness and translated into the appropriate languages for use in different countries.

QUESTIONNAIRE

The questionnaire was distributed through an online survey tool, Microsoft Forms as seen in Figure 4 and 5, and was available in multiple languages, including English, German, Spanish, Greek, Romanian, Norwegian, and Italian. The survey questions were presented in various formats, such as multiple choice, open-ended, and select-all-that-apply. They cover a wide range of topics related to wildfire prevention and management, and the format in which they were presented varied based on the type of information being gathered.

The multiple-choice questions asked respondents to select one or more options from a list of choices. These questions were used to gather information on the specific tools, features, and functionalities that respondents would require or prefer to have in a wildfire-related IT application. Examples of multiple-choice questions include:

"Do you require the wildfire-related IT apps for any of the following?"

"How would you like to access the application?"

"Which of the following user roles would you like to be included in this tool?"

The open-ended questions allowed respondents to provide more detailed and personalised answers and were used to gather information on respondents' specific needs, preferences, and concerns. Examples of open-ended questions include:

"If yes, state which [wildfire GIS] one?"

"What recommendations do you have for the TREEADS platform?"

" What is your greatest concern about the TREEADS platform? "

To further enhance the information provided about the survey questions and format, it can be noted that the questions were designed to gather feedback and opinions from users on various aspects of the TREEADS platform, which is an IT solution aimed at preventing and managing forest fires. The survey questions were presented in different formats, including multiple choice, open-ended, and select-all-that-apply.

The questions covered a wide range of topics related to the use of the platform, including the use of wildfire-related IT apps, access to AR/VR training, the need for specific tools to assemble a useful simulation, and the preferred access control system type. Users were also asked about their preferences for notification services, user roles, and authentication methods.

In addition, the survey included questions about the time periods users considered adequate for various activities related to forest management, such as creating a map of activities in protected areas, detecting new constructions, and monitoring drought areas. The survey also asked users about their preferences for the types of information provided by tools such as the Accurate Forest Mapping tool and the Fire Prevention System tool.

Other survey questions focused on the use of UAVs, including the type of UAV available and the actions users would like to perform with the UAV Command and Control System tool. Users were also asked about their preferences for the wildfire response engine and the identification of emerging fire-related situations.

Overall, the survey questions were designed to gather valuable insights and feedback from users about their preferences, needs, and concerns related to forest management and wildfire prevention. The various formats used in presenting the questions ensured that users were able to provide detailed and nuanced responses, providing the TREEADS team with a wealth of information to improve the platform's functionality and user experience.

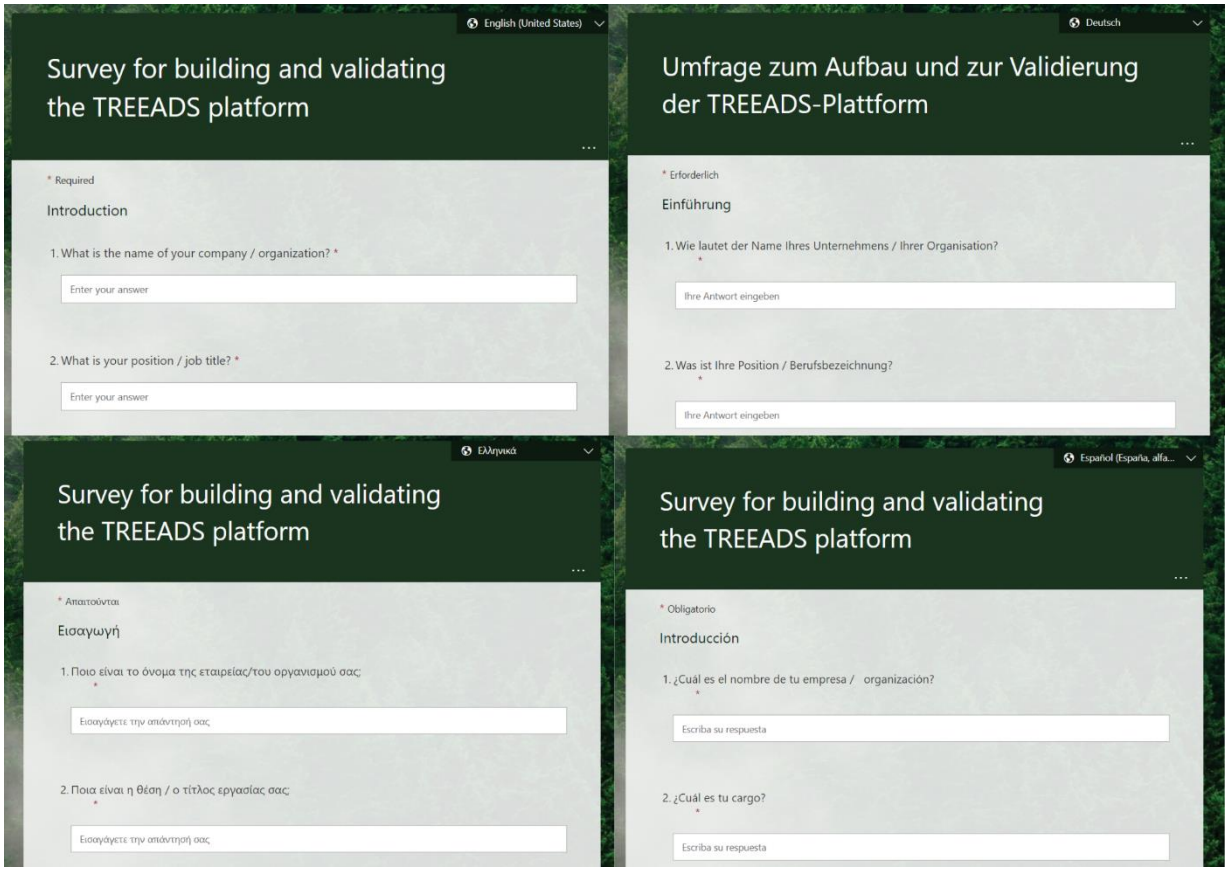

Figure 4: The user interface of the questionnaire in various languages (English, Greek, German, Spanish)

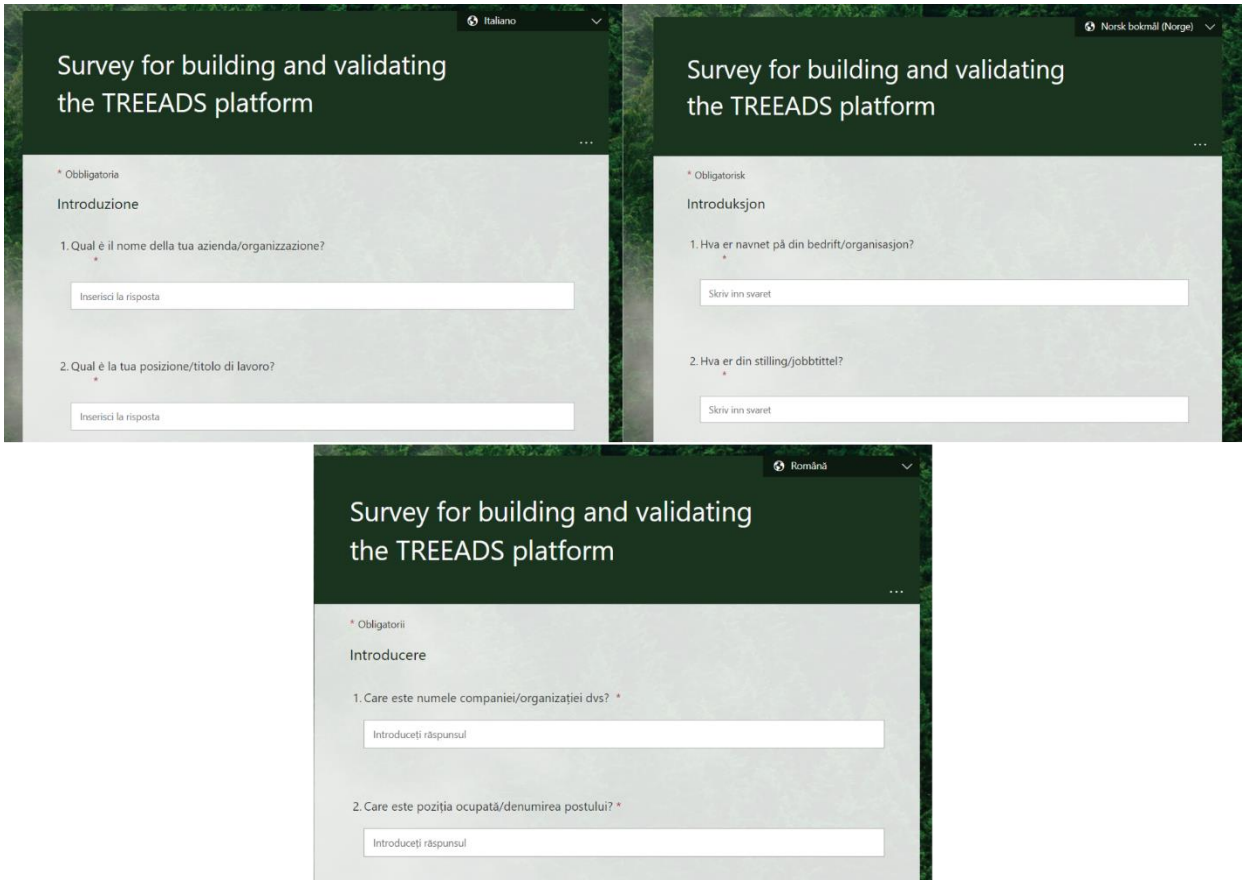

Figure 5: The user interface of the questionnaire in various languages (Italian, Norwegian, Romanian)

MAIN FINDINGS

The findings represent the responses from a survey conducted to gather insights on the preferences and expectations of stakeholders towards the development of a wildfire response system. The survey covers various aspects of the system, from the categories of recommended interventions to be visualised in post-fire maps, to the type of messages stakeholders prefer to receive during an emerging fire situation. The survey had responses from 48 stakeholders, from different nationalities. Out of the 48 participants, 15 were Romanians, making them the largest group, followed by 12 Greeks and 11 Spanish stakeholders. There were also 4 Germans, 2 Austrians, and 1 Norwegian who took part in the survey. There were no answers provided by the Italian Stakeholders. Figure 6 depicts a detailed breakdown of the distribution of the stakeholders based on their country.

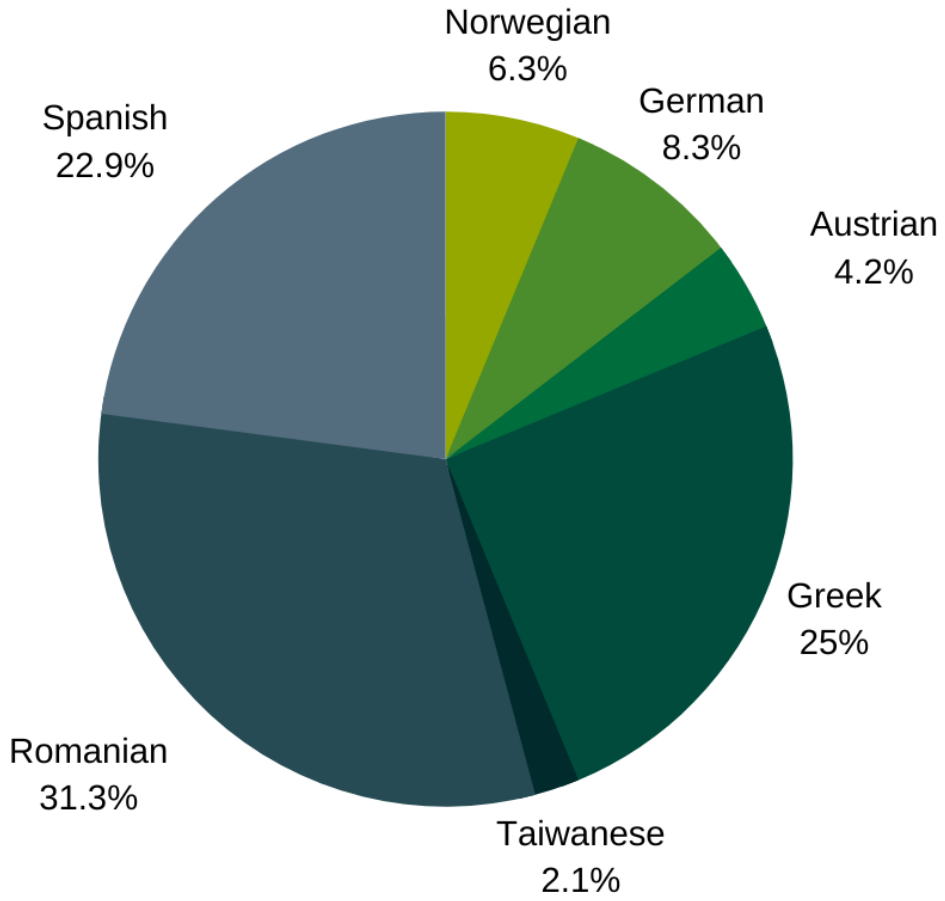

Figure 6 Respondents distribution by country

The survey reveals that the majority of respondents believe in the importance of monitoring social media posts to detect a fire event or indication of a fire, with a high level of interest in identifying users and user communities that play an essential role in the case of a fire event. Additionally, the survey shows that respondents have clear preferences in terms of the features they would like to see in the wildfire response system, such as the hotspot detection tool, visual object recognition tool, and real-time messaging system. Overall, the survey findings provide valuable insights into the stakeholder's preferences and expectations, which can inform the development of a more effective wildfire response system.

Wildfire IT application (webGIS)

The findings indicate that a majority of respondents, 36.9%, require wildfire-related IT apps for Prevention & Preparedness, Detection & Response, and Restoration & Adaptation. The second most popular choice is Prevention & Preparedness and Detection & Response, with 30.4% of respondents requiring apps for these purposes. Additionally, 10.9% of respondents require IT apps for Prevention & Preparedness only, while the same percentage require them for Detection & Response only. Only a small percentage, 2.2%, require apps for Prevention & Preparedness and Restoration & Adaptation. These findings suggest that there is a demand for IT apps that can aid in wildfire prevention, detection, response, and restoration. As illustrated in Figure 7, the aforementioned can be seen.

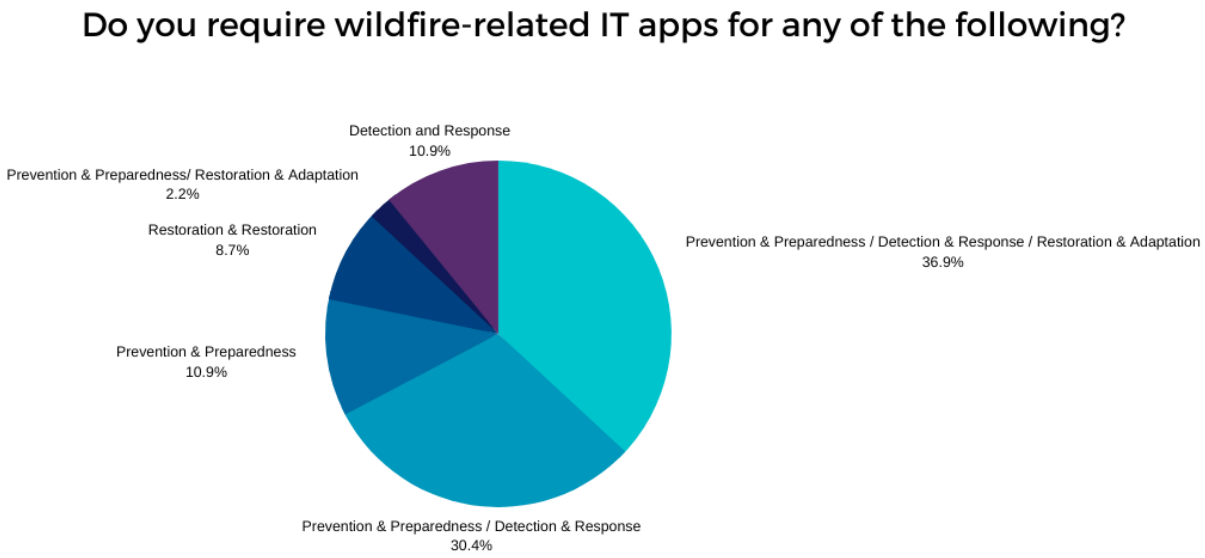

Figure 7: The stages for which the respondents require wildfire-related apps.

The findings suggest that a majority of respondents, 80.4%, have utilised a wildfire GIS in the past. This indicates a significant level of interest in using GIS technology to aid in wildfire management. Respondents who answered yes have utilised a variety of GIS systems, including GIS System Lower Austria, SIGPAC, Engage, Arg-GIS, Q-GIS, WFA, Flammap, NIBIO, and Landes GIS System NÖ LDREG, Steiermark, Graz. These results indicate that there are multiple GIS systems available for wildfire management and that different regions may have their preferred GIS systems. The findings highlight the importance of utilising GIS technology in wildfire management and the need for continued development and improvement of GIS systems to aid in better wildfire management. The previously mentioned are depicted in Figure 8.

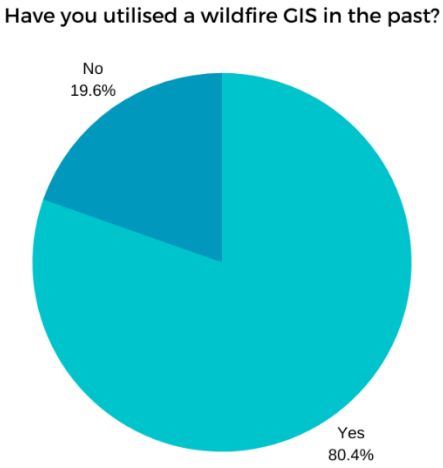

Figure 8: The percentage of the respondents that have utilised a wildfire GIS in the past.

The findings regarding how respondents prefer to access the wildfire application are intriguing, as they reveal a diverse range of preferences. Mobile applications are the most popular choice, indicating a desire for convenience and accessibility on-the-go. However, it is noteworthy that a considerable proportion of respondents also prefer accessing the application through a web browser or a desktop application, suggesting that some users may prefer a more comprehensive and robust interface. The fact that a significant percentage of respondents prefer a combination of different access points indicates that users are looking for flexibility and ease of use.

These findings emphasise the importance of making the wildfire application accessible through multiple channels, including mobile applications, web browsers, and desktop applications, to cater to different user preferences. Additionally, developers should consider optimising the user interface and experience for each access point to ensure that users can interact with the application seamlessly. A mobile application, for example, would benefit from having a simple, intuitive interface, while a desktop application could provide users with advanced features and greater functionality. By taking into account these preferences, developers can ensure that the wildfire application is as user-friendly and accessible as possible, helping to enhance its usefulness and effectiveness. Figure 9 displays the aforementioned trend.

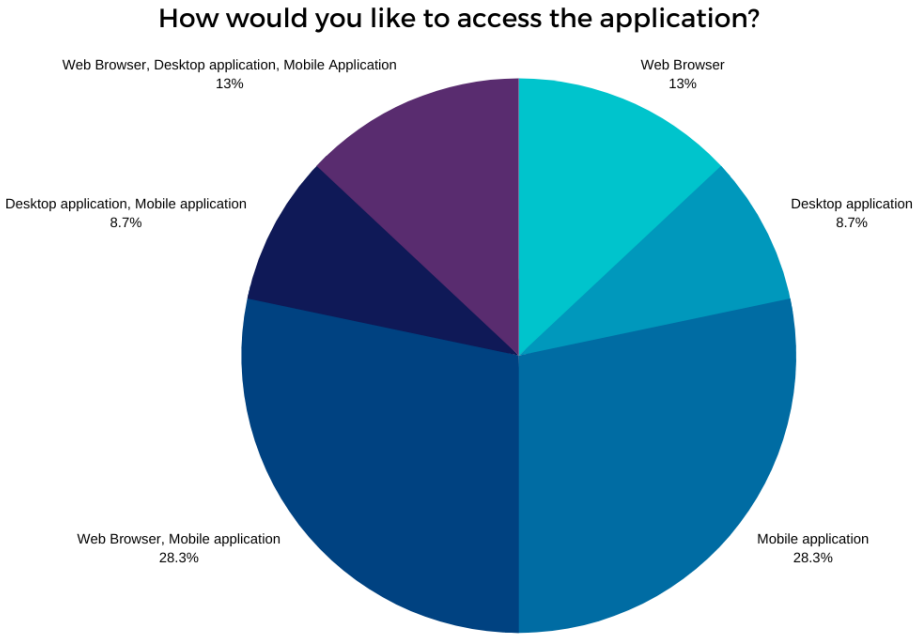

Figure 9: The way in which the respondents would like to access the application.

AR/VR Training

The findings suggest that a minority of respondents, 24%, have had access to AR/VR training before, indicating that there is room for growth in the adoption of these technologies in wildfire management. When asked whether they have the resources or expertise to access simulations without TREEADS support, only 26.1% of respondents answered yes, while 73.9% answered no, highlighting the need for accessible and user-friendly training materials. Figures 10 and 11 show the previously stated.

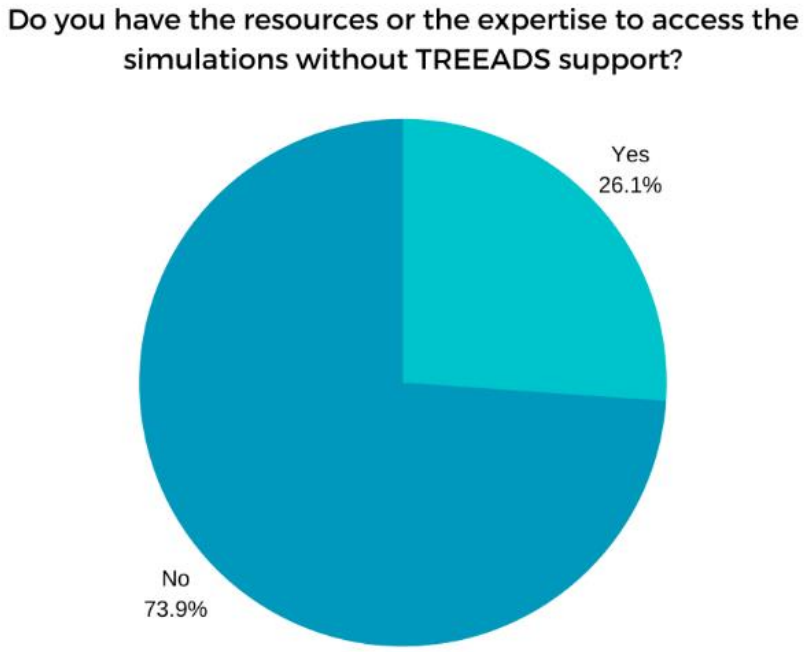

Figure 10: The percentage of the respondents that have the expertise to access the simulations without TREEADS support.

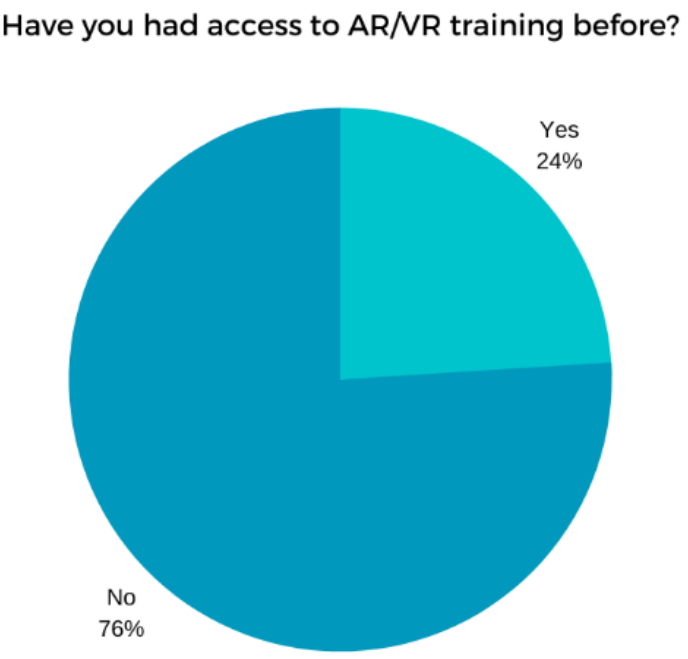

Figure 11: The percentage of the respondents that have had access to AR/VR training before.

The majority of respondents, 29%, would like to view lessons or training materials with an AR/VR tool, followed closely by 27% who would like to run simulations. Meanwhile, 21% of respondents would like to build custom scenarios, while another 21% would like to view reports with progress and statistics. Only a small percentage of respondents did not answer the question. These findings suggest that there is a demand for a wide range of AR/VR functionalities, from viewing training materials to running simulations and analysing progress. As seen in Figure 12, the above-mentioned are depicted.

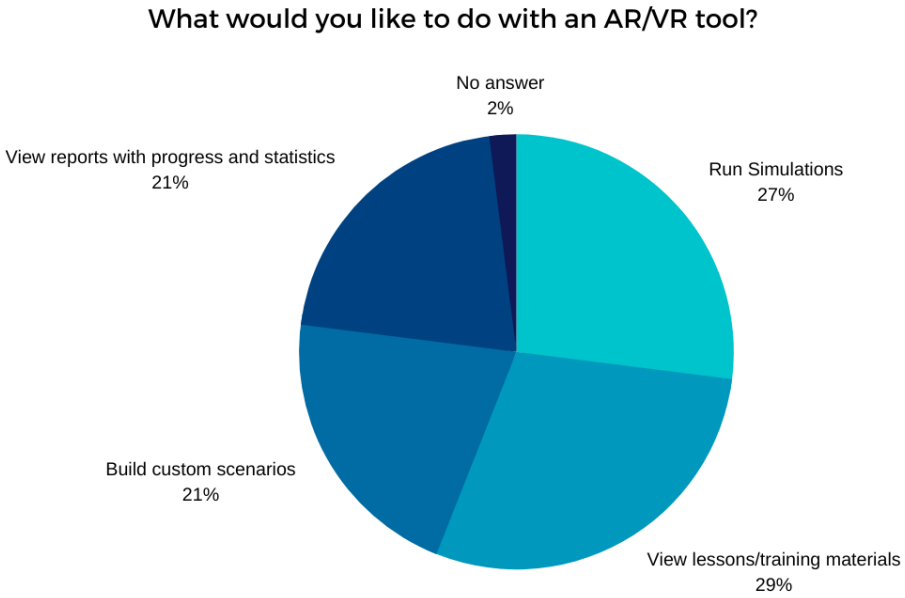

Figure 12: The actions that the respondents would like to perform with an AR/VR tool.

Regarding the scenario builder tool, over half of the respondents, 51%, indicated that they would need elements hazard to assemble a useful simulation, followed by 32% who would need pieces of equipment. Meanwhile, 13% would require avatars, and 4% did not answer the question. These results demonstrate that different users may require different tools to assemble a useful simulation, and developers should consider including a range of options to cater to these needs. The mentioned items are illustrated in Figure 13.

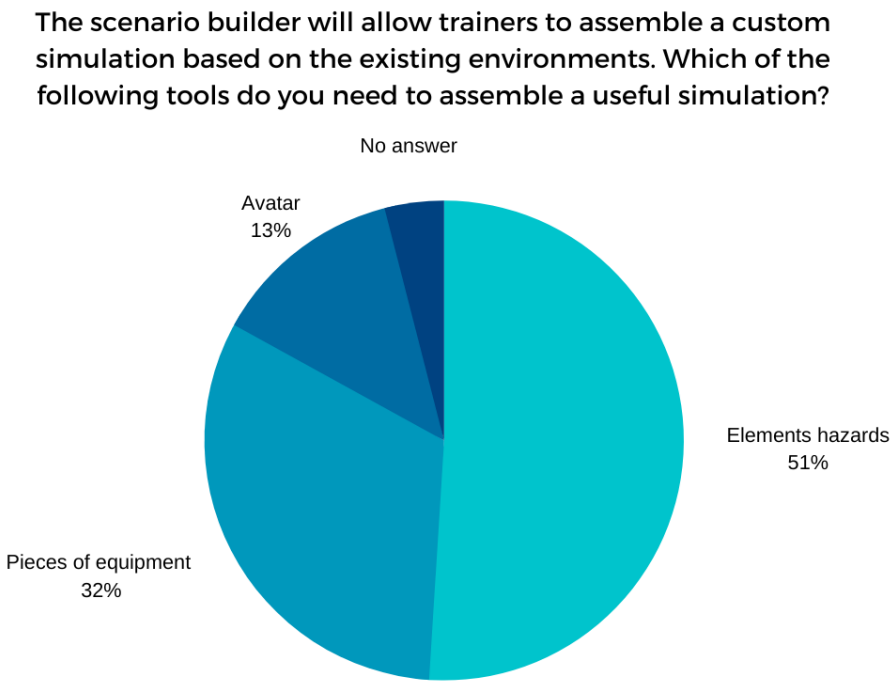

Figure 13: The tools that the respondents need to assemble a useful simulation.

When asked which training materials they would utilise, the highest number of respondents, 35, selected mapping procedures. Tool handling and drone piloting were also popular choices, with 31 and 32 respondents selecting them, respectively. In contrast, fire truck functions and cutting procedures received fewer responses, with only 16 and 18 respondents selecting them, respectively. A small percentage of respondents did not answer the question. These findings suggest that developers should prioritise the creation of training materials related to mapping procedures, tool handling, and drone piloting, as these are areas of high interest to users. Figure 14 represents the previously mentioned.

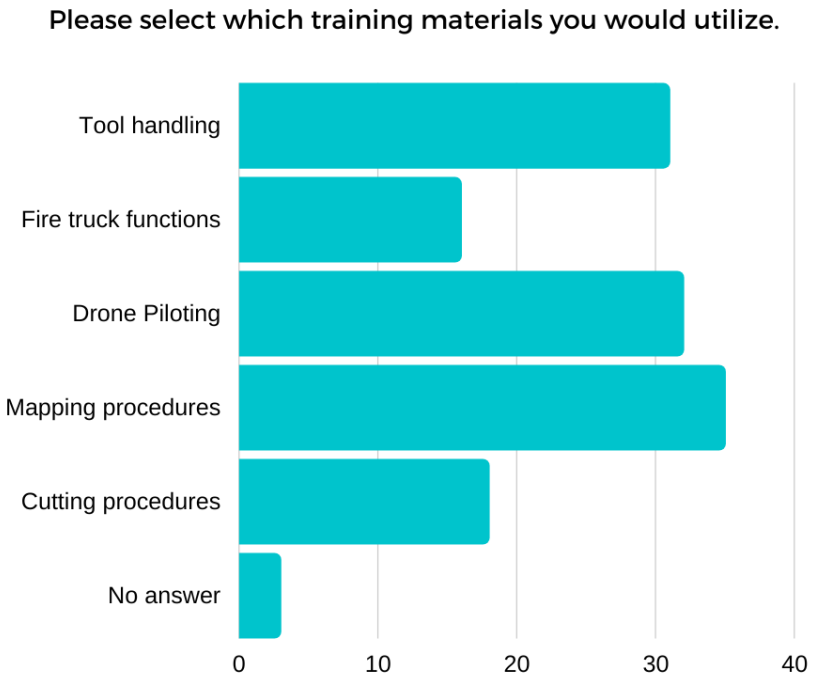

Figure 14: The training materials that the respondents would utilise.

Security Services

The findings indicate that the majority of respondents, 38, find user authentication to be a necessary feature in a wildfire-related IT application. This suggests that users are concerned with the security of their data and want to ensure that only authorised individuals can access the system. Similarly, 28 respondents indicated that they find security features to protect data necessary, indicating that data protection is a top priority for users. Meanwhile, 26 respondents selected access control as a necessary feature, indicating that users want to have control over who can access specific features or data within the application. User, session, and role management were also identified as necessary features by 21 respondents, indicating that users want to have the ability to manage user roles and sessions. Only 12 respondents selected server configuration as a necessary feature, indicating that users are less concerned with the technical details of server configuration and are more focused on the features that directly impact their user experience. Finally, only one respondent did not answer the question, suggesting that the majority of users have clear preferences when it comes to the features they require in a wildfire-related IT application. The aforementioned trend is shown in Figure 15.

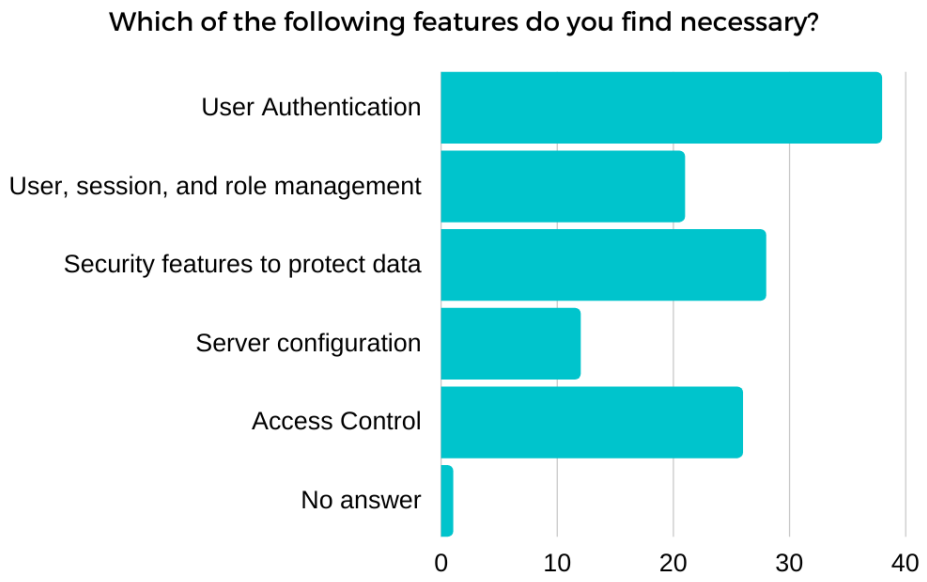

Figure 15: The features that the respondents find necessary.

The findings suggest that the majority of respondents, 52%, prefer Role-Based Access Control (RBAC) as the access control system type in a wildfire-related IT application. This system allows access to be granted based on an individual's role in the organisation, which can help ensure that users only have access to the data and features that are necessary for their job.

Meanwhile, 29% of respondents indicated a preference for Mandatory Access Control (MAC), which is a more rigid access control system that restricts access based on predefined security levels. Only 13% of respondents selected Discretionary Access Control (DAC), which allows users to set their own access controls. Finally, 6% of respondents did not answer the question.

These findings suggest that developers should prioritise the implementation of Role-Based Access Control in wildfire-related IT applications, as it is the preferred access control system type among respondents. By implementing this system, developers can help ensure that users have access to the data and features they need to perform their job while maintaining the security of the system. Figure 16 displays the items mentioned earlier.

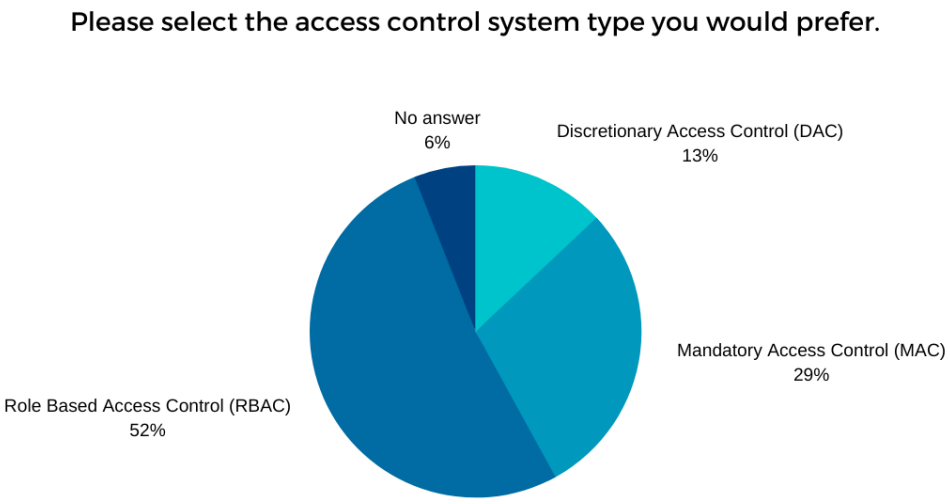

Figure 16: The access control system that the respondents prefer.

The findings suggest that a majority of respondents, 47%, prefer email as the type of notification service they would like to receive in a wildfire-related IT application. Email notifications are a common and reliable method of communication, and they can be easily accessed from a variety of devices. Meanwhile, 30% of respondents indicated a preference for SMS notifications. SMS messages can be quickly delivered to mobile devices and are often read more quickly than email messages. Only 22% of respondents selected instant messaging as the type of notification service they would like to receive. While instant messaging can be a fast and convenient method of communication, it may not be as reliable as email or SMS, and it may not be appropriate for all users. Finally, 1% of respondents did not answer the question. Overall, the findings suggest that developers should prioritise the implementation of email and SMS notification services in wildfire-related IT applications, as these are the preferred methods of communication among the majority of respondents. As can be observed in Figure 17, the aforementioned trends are depicted.

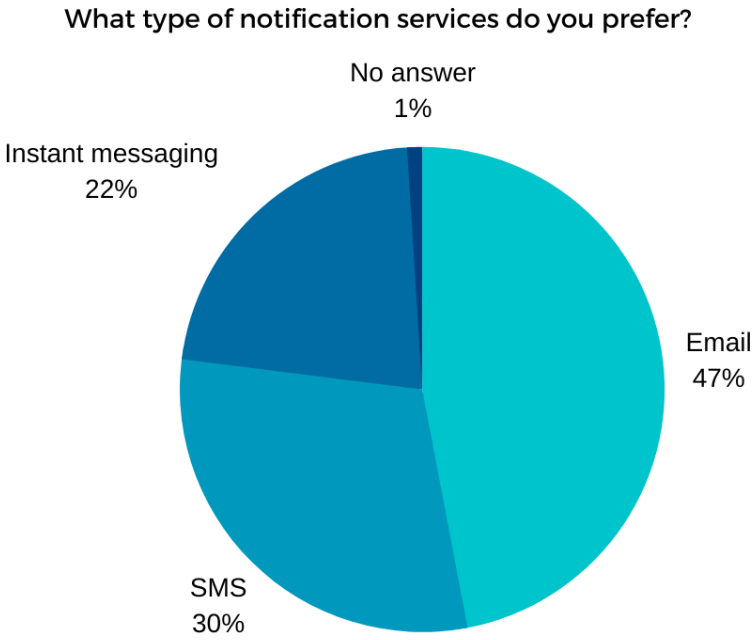

Figure 17: The types of notification services that the respondents prefer.

The findings indicate that 55% of respondents prefer to have a registered user role included in a wildfire-related IT application. This suggests that users would like to have access to personalised features and settings within the application, which can be facilitated through user registration. 22% of respondents indicated a preference for an administrator role, which suggests that some users may require elevated permissions to perform specific tasks or manage the application. 22% of respondents also selected the anonymous/guest user role, indicating that some users may not wish to register for the application but would still like to access certain features. Finally, 1% of respondents did not provide an answer. Overall, the findings suggest that developers should prioritise the inclusion of a registered user role in wildfire-related IT applications, as this is the preferred user role among the majority of respondents. However, it may also be important to include the option for anonymous/guest users and administrators to ensure that all user needs are met. Figure 18 shows the aforementioned trend.

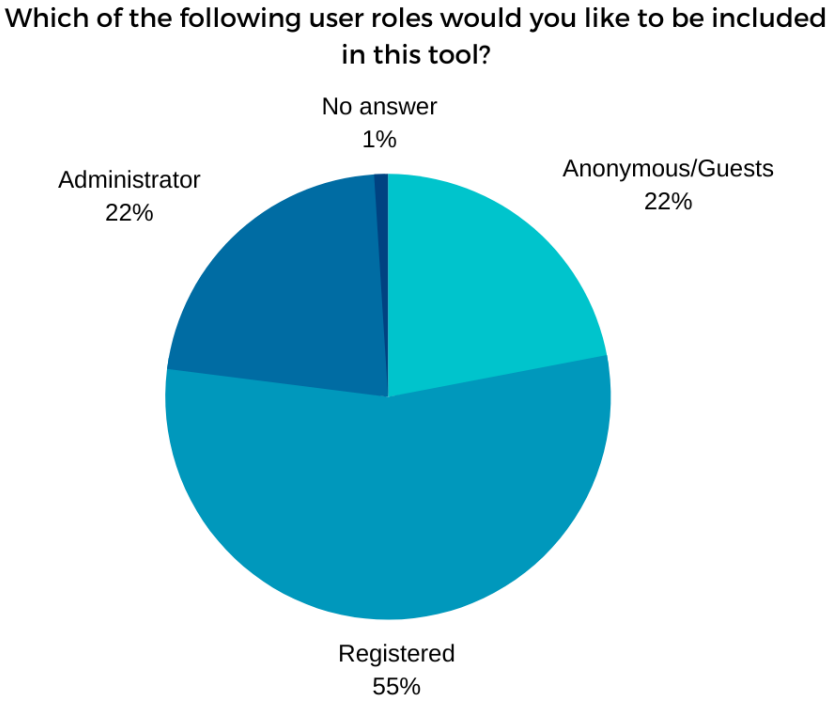

Figure 18: The user roles that the respondents would like to be included in the tool.

The findings indicate that the most preferred type of authentication among the respondents is two-factor authentication (2FA), which was chosen by 40% of the respondents. This suggests that users value an additional layer of security beyond a simple username and password, which can help protect against unauthorised access and data breaches. 28% of the respondents prefer single-factor/primary authentication, indicating that some users may not feel the need for additional layers of security or find it inconvenient to use them. 14% of the respondents prefer multi-factor authentication (MFA), which is a more robust security measure that requires multiple types of authentication factors such as a password, a fingerprint, and a security token. This suggests that some users place a high value on security and are willing to invest more effort into protecting their accounts. 18% of the respondents prefer single sign-on (SSO), which is a method of authentication that allows users to access multiple applications with a single set of login credentials. This suggests that users value convenience and ease of use when accessing different applications. Overall, the findings suggest that developers of wildfire-related IT applications should prioritise implementing 2FA, as it is the most preferred type of authentication among the respondents. However, it may also be important to offer other authentication options such as single-factor authentication, MFA, and SSO to accommodate the preferences and needs of different users. As illustrated in Figure 19, the aforementioned statistics can be seen.

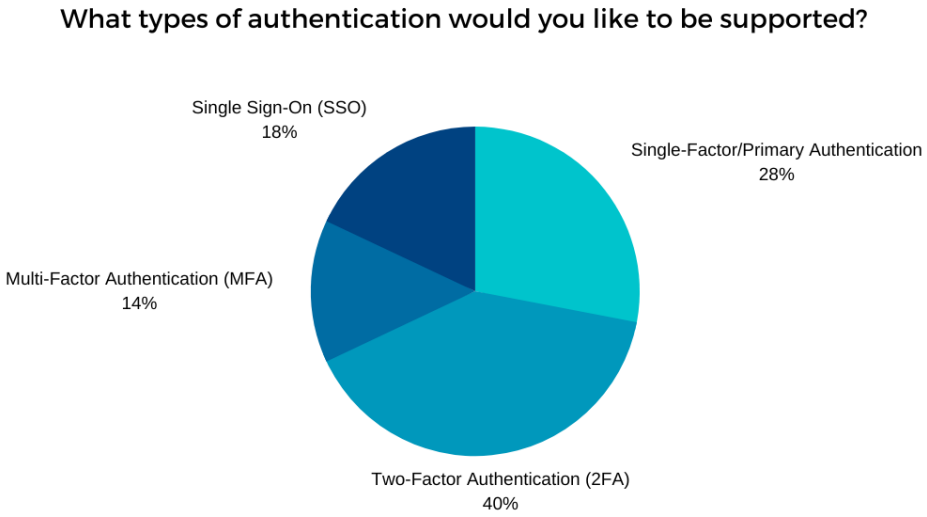

Figure 19: The types of authentication that the respondents would like to be supported.

Risk analysis

According to the survey results, 42% of the respondents consider a monthly time period to be adequate in order to create a map of activities in protected areas. Meanwhile, 29% of the respondents consider a weekly time period to be sufficient, and 16% consider a daily time period to be necessary for this task. Lastly, 13% of the respondents did not provide an answer. The findings suggest that a significant portion of the respondents are comfortable with a monthly or weekly time period, indicating that they may prioritise other tasks over creating maps of activities in protected areas on a daily basis. However, it is worth noting that a notable portion of respondents still consider a daily time period to be necessary, highlighting the importance of timely and up-to-date information for effective management of protected areas. The previously mentioned are depicted in Figure 20.

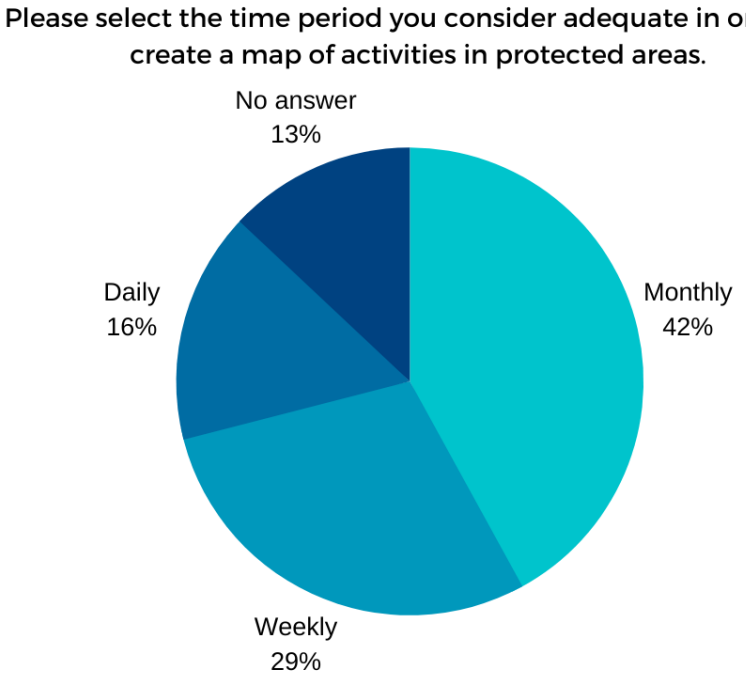

Figure 20: The time period that the respondents consider adequate for the creation of a map of activities in protected areas.

The survey results indicate that there is a relatively even distribution among the time periods considered adequate for the detection of new constructions. Specifically, 29.2% of respondents consider an annual time period to be sufficient, while the same percentage of respondents believe that a detection period of every 6 months is necessary. Meanwhile, 25% of respondents consider a monthly time period adequate, and 10.3% of respondents consider a weekly detection period to be necessary. A smaller portion of respondents, 6.3%, believe that a detection period of every 3 months is adequate. These findings suggest that there is no clear consensus among the respondents regarding the appropriate time period for detecting new constructions, and that factors such as resource availability and the size of the protected area may play a role in determining the appropriate detection period. Figure 21 displays the aforementioned trend.

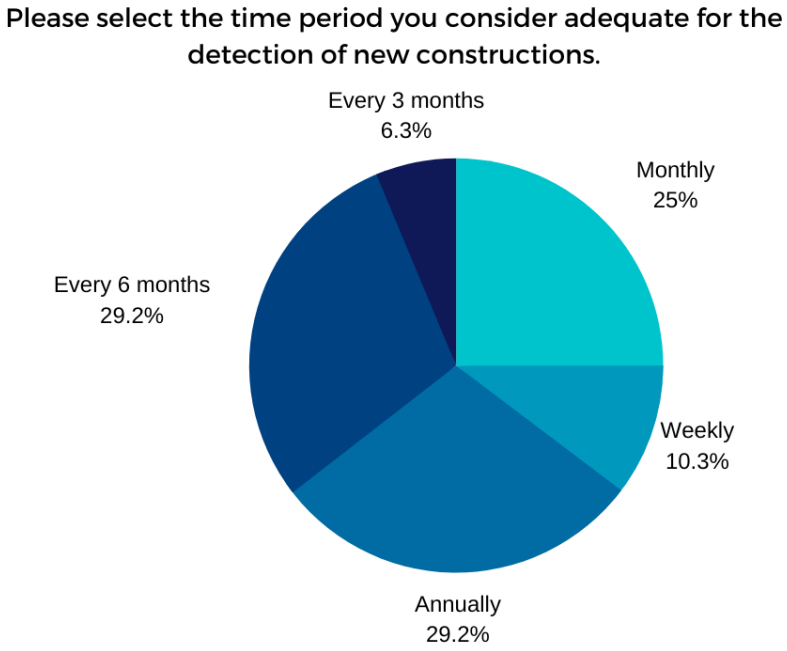

Figure 21: The time period that the respondents consider adequate for the detection of new constructions.

According to the survey results, 37% of respondents consider a monthly time period adequate for monitoring drought areas, while 35% prefer a weekly time period. Meanwhile, 22% of respondents believe that monitoring should be done on a daily basis. Only 6% of respondents did not provide an answer to this question. These findings suggest that there is a preference for more frequent monitoring of drought areas, with a monthly or weekly time frame being the most popular choices. It is important to have timely and accurate monitoring to effectively manage and mitigate the impacts of drought in affected areas. Figure 22 shows the previously stated.

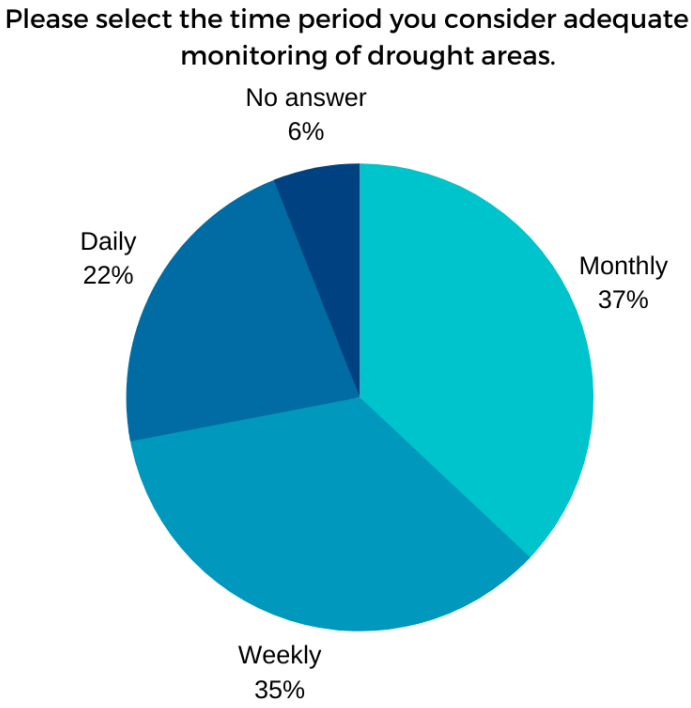

Figure 22: The time period that the respondents consider adequate for the monitoring of drought areas.

In response to the question about which variables are necessary to see the specific percentages for each forest area's plant and tree species provided by the agroforestry index, the participants gave a variety of responses. The most commonly selected variable was vegetation, with 33 respondents indicating that it was necessary to see the specific percentages. Percentage of crown cover was the second most popular variable, with 26 respondents choosing it. Other commonly selected variables included biomass (23), organic matter (20), species diversity (20), stratification of crown cover (21), and soil erosion (15). Some respondents also indicated that they would need to see soil properties (14), bulk density (17), and soil moisture (19). There were also a small number of respondents who did not provide an answer to this question (4). As seen in Figure 23, the above-mentioned are depicted.

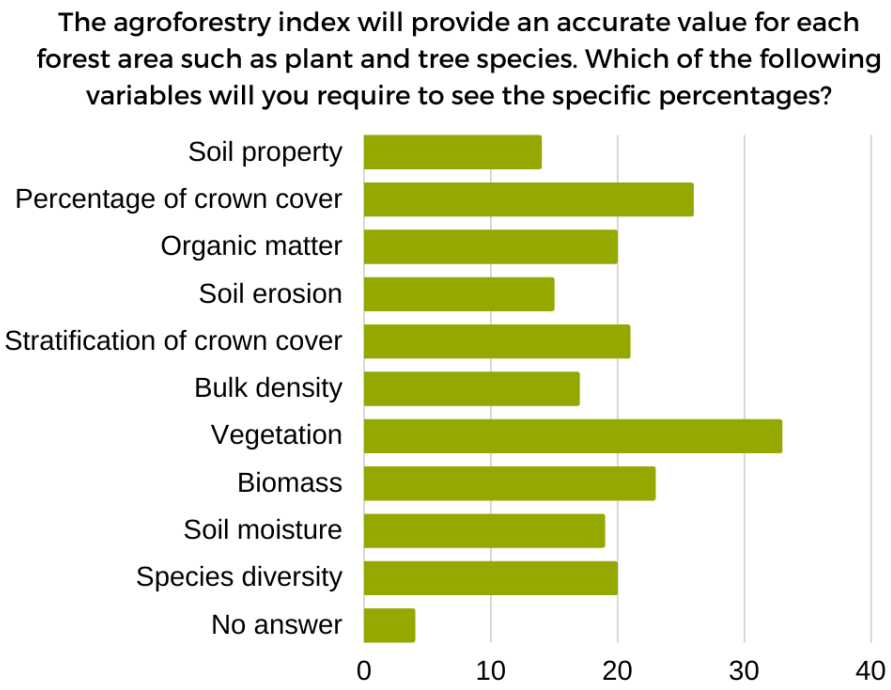

Figure 23: The variables for which the respondents require to see the specific percentages.

The findings from the question "The Accurate Forest Mapping tool provides physical and geometric characteristics. Please select which will you require information about" reveal that 39 respondents require information about tree species. This was the most commonly selected response, indicating that the identification of tree species is a crucial factor in accurate forest mapping. Additionally, 33 respondents require information about tree height, indicating that understanding the height of the trees is also important. Biomass was selected by 28 respondents, showing that the amount of biomass in a forest area is another critical factor. 24 respondents require information about fuel type and fuel conditions, suggesting that the Accurate Forest Mapping tool's ability to provide information about forest fire risks is also essential. Interestingly, only one respondent selected orientation, ground gradient, and the degree of coverage of the crown, indicating that these characteristics may not be as important for accurate forest mapping. The mentioned items are illustrated in Figure 24.

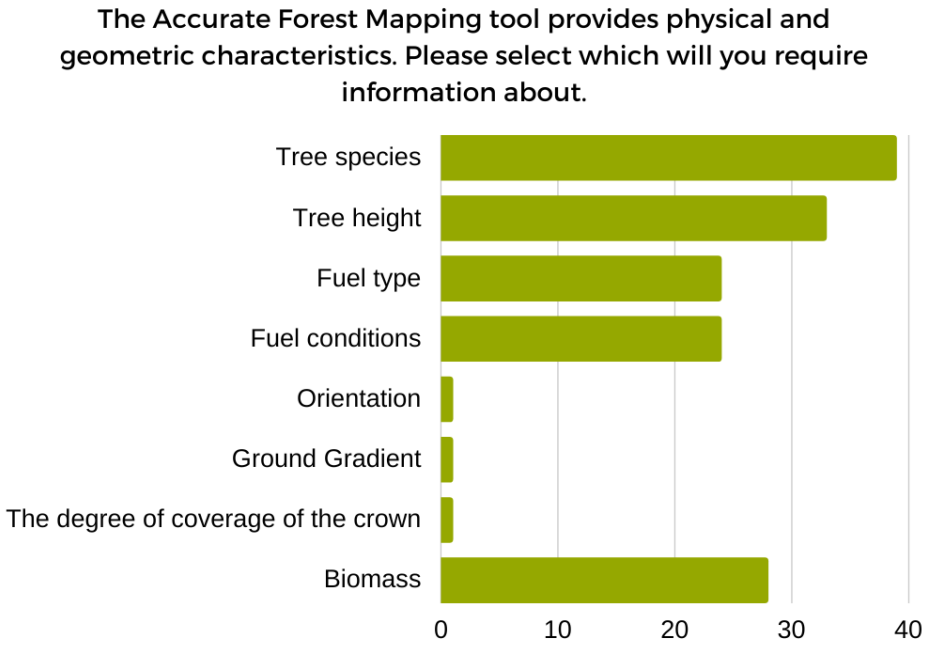

Figure 24: The specific information that the respondents require regarding physical and geometric characteristics.

The findings indicate that the majority of the respondents (41) consider human activities as the most important socioeconomic factor to be considered for the fire prevention system. This suggests that human behaviour plays a significant role in causing wildfires, and thus efforts should be made to promote fire safety awareness and education to prevent human-caused wildfires. Another important factor identified by respondents is population (35), which may be related to the increased risk of wildfires in areas with higher population density. Additionally, the proportion of the population working in agriculture and service sectors (19) was also considered important, indicating the potential impact of human activities such as land use changes and other economic activities on the risk of wildfires. The respondents also identified illegal cutting (21) as an important factor, which suggests that illegal activities such as logging and deforestation can increase the risk of wildfires. Finally, cultural traditions (17) and the proportion of working population in the service sector (11) were identified as relatively less important factors. These findings highlight the need for a comprehensive approach to fire prevention that takes into account a range of socioeconomic factors to effectively reduce the risk of wildfires. Figure 25 represents the previously mentioned.

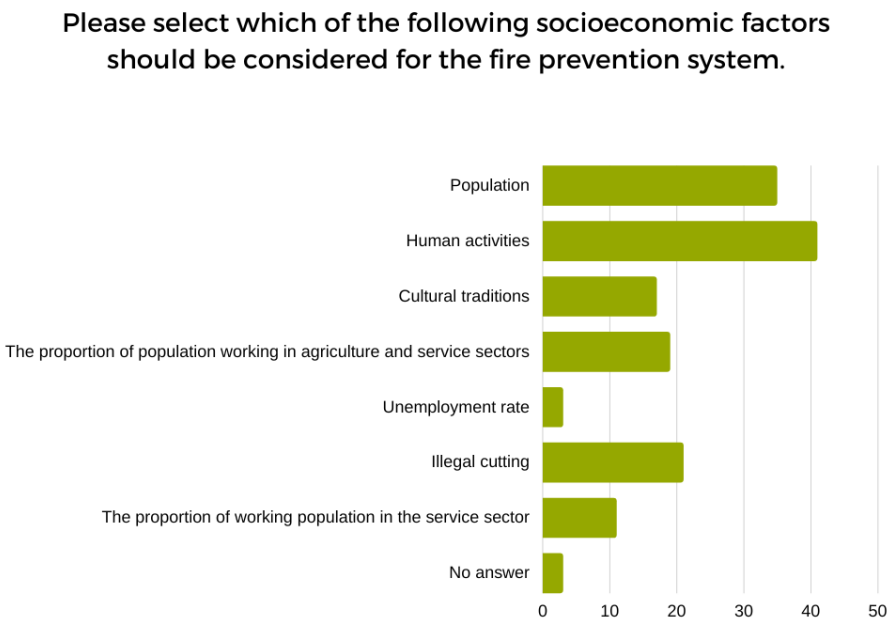

Figure 25: The socioeconomic factors that should be considered for the fire prevention system according to the respondents.

According to the responses, the majority of the participants (62%) prefer a color-coded heat-map for the Fire Prevention System tool's risk and priority maps. This type of map can visually display the level of risk in different areas using color codes, making it easier to identify high-risk areas that require immediate attention. Additionally, 20% of participants preferred the percentage-based maps, which can provide a numerical representation of the risks in different areas. A smaller group of participants (14%) opted for the traffic light approach, which typically uses the colours of the traffic light to indicate different levels of risk. Finally, 5% of participants did not provide any answer to this question. The aforementioned trends are shown in Figure 26.

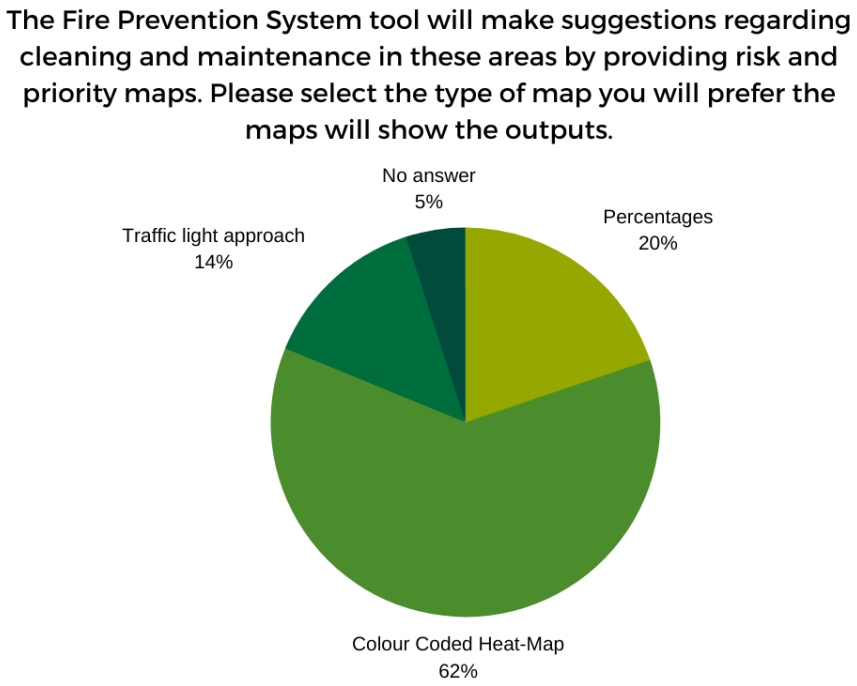

Figure 26: The type of map that the respondents prefer for viewing suggestions regarding cleaning and maintenance.

Map Services

According to the survey, respondents were asked to select the functionalities they would like to have in a map viewer. The majority of respondents, 41, preferred to have the zoom functionality, which allows the user to zoom in and out of the map. Additionally, 36 of respondents indicated that they would like to view the layers list and 33 of them wanted to turn layers on/off. Moreover, 41% of respondents also preferred to have the ability to find a location, while 22% of them wanted the pan functionality. 26 of respondents wanted the ability to select a base layer, and 32 wanted a coordinate indicator. Only a few respondents did not provide any answers, while some respondents added altitude and landmark as additional functionalities, they would like to see in the map viewer. Figure 27 displays the items mentioned earlier.

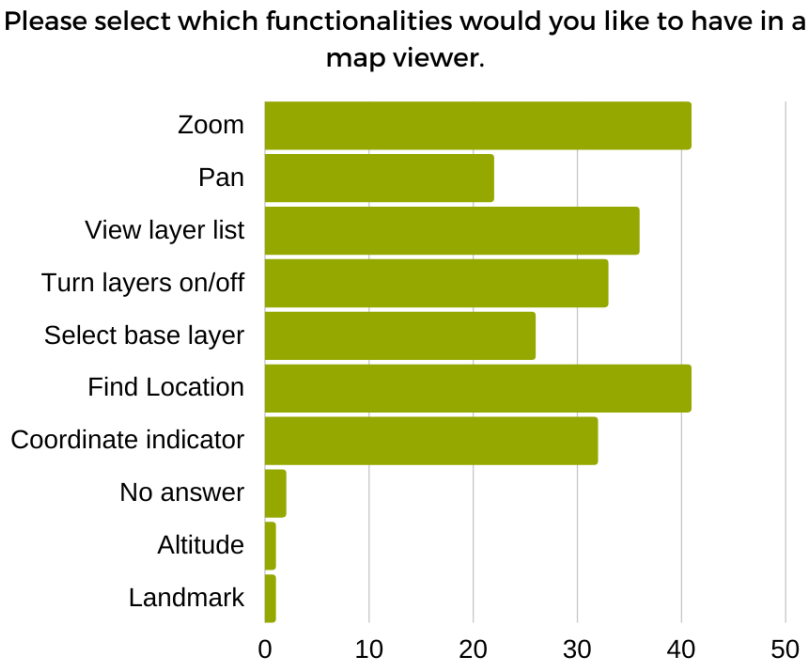

Figure 27: The functionalities that the respondents would like to have within a map viewer.

The survey results indicate the preferences for formats to extract the map. 37 preferred JPG, making it the most popular format. CSV/Spreadsheet and Shapefile were the next most popular options, with 25 and 21 responses respectively. Other popular formats included TIFF/TIF, KML, and GeoJSON, with 12-13 respondents selecting them. The least popular formats were DXF and GIF, with only 1 and 9 respondents respectively. There were also 2 respondents who did not provide an answer. These findings suggest that a variety of formats should be made available to users in order to meet their diverse needs. As can be observed in Figure 28, the aforementioned statistics are depicted.

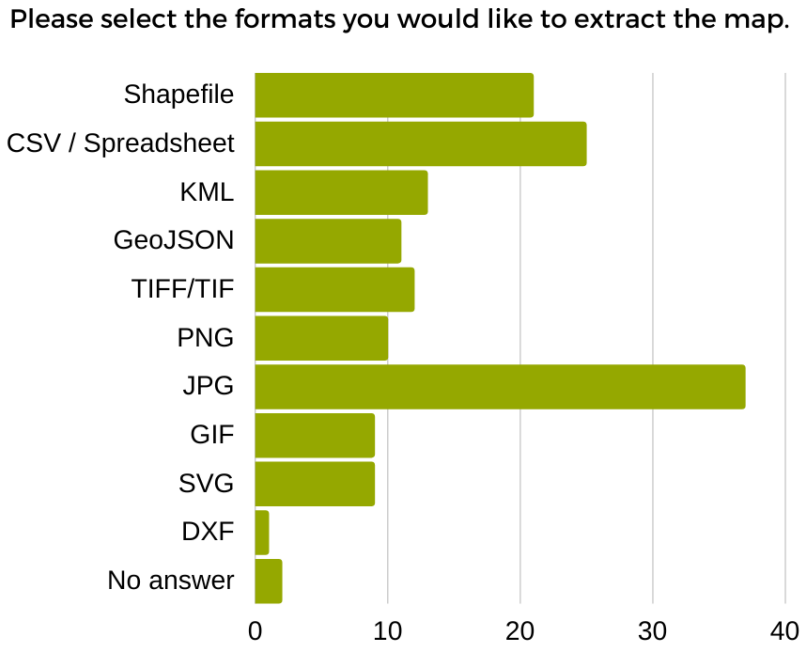

Figure 28: The formats in which the respondents would like to extract the map.

Fire and Smoke Propagation

The survey asked respondents to select which characteristics of the fire spread area they would like to be provided by the tool. The majority of respondents, 40%, indicated that they would like information on the burned area. Another 38% indicated that they would like to know the burning area. The mass fraction of consumed fuel was selected by 19% of respondents. A small number of respondents, 1%, provided recommendations for additional characteristics to be included, such as speed expansion, flames and flame height, and propagation trend area. As illustrated in Figure 29, the aforementioned trends can be seen.

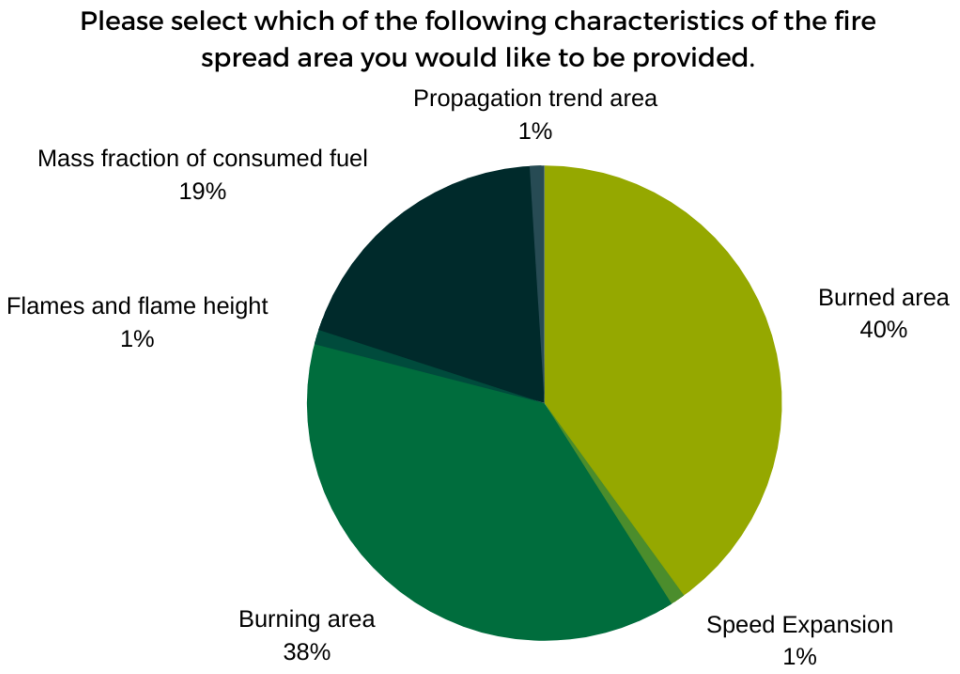

Figure 29: The characteristics of the fire spread area that the respondents would like to be provided.

The survey asked respondents to select the information they would like to be provided about the area. The majority of respondents, 45%, selected perimeter as the information they would like to receive. 41% of respondents selected position as the information they would like to receive. 13% of respondents selected thickness, and only 1% did not provide an answer. These findings suggest that perimeter and position are the most important pieces of information for users when it comes to the area they want to be provided. The previously mentioned are depicted in Figure 30.

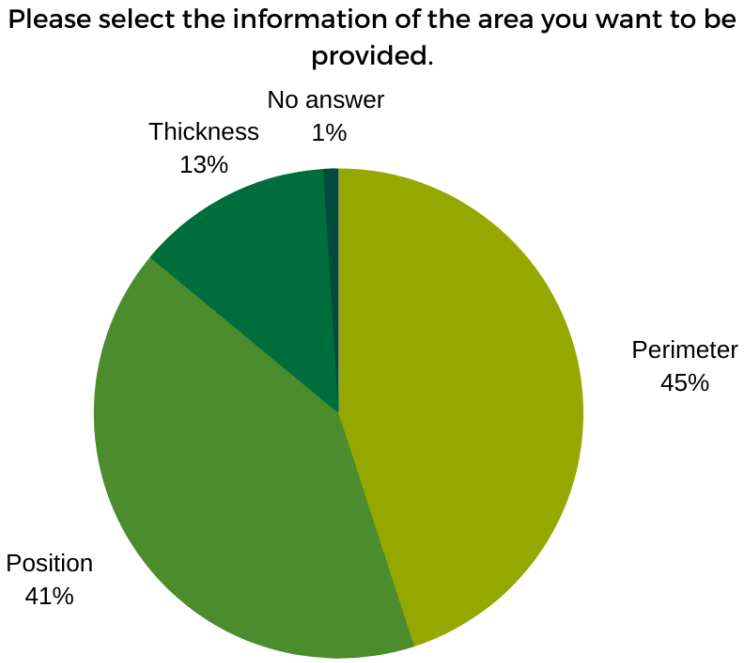

Figure 30: The information of the area that the respondents would like to be provided.

According to the survey responses, the majority of participants preferred the ASCII file format for input and output in the three models (PhyFire, HDWind, PhyNX), with 27 responses. The ASCII file format is a standard text format that represents data in a plain text form, where each line contains a record or field. It is widely used for exchanging data between different systems and software programs. The WTK file format was the second most preferred with 13 responses, followed by Avizo file format with 11 responses. The WTK (Weather Research and Forecasting Toolkit) file format is a binary format that contains atmospheric and meteorological data. It is commonly used in atmospheric science research and numerical weather prediction. The Avizo file format is a proprietary format that stores data in a 3D image or volume. It is commonly used in scientific visualisation, particularly in the field of materials science. The MEDIT file format and VTK file format were chosen by 8 and 9 participants respectively. The MEDIT file format is a text format that stores finite element meshes. It is used in the field of computational mechanics for numerical simulations. The VTK (Visualisation ToolKit) file format is a standard format that stores data in a 3D image or volume. It is widely used in scientific visualisation and engineering analysis. Additionally, 12 respondents did not provide an answer to this question. The respondents who did not provide an answer may have not had a preference for a specific file format, or they may have been unsure of the different options available. Figure 31 displays the aforementioned statistics.

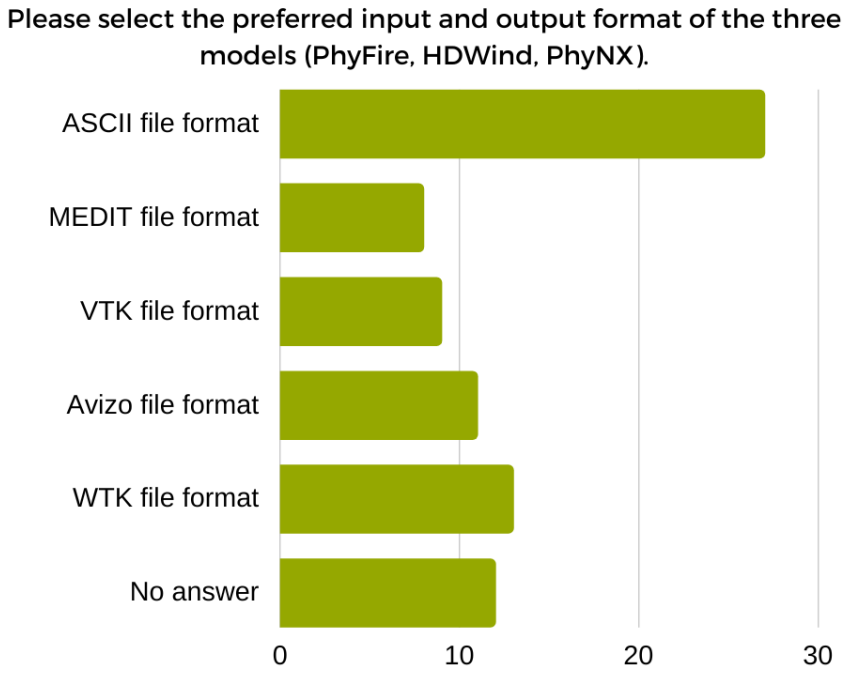

Figure 31: The preferred input/output format of the three models according to the respondents.

The survey responses indicated that the majority of participants require temperature and velocity data for the development of safety measures related to fire behaviour and spread. Forty respondents indicated a need for temperature data, while 44 participants indicated a need for velocity data. Other technical aspects that were identified as necessary by the respondents included soot fraction (11 responses), smoke gas components (18 responses), and heat release rate in each grid point of the computational domain (20 responses). Smoke layer height (28 responses), flame thickness (22 responses), and flame height (1 response recommended by a respondent) were also identified as important technical aspects. Only one respondent did not provide an answer to this question. These findings suggest that there is a need for comprehensive and multi-dimensional data to effectively develop safety measures related to fire behaviour and spread. Figure 32 shows the previously stated.

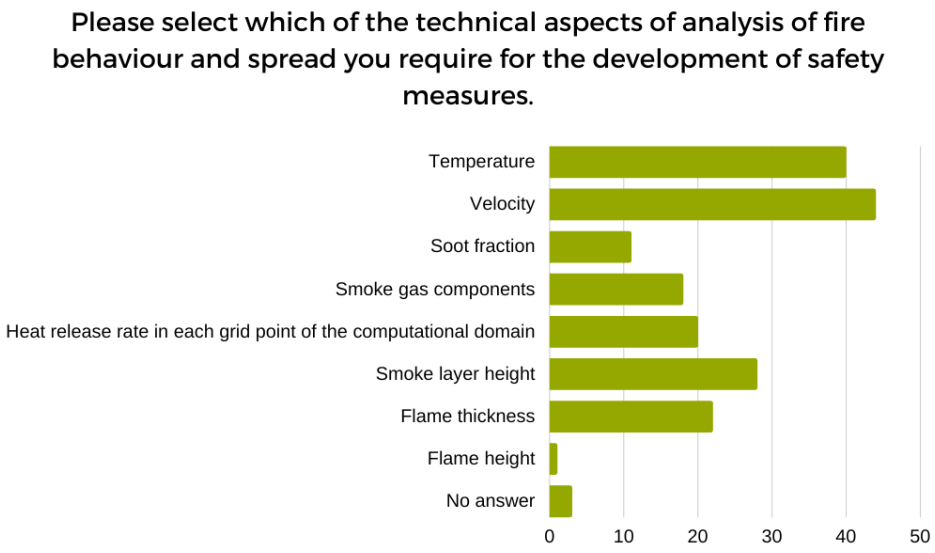

Figure 32: The technical aspects of the analysis of fire behaviour and spread that the respondents require for the development of safety measures.

According to the survey responses, the majority of participants, which is 85%, indicated that they would like to obtain visual explanations for the statistical models' decisions. This suggests that users prefer having a clear and intuitive understanding of how the models make their decisions. On the other hand, 15% of the participants indicated that they do not require visual explanations, which may suggest that they have a strong technical understanding of the models and their decision-making processes. Overall, providing visual explanations can enhance the transparency and interpretability of the models, which can ultimately improve their effectiveness and user trust. As seen in Figure 33, the above-mentioned are depicted.

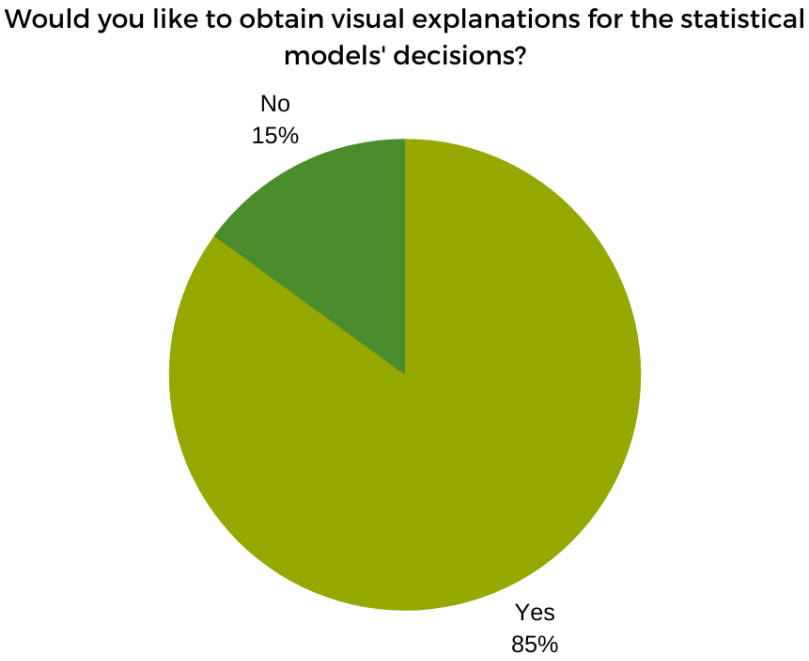

Figure 33: The percentage of the respondents that would like to obtain visual explanations for the statistical models' decisions.

Remote Sensors- IoT

The survey respondents were asked to select which factors they would like to monitor with the multiple sensors in the forest for the fire prevention system. The majority of participants, 38, preferred to monitor the wind direction, followed by smoke emissions with 34 responses and images/video with 32 responses. Other commonly selected factors included humidity (29), soil moisture (25), air quality (20), and temperature (20). The least selected options were motion (9) and sounds/audio (10). One respondent did not provide an answer. The mentioned items are illustrated in Figure 34.

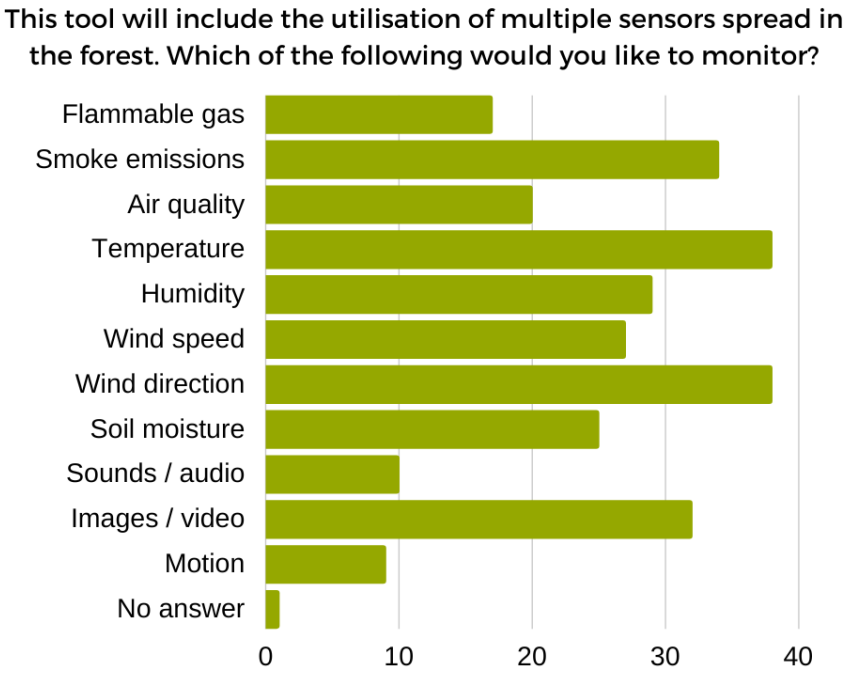

Figure 34: The variables that the respondents would like to monitor with the utilisation of multiple sensors spread in the forest.

The survey revealed that 25 respondents preferred the LoRaWAN protocol for data collection, followed by COAP with 11 responses and MQTT with 10 responses. Modbus/TCP and AMQP were chosen by 9 and 6 participants, respectively. Furthermore, 11 respondents did not provide an answer to this question. LoRaWAN is a low-power, long-range wireless communication protocol designed to connect low-power IoT devices over a wide area. It is commonly used for applications that require battery-powered devices that transmit data over long distances, such as environmental monitoring systems. COAP (Constrained Application Protocol) is a lightweight protocol designed for IoT devices that have limited processing power and memory. It is used for communication between constrained devices and the internet. MQTT (Message Queuing Telemetry Transport) is a lightweight publish-subscribe messaging protocol that is commonly used in IoT applications. It is designed to be easy to implement and can be used in low-bandwidth and unreliable network environments. Modbus/TCP is a protocol commonly used for industrial automation and control systems. It allows communication between devices over Ethernet. AMQP (Advanced Message Queuing Protocol) is a messaging protocol used for real-time communication between applications. It supports features like authentication, encryption, and message persistence. The choice of protocol will depend on factors such as the type of device being used, the amount of data being transmitted, the distance over which the data needs to be transmitted, and the reliability and security requirements of the application. Figure 35 represents the previously mentioned.

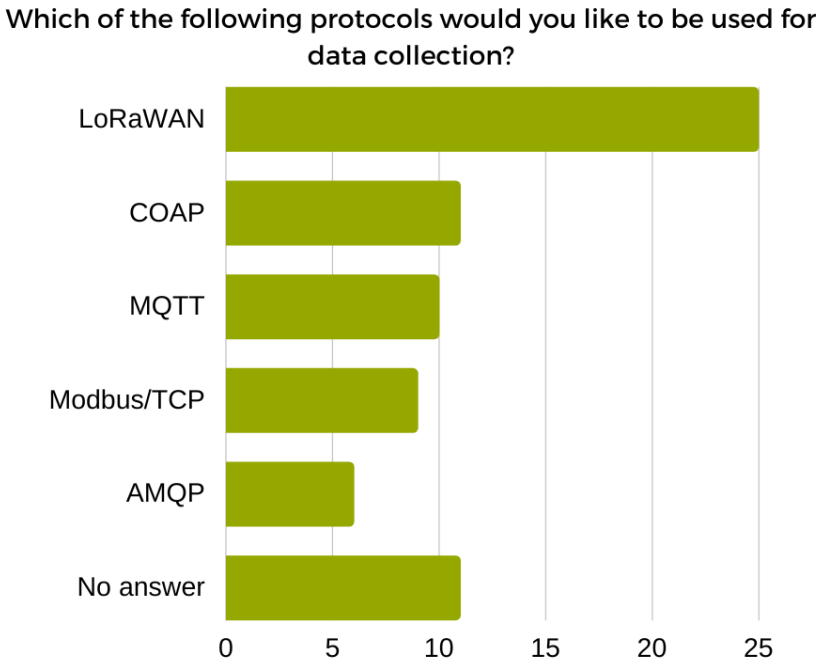

Figure 35: The protocols that the respondents would like to be used for data collection.

Evacuation and Planning

According to the survey responses, the majority of participants would utilise the evacuation and planning tool to optimise route management and patrol with 36% of the responses. 31% of the participants would use the tool to find potential evacuation routes, while 30% would use it to estimate the evolution of the incident. Only 3% of participants did not provide an answer to this question. This suggests that the tool's ability to optimise route management and find evacuation routes is a top priority for users, followed closely by the ability to estimate the evolution of the incident. The aforementioned trends are shown in Figure 36.

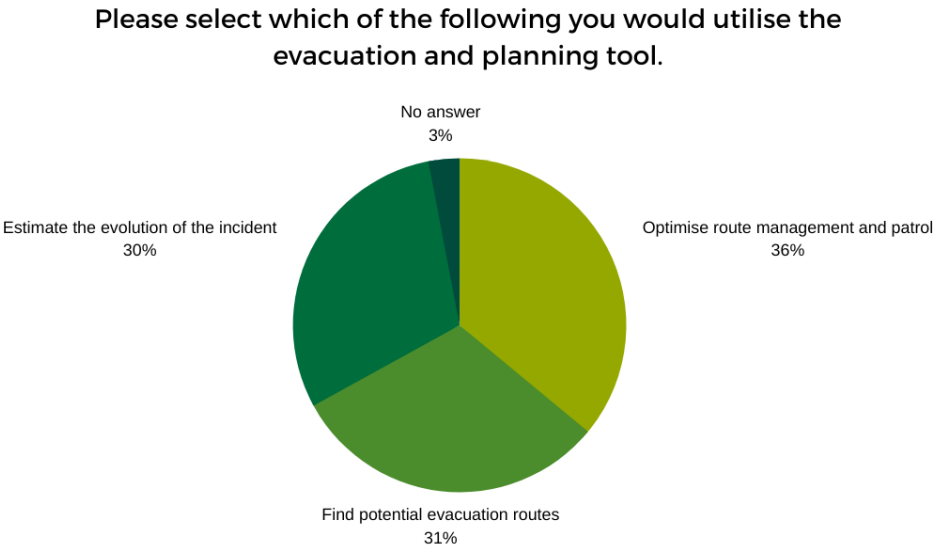

Figure 36: The actions that the respondents would like to perform with the evacuation and planning tool.

Based on the survey responses, the most relevant information for a successful evacuation and planning is the spread of the fire, with 28% of respondents ranking it as the top priority. The direction of the wind was the second most important, with 25% of respondents ranking it as the top priority. The condition of the road network was considered the third most important with 22% of respondents ranking it as the top priority. The presence of humans, animals, or vehicles was ranked as the fourth most important with 23% of respondents ranking it as the top priority. Only 2% of respondents did not provide an answer to this question. Figure 37 displays the items mentioned earlier.

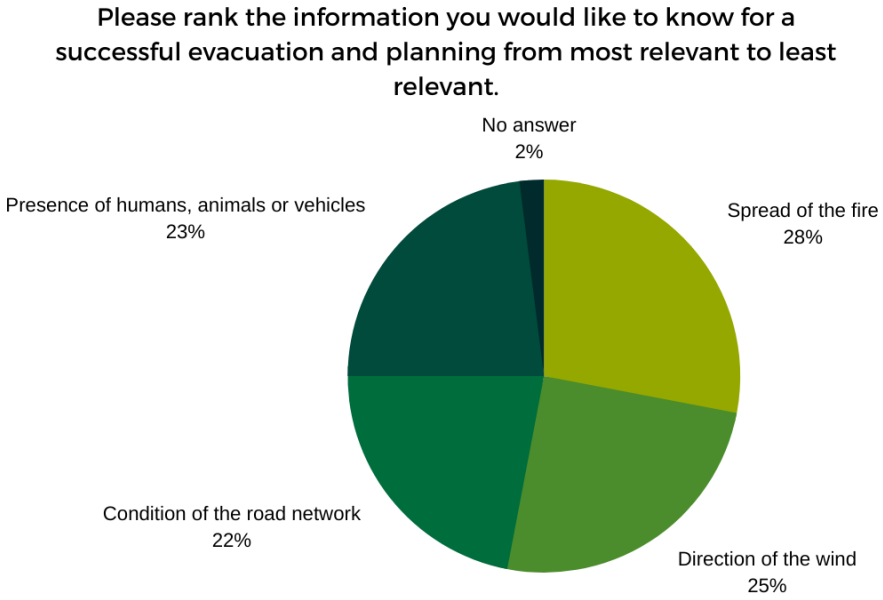

Figure 37: The information that the respondents would like to know for a successful evacuation and planning.

The survey asked the participants to choose the areas they would like to run the iCrowd simulation. The majority (30) selected public spaces, indicating a need to study crowd behaviour in such areas. Building exterior was selected by 23 respondents, followed by open-air festivals with 22 responses. Building interior and stadium were chosen by 17 and 13 respondents, respectively. Additionally, 3 respondents did not provide an answer to this question. These results suggest that iCrowd simulation is considered relevant and useful for a variety of scenarios and can help in understanding the behaviour of crowds in different environments. As can be observed in Figure 38, the aforementioned trends are depicted.

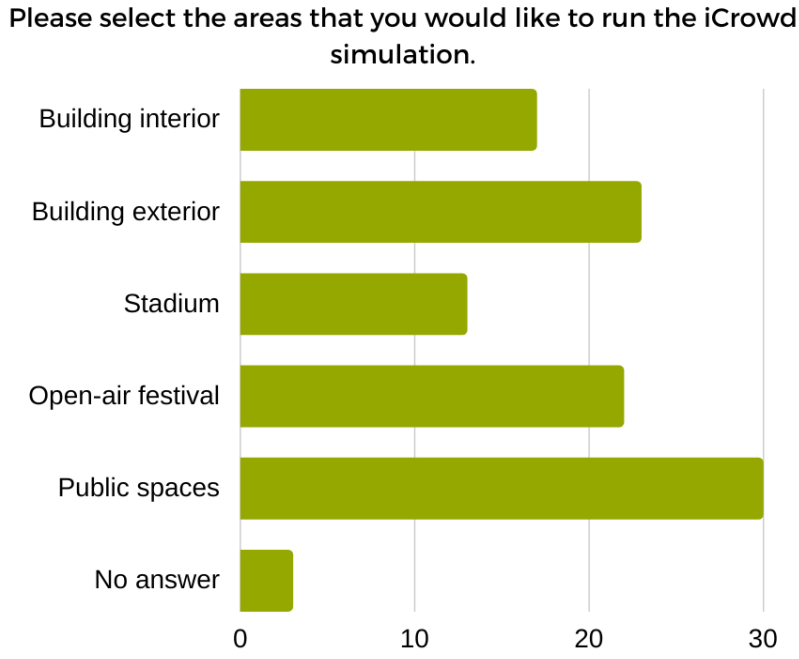

Figure 38: The areas where the respondents would like to run the iCrowd simulation.

The majority of respondents (45%) indicated that they would like to track people during the iCrowd simulation. Vehicles were the second most preferred category, with 31% of respondents selecting it. Livestock was chosen by 20% of the participants. Two percent of respondents added that they would like to track wildlife during the simulation. Only 2% of the participants did not provide an answer to this question. As illustrated in Figure 39, the aforementioned can be seen.

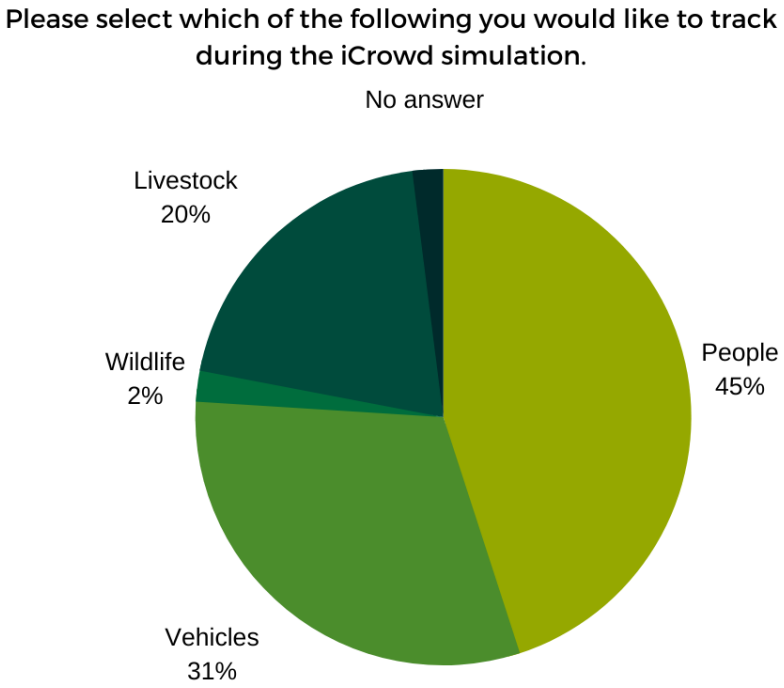

Figure 39: The objects that the respondents would like to track during the iCrowd simulation.

UAV Solutions

According to the survey responses, a majority of participants (69%) did not have access to unmanned aerial vehicles (UAVs), while 31% of respondents had access to UAVs. The availability of UAVs can have an impact on the feasibility and effectiveness of using them for tasks such as monitoring forest fires or conducting search and rescue operations. The previously mentioned is depicted in Figure 40.

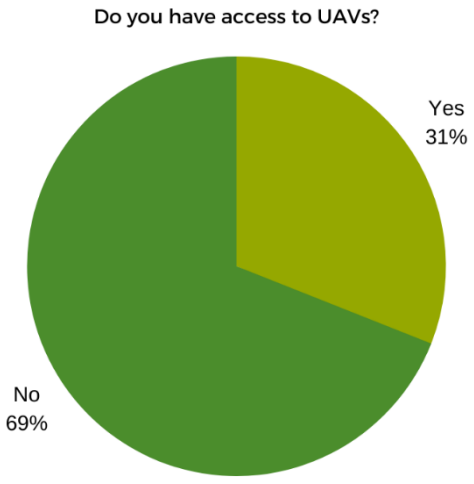

Figure 40: The percentage of the respondents that have access to UAVs.

According to the survey responses, out of the participants who have access to UAVs, the majority (28%) have access to Multi-Rotor Drones. 11% have access to Fixed-Wing Drones,

while 5% each have access to Single-Rotor Drones and Fixed-Wing Hybrid VTOL. On the other hand, 51% of the participants did not have access to drones and therefore could not answer the question. Figure 41 displays the aforementioned.

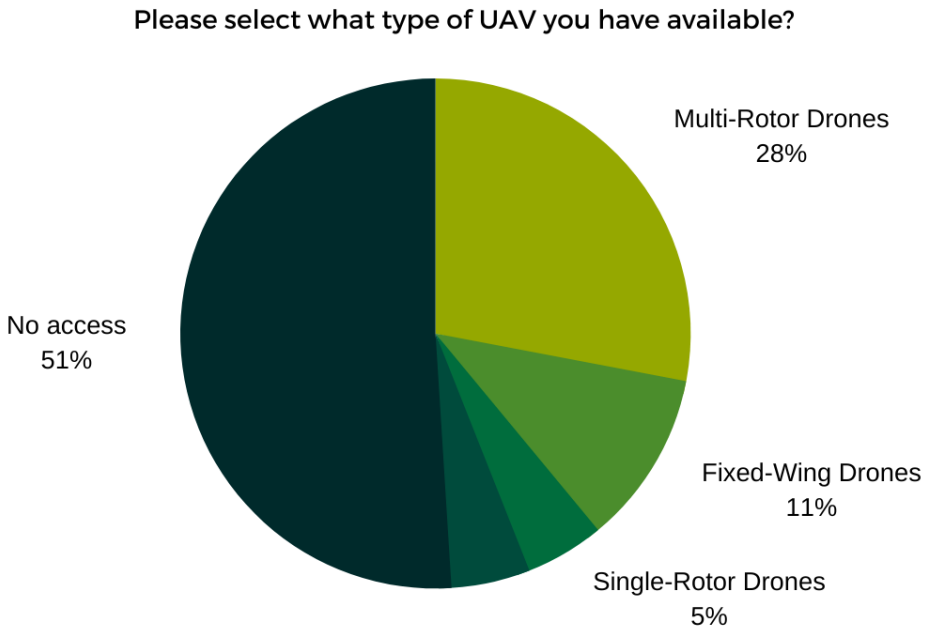

Figure 41: The types of UAVs that the respondents have available.

According to the survey responses, the majority of participants (33%) would like to use the UAV Command and Control System tool to request multispectral images. 31% of participants would like to use the tool to navigate the UAV, while 28% would like to use it to monitor telemetry. Additionally, 8% of respondents did not provide an answer to this question. Figure 42 shows the previously stated.

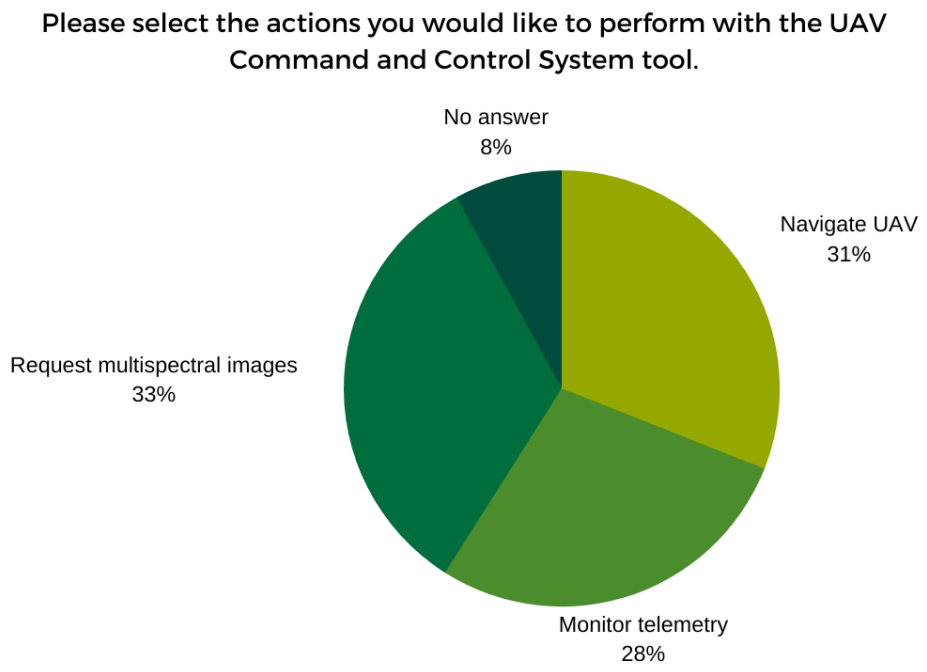

Figure 42: The actions that the respondents would like to perform with the UAV Command and Control System tool.

According to the survey responses, the majority of participants (75%) preferred the automatic collision avoidance functionality for the UAV, while only 13% preferred the motion collision/manual avoidance. Additionally, 12% of respondents did not provide an answer to this question. The preference for automatic collision avoidance could be attributed to its convenience and increased safety, as it would allow the UAV to avoid obstacles and potential collisions without requiring constant manual intervention from the operator. On the other hand, those who preferred motion collision/manual avoidance may have specific scenarios where they would need more control over the UAV's movements or want to manually avoid obstacles. As seen in Figure 43, the above-mentioned is depicted.

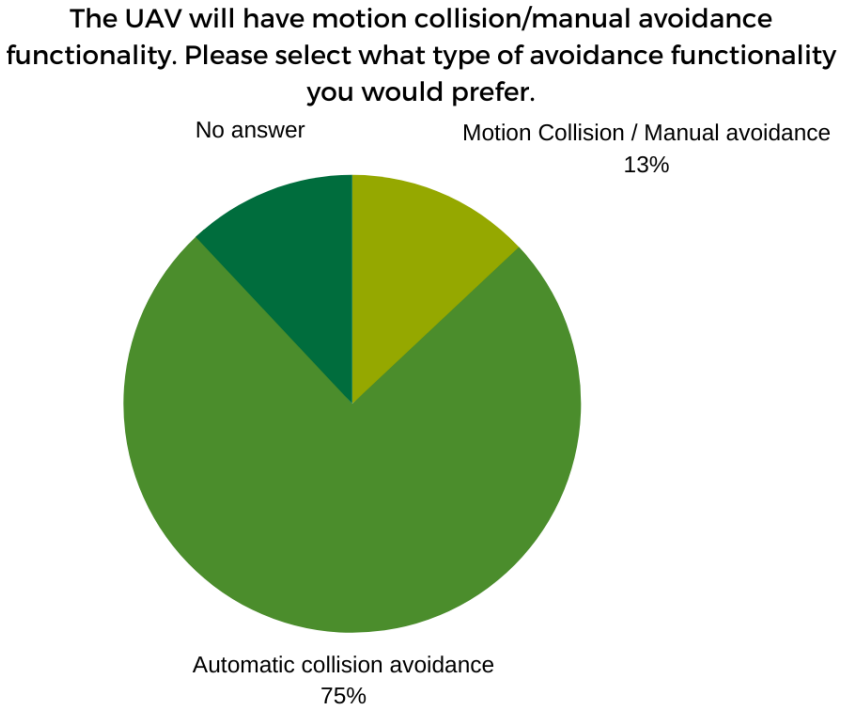

Figure 43: The type of avoidance functionality that the respondents would prefer.

Resource Management System

Based on the responses to the question, it seems that a significant portion (33 responses) of the participants have not used any of the listed software. Of those who have used software, ESO Fire RMS, New World Public Safety, Rhodium Incident Management, FireHouse Manager, and ImageTrend Fire RMS were all used by 5 or fewer participants. D4H, TargetSolutions, and ImageTrend EMS Critical Care were each used by only 1-6 participants. TCP Aladtec Scheduling and High Plains RMS were used by only 2 participants. Overall, the responses suggest that there is a wide variety of software being used in the field of emergency management, and many participants have not used any of the listed software. The mentioned items are illustrated in Figure 44.

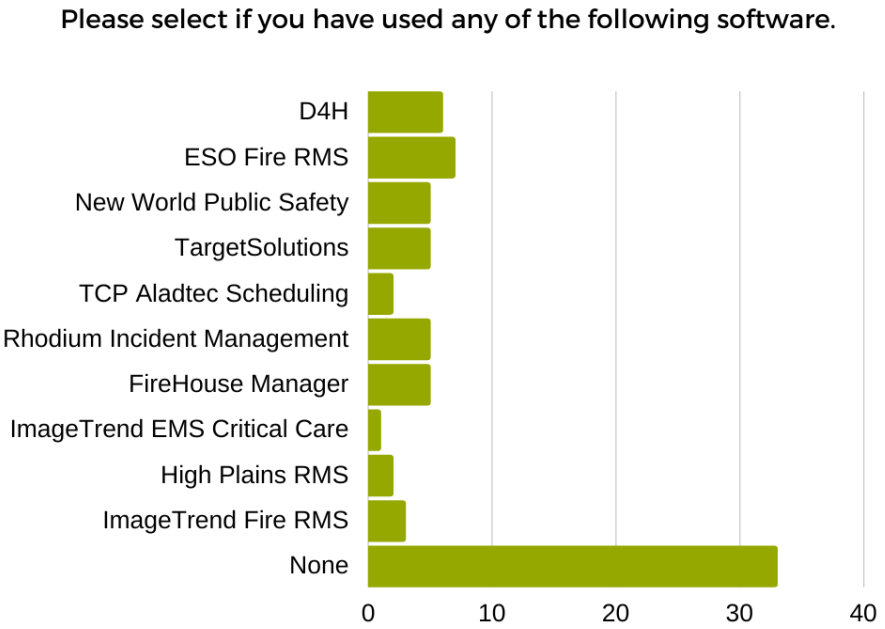

Figure 44: The RMS software that the respondents have previously used.

The results of this question provide insight into the specific functions that emergency management personnel would like to utilise within their software. Optimising resource planning was the most popular response, indicating that efficient resource allocation is a top priority for emergency managers. Managing people allocations and incident management were also highly ranked, suggesting that personnel management and response coordination are important functions. Other functions, such as predicting resource utilisation and equipment management, were less popular, indicating that emergency managers may prioritise reactive response over proactive planning. Post-emergency analysis and incident and emergency planning were moderately popular, suggesting that emergency managers see value in learning from past incidents and developing plans for future events. Functions such as mass notifications, volunteer management, and third-party data mining were less popular, potentially indicating that emergency managers may not see them as essential functions or may have alternative methods for handling those tasks. Overall, these results provide valuable insights into the specific functions that emergency management software should prioritise in order to meet the needs and preferences of emergency management personnel. Figure 45 represents the previously mentioned.

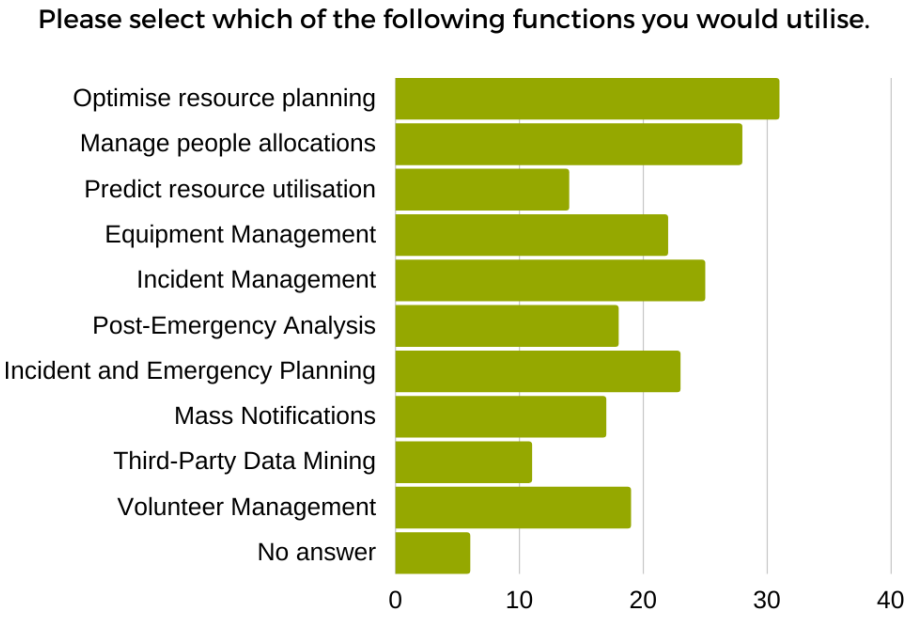

Figure 45: The functions that the respondents would like to utilise with an RMS.

The findings indicate that 40% of the respondents prefer the National Fire Incident Reporting Systems (NFIRS) codes to be met from the RMS they utilise, which suggests that reporting fire incidents according to a standardised system is important for them. 24% of the respondents prefer the National Fire Protection Association (NFPA) codes to be met, which could indicate their focus on ensuring that the fire protection and life safety standards are being met. 19% of the respondents prefer International Code Council (ICC) codes to be met, which could indicate their focus on ensuring that the building codes and standards are being met. Finally, 17% of the respondents did not provide an answer, which could suggest a lack of familiarity with the codes or a lack of interest in their implementation. Overall, the findings suggest that there is a preference for meeting codes in the RMS utilised, with a higher preference for the NFIRS codes. The aforementioned is shown in Figure 46.

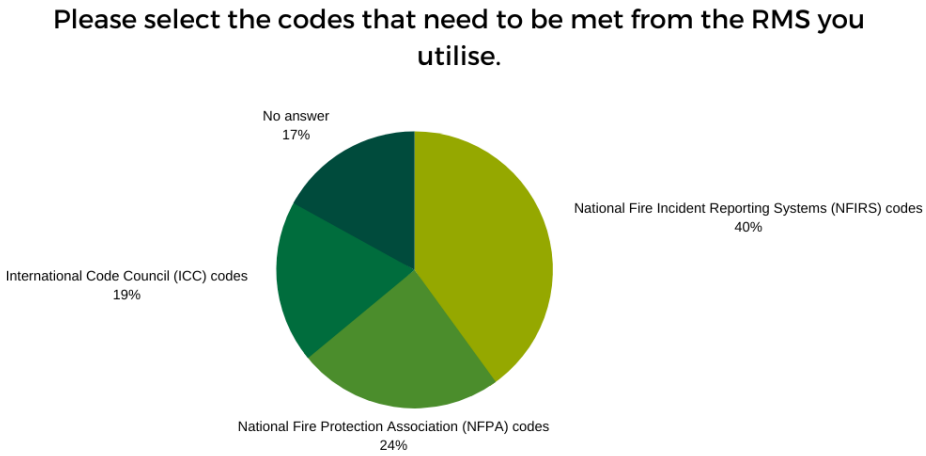

Figure 46: The codes that need to be met from the RMS according to the respondents.

Post-fire Restoration

The majority of respondents (36%) indicated they would like to see salvage logging categories visualised in post-fire maps, followed by natural generation at 23%, and drone seed spread at 18%. Only 1% of respondents selected traditional reforestation areas, while 18% preferred no intervention areas. Additionally, 4% of respondents did not provide an answer to this question. These findings suggest that there is a preference for interventions that focus on salvaging timber and promoting natural regeneration of forests, rather than traditional reforestation practices or no interventions at all. Figure 47 displays the items mentioned earlier.

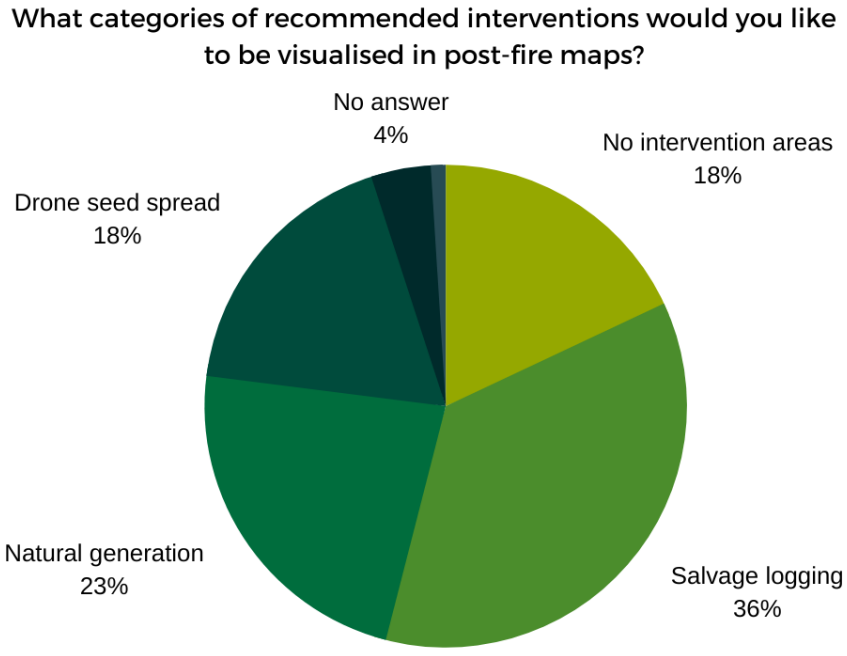

Figure 47: The categories of recommended interventions that the respondents would like to be visualised in post-fire maps.

The respondents were asked to select the physical properties of soil they would require values for, and the findings show that the majority of the respondents require values for temperature (26 responses) and erodibility (26 responses). Other commonly selected physical properties include permeability (22 responses), porosity (20 responses), structure (21 responses), and density (20 responses). Texture and colour were selected by 18 and 9 respondents, respectively. Only a few respondents selected weight (5 responses) and plasticity (8 responses). 11 respondents require values for compressibility. A small number of respondents did not provide any answer (5 responses). As can be observed in Figure 48, the aforementioned are depicted.

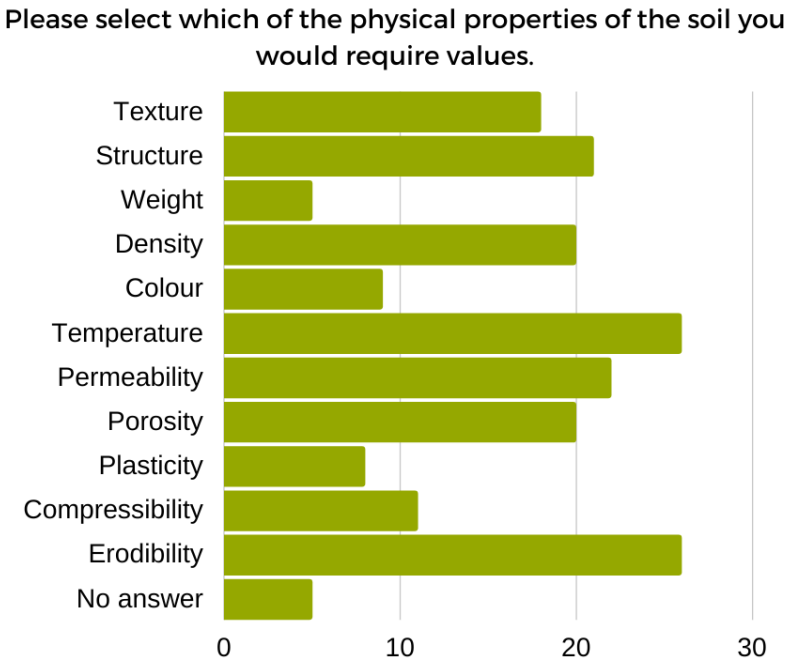

Figure 48: The physical properties of the soil that the respondents would require a value.

Based on the survey results, the majority of respondents (41%) would like values for organic matters to be provided, followed by pH (acidity/alkalinity) at 34%, and inorganic matters at 21%. Only 4% of respondents did not provide an answer. This suggests that understanding the chemical properties of the soil, particularly organic matters, is important for the respondents' purposes. These findings can help guide the development of tools or systems that provide information on soil properties for various applications. As illustrated in Figure 49, the aforementioned can be seen.

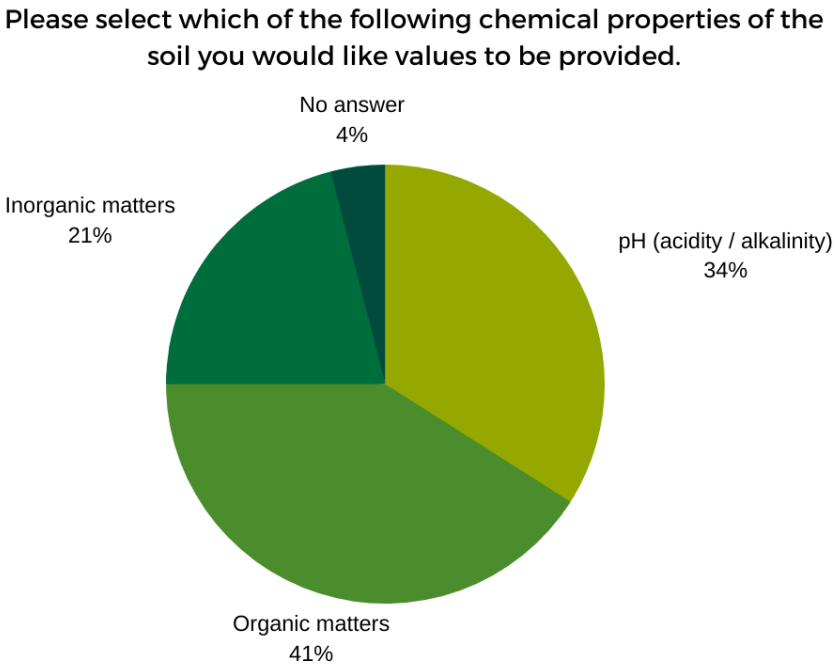

Figure 49: The chemical properties of the soil that the respondents would require a value.

Based on the responses to the survey question, "Please select which data sources you would like the soil evaluation to provide," it was found that the majority of respondents (38%) would like to receive satellite data as a source of soil evaluation. Meanwhile, 28% of respondents prefer data from drones, and 29% prefer data from sensors. Only 5% of respondents did not provide an answer. This suggests that the use of remote sensing technology in soil evaluation is of great interest to those who participated in the survey, with satellite data being the most preferred source. The previously mentioned are depicted in Figure 50.

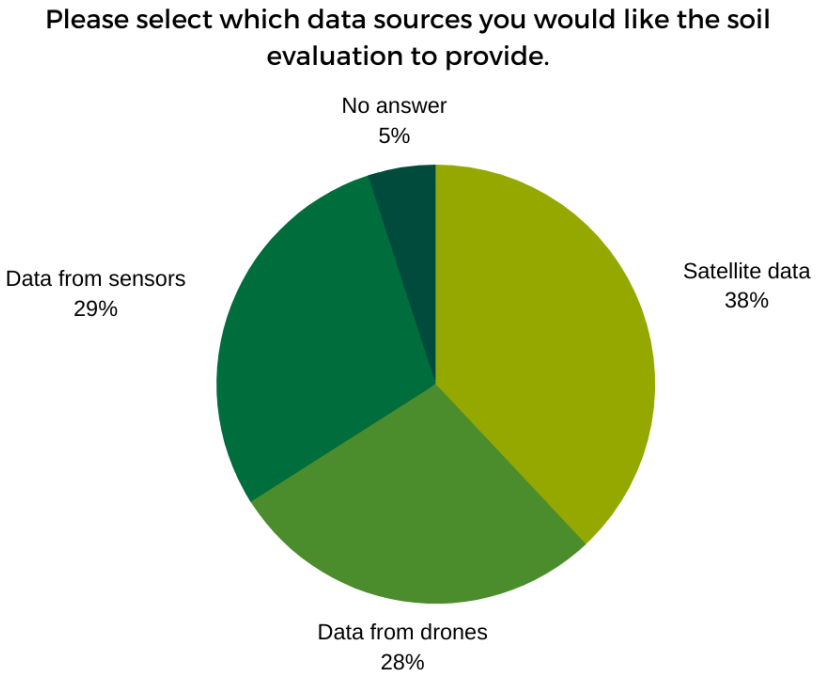

Figure 50: The data sources that the respondents would prefer for the soil evaluation.

Based on the responses, 48% of the participants preferred a spatial resolution of 20 meters for the accurate mapping of the area affected by a fire, while 34% of the participants preferred a resolution of 60 meters. Only 12% of the participants preferred a resolution of 250 meters, and 2% of the participants preferred a resolution of 500 meters. 4% of the participants did not provide an answer. Figure 51 displays the aforementioned.

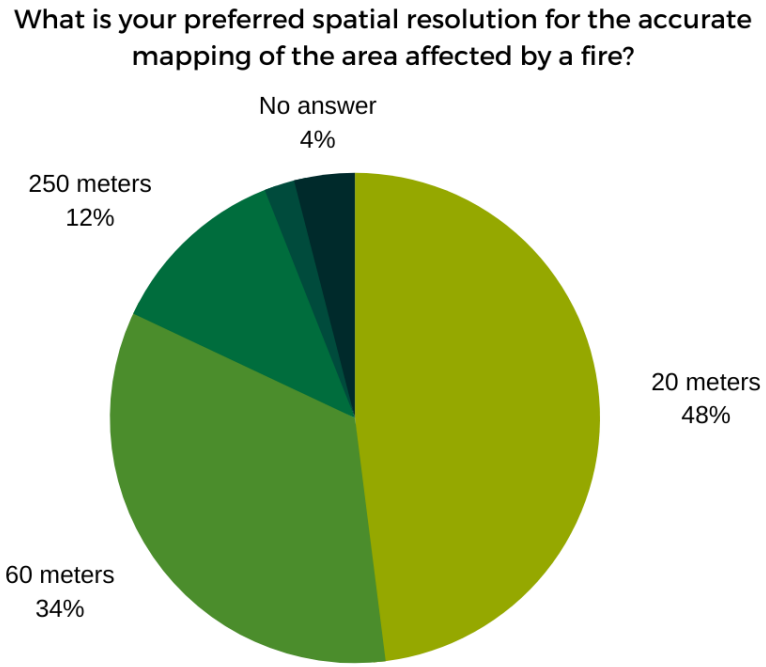

Figure 51: The spatial resolution that the respondents would prefer for the accurate mapping of the area affected by a fire.

Based on the responses, 44 respondents would like to have cost estimations provided for fire damage. 23 respondents would like economic cost estimations, while 25 would like direct cost estimations and 18 would like indirect cost estimations. 14 respondents specified that they would like costs related to insured losses, while 12 specified non-insured losses. Additionally, two respondents added costs from loss of ecosystem services as a type of cost estimation they would like to see. Finally, 2 respondents did not provide an answer to this question. Figure 52 shows the previously stated.

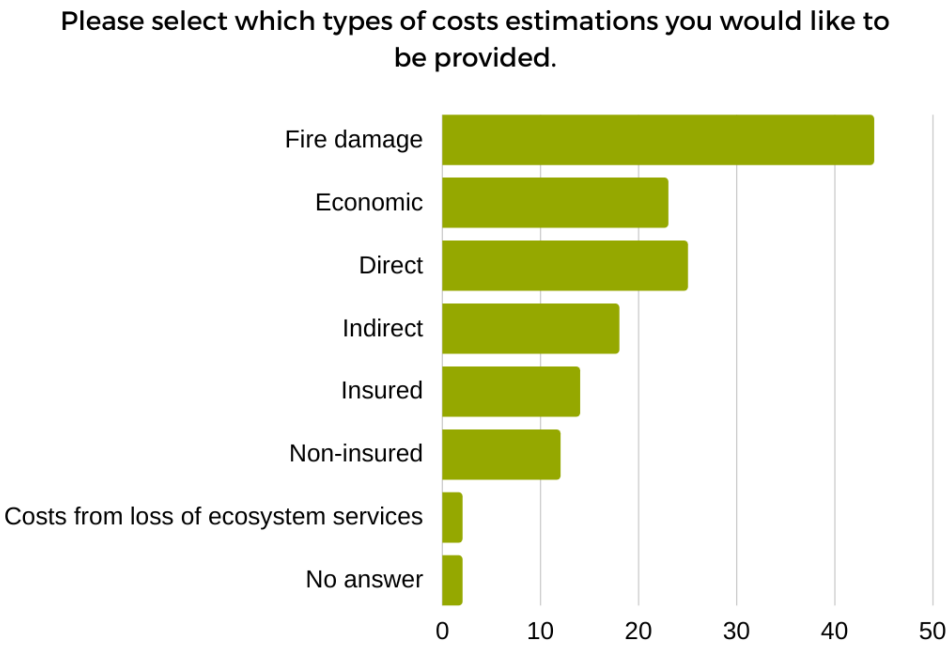

Figure 52: The types of cost estimations that the respondents would like to be provided.

Based on the responses to the question, "Please select which of the following sectors you would like to obtain the cost estimations," 38 respondents selected forestry as the sector they would like to obtain cost estimations for. This was followed by biodiversity/ecosystems with 29 responses. Infrastructures and buildings were tied with 20 responses each, while insurance had 20 responses. Only 2 respondents did not provide an answer to this question. As seen in Figure 53, the above-mentioned are depicted.

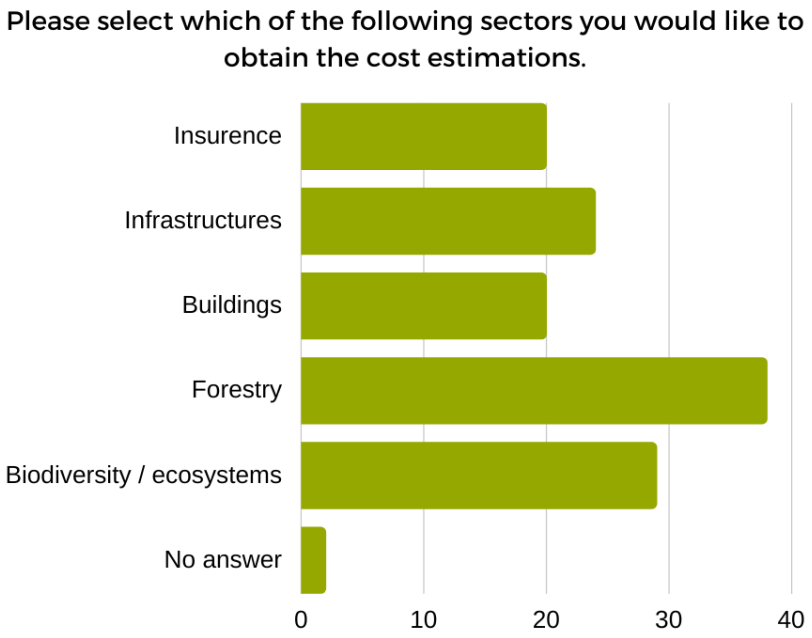

Figure 53: The sectors for which the respondents would like to obtain the cost estimations.

Detection and Response Processes

Based on the findings, the majority of respondents (28%) preferred to use thermographic images from drones or zeppelins for hotspot detection, followed by data from EFFIS (Copernicus) (26%). Ground cameras were the least preferred option at 15%, while 16% of respondents preferred data from FIRMS (NASA). It's worth noting that some respondents recommended the use of real-time alerts as a feature for hotspot detection. Additionally, 14% of respondents did not provide an answer. These findings suggest that thermal imagery from drones or zeppelins is a popular choice for detecting hotspots, possibly due to its accuracy and ability to cover large areas quickly. The use of satellite data, such as EFFIS or FIRMS, is also a viable option for hotspot detection. The recommendation of real-time alerts implies the importance of timely information in managing wildfires. Finally, it's important to note that some respondents did not provide an answer, indicating a lack of knowledge or interest in this area. The mentioned items are illustrated in Figure 54.

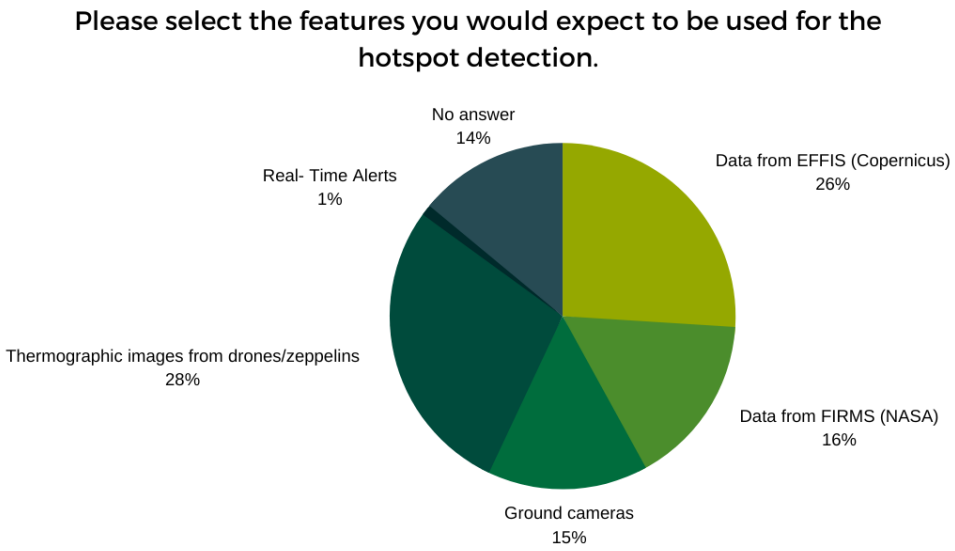

Figure 54: The features that the respondents would expect to be used for the hotspot detection.

According to the survey responses, the majority of the respondents (37) expected the visual object recognition tool to detect and track people, animals, or goods in danger. 30 respondents expected it to assist in search and rescue missions, while 26 expected it to assist in vehicle and personnel monitoring and to detect objects that could pose a threat. Additionally, 25 of the respondents expected it to oversee evacuation missions and 19 expected it to monitor traffic. Only a small percentage of respondents (3) did not provide an answer to this question. Figure 55 represents the previously mentioned.

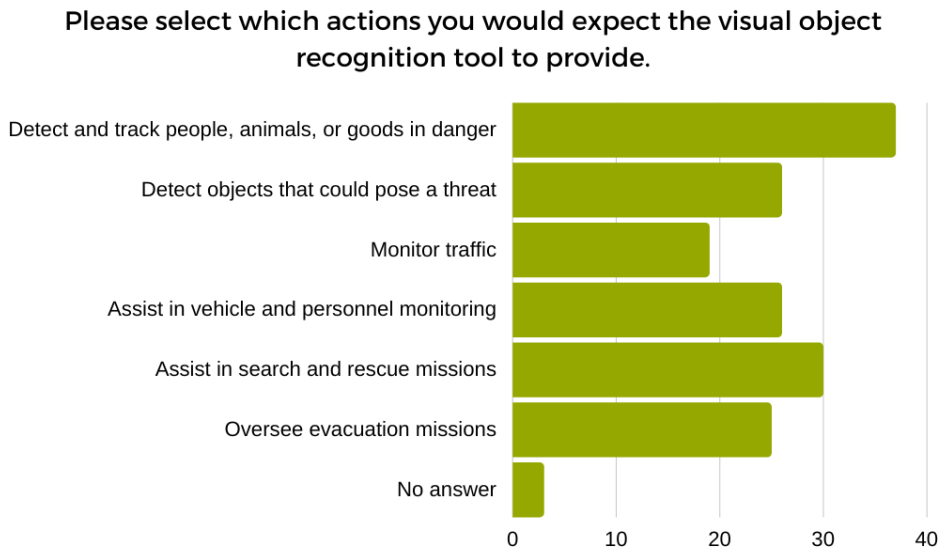

Figure 55: The actions that the respondents would expect the visual object recognition tool to provide.

The findings suggest that the majority of respondents (36%) prefer to receive SMS messages in case of an emerging fire situation, followed by email (31%) and instant messaging (28%). This indicates that mobile communication is considered an important channel for emergency notifications. However, it is important to note that 5% of respondents did not provide an answer, and it would be useful to investigate the reasons behind this. It is also worth considering the potential drawbacks of relying solely on mobile communication, as not everyone has access to a mobile device or may not be able to receive messages in certain locations or situations. Therefore, it may be necessary to supplement mobile communication with other channels, such as loudspeakers, sirens, or social media. The aforementioned are shown in Figure 56.

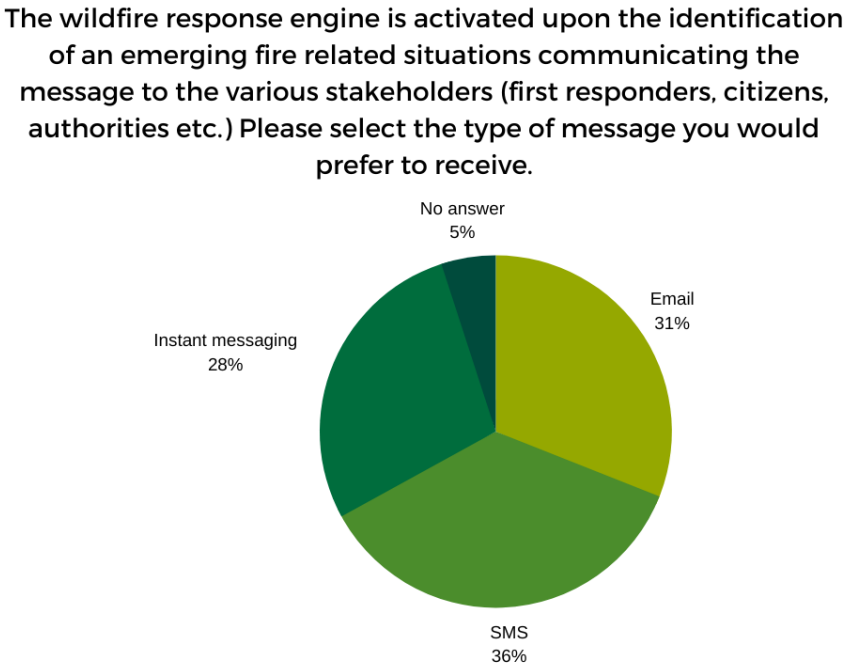

Figure 56: The type of message that the respondents would prefer to receive from the wildfire response engine when an emerging fire related situation is identified.

Social Media Analysis

Based on the survey results, 44% of the respondents indicated that they would be more interested in retrieving location information from attached images, while 27% preferred to obtain the location from tweets and 24% from posts or texts. Only 5% did not provide an answer. This suggests that visual content, such as images, may be a valuable source of location information for detecting and responding to fire events. However, it's worth noting that obtaining precise location information from social media posts may still pose some challenges, and additional efforts may be required to accurately identify and verify the location of a fire event based on social media data. Nonetheless, the majority of respondents (75%) believed that monitoring social media in real-time to detect a fire event or an indication of a fire (e.g., smoke) could be useful, highlighting the potential value of leveraging social media data for fire monitoring and response. Figure 57 displays the items mentioned earlier.

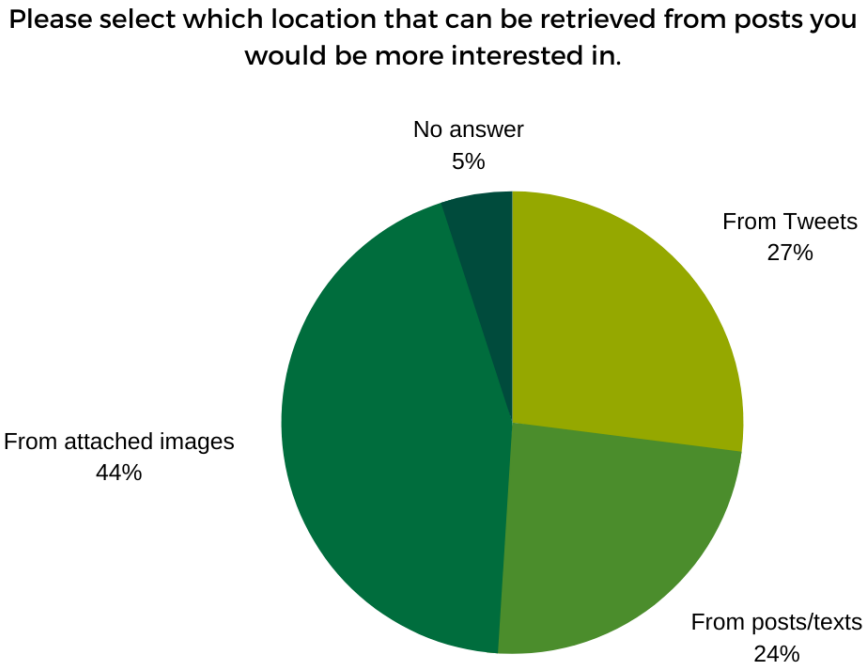

Figure 57: The preference of the participants for the retrieval of the locations of the posts.

The findings for the question "Would you be interested in the identification of users and user communities that play an important role in the case of a fire event?" show that a majority of respondents (81%) would be interested in such identification, while 19% of respondents would not be interested. It seems like a majority of respondents were interested in identifying users and user communities that play an important role in the case of a fire event. This could potentially help in targeting communication and outreach efforts towards these users and communities in case of emergency situations. It may also be useful for tracking the spread of information about the fire on social media and understanding how different groups are affected by the event.

Stakeholder valuable features

Based on the responses provided by the stakeholders, it is evident that the TREEADS platform is expected to provide a comprehensive set of features for effective forest fire management. The platform is expected to have various features that enable real-time detection and response to fire incidents, including fire area detection, propagation models, embers detection, smoke propagation models, forecast models, and real-time fire spread and gas emission monitoring. The stakeholders also emphasised the importance of AR/VR technology in providing immersive training and simulation environments for firefighting teams.

Another important feature of the TREEADS platform is its ability to support quick and effective decision-making in different phases of fire management, including prevention, detection, response, and ecological restoration. The platform should provide access to prevention maps, fire location maps, post-fire severity maps, and information on fires to

aid in decision-making. The stakeholders also emphasised the importance of the platform's ability to support risk management, incident management, and post-fire restoration phase, including sensor monitoring.

The stakeholders also highlighted the need for innovative solutions and a multisectoral approach to forest fire management. The platform should include features that support fire prevention and detection, such as monitoring dry areas, simulations, and updated landscape and fuel parameters. Additionally, the platform should provide support systems for minimising fire deaths, reducing accidental fire ignitions, reducing emissions from fires, controlling extreme and potentially damaging wildfires, and protecting fire-resistant areas.

Furthermore, the stakeholders emphasised the importance of the platform's ability to provide fast data processing and real-time updates during a fire event. The platform should include features that enable quick access to information, analysis, and appraisal for insurance purposes. Other important features of the TREEADS platform include services regarding exposure to wildfires and their risk estimation, technology providers, monitoring of dry areas, and showing the way to escaping routes for the public.

The responses from stakeholders also highlight the importance of information and training for effective forest fire management. The TREEADS platform should provide access to relevant information and training modules that can help users develop the skills and knowledge necessary for fire prevention, detection, response, and restoration. This can include training modules for different types of users, such as firefighters, first responders, government officials, and the public.

Moreover, the TREEADS platform should enable effective communication and collaboration between different stakeholders involved in fire management. The platform should provide features that enable real-time communication and sharing of information between different users, including government officials, firefighting teams, first responders, and the public. This can include features such as chat rooms, forums, and social media integration.

The responses from stakeholders also highlight the importance of using innovative technologies and systems for effective forest fire management. The TREEADS platform should be designed to leverage advanced technologies such as AI, machine learning, and big data analytics to provide actionable insights and predictions about fire behaviour, weather patterns, and ecological impacts. Additionally, the platform should incorporate emerging technologies such as drones, sensors, and satellite imagery to enable real-time monitoring and analysis of fire incidents.

Finally, the TREEADS platform should be designed with scalability and flexibility in mind. The platform should be able to accommodate the needs of different users and stakeholders, including government agencies, private organisations, and the public. Additionally, the platform should be able to adapt to changing environmental conditions, such as changes in weather patterns, vegetation growth, and wildlife behaviour. By incorporating these elements, the TREEADS platform can become a valuable tool for effective forest fire management and help protect our natural resources for generations to come.

In conclusion, the stakeholders' responses show that the TREEADS platform must include a wide range of features to enable effective forest fire management. The platform must

support real-time detection and response, quick and effective decision-making, innovative solutions, and a multisectoral approach to fire management. With these features, the TREEADS platform can help prevent, detect, respond to, and restore ecological systems affected by forest fires.

Stakeholder Concerns

The concerns expressed by stakeholders regarding the TREEADS platform are varied and highlight the importance of taking a comprehensive and thoughtful approach to developing and implementing such a system.

One of the primary concerns is connectivity, which emphasises the need for a robust and reliable system that can function in areas with limited or no connectivity. This concern underlines the importance of developing a platform that can function in a variety of contexts, ensuring that critical information can be accessed regardless of the availability of traditional communication methods.

Another concern is the complexity and accuracy of the system, which highlights the importance of ensuring that the platform is user-friendly while still providing accurate and actionable information. This concern emphasises the need to balance the functionality of the system with ease of use, ensuring that users can quickly and easily access and interpret the information provided.

A concern that is closely related to the complexity of the system is the need for user training. This highlights the importance of providing adequate training to users, ensuring that they can utilise the system to its full potential. Without proper training, users may be hesitant to use the system or may not fully understand its capabilities. The concerns expressed by stakeholders regarding the TREEADS platform are diverse and encompass a wide range of issues. One concern that was mentioned was the language barrier, which highlights the importance of ensuring that the platform is accessible to users who speak languages other than English. This concern is particularly relevant in areas where multiple languages are spoken, as it can be a significant barrier to effective communication and use of the platform.

Additionally, stakeholders also expressed concern regarding socioeconomic factors and educational background. These concerns are critical as they can affect access to technology and the ability to use it effectively. It is essential to ensure that the TREEADS platform is designed to be accessible to all users regardless of their socioeconomic status or educational background. This can be achieved through user-friendly interfaces, appropriate training, and support materials.

Another concern is the cost of the system, which emphasises the need to develop a platform that is accessible to a wide range of users, including those with limited resources. This concern underscores the importance of developing a sustainable funding model that ensures the long-term viability of the platform.

The concern regarding the duration of implementation highlights the need for a clear and effective rollout plan, ensuring that the platform can be deployed in a timely and efficient manner. This concern also emphasises the importance of collaborating with stakeholders throughout the development and implementation process, ensuring that their needs are taken into account.

Concerns regarding data collection, processing, and visualisation highlight the importance of developing a platform that can handle large amounts of data while still providing clear and concise information to users. This concern underscores the need to develop a platform that can effectively handle a variety of data sources, including real-time data.

Another key concern is the sustainability of the platform, which emphasises the importance of developing a system that can adapt to changing needs and circumstances over time. This concern underscores the need for ongoing maintenance and support, as well as a commitment to continued innovation and improvement.

Finally, concerns regarding the environment emphasise the importance of developing a platform that takes a comprehensive and holistic approach to wildfire management, including prevention, response, and restoration. This concern highlights the need to ensure that the platform is designed to support sustainable and effective wildfire management practices.

In summary, the concerns expressed by stakeholders regarding the TREEADS platform highlight the importance of developing a system that is robust, reliable, user-friendly, accessible, and sustainable. These concerns underscore the need for a comprehensive and collaborative approach to developing and implementing the platform, ensuring that the needs of stakeholders are taken into account throughout the process. Addressing these concerns will be critical to ensuring the platform's success and its ability to effectively manage forest fires, protect natural resources, and safeguard communities. By taking into account these concerns, TREEADS can develop a platform that effectively supports wildfire management efforts, ultimately helping to protect people, property, and the environment.

Stakeholders Recommendations

The recommendations provided by stakeholders for the TREEADS platform are critical to its success in addressing the challenges of forest fires. First and foremost, the platform should be user-friendly, with a simple and intuitive interface, and the functions should be presented in an easily understandable manner. This is essential to ensure that users, regardless of their background or education, can operate the platform effectively and efficiently.

Furthermore, the stakeholders emphasise the need for the platform to be accessible, low maintenance, and have low operation costs, as well as fully financed for the end-users or authorities. This is important to ensure that the platform is sustainable and that it can continue to be used in the long run, which is crucial for effective forest fire management.

There is also a need to have experts in the field of fire and forestry review the platform to ensure that it is up to date and relevant to the challenges faced by stakeholders. Additionally, training on how to implement and use the platform should be provided, and the platform should be problem-oriented, with characteristics that are useful in real-life situations. This would ensure that the platform is not only user-friendly but also practical and effective in mitigating forest fires.

The recommendation to keep the platform a simple interface, also known as KISS (Keep It Simple, Stupid), is important to prevent confusion and ensure that the platform can be easily understood and used. This is critical as the platform has a vast amount of

information and functions provisioned, making it challenging to keep it clear and simple to use.

Finally, the stakeholders emphasise the need for communication with the actors of the territory at all levels, including the general public, civil protection agencies, and other stakeholders. This is important for raising awareness about the platform and its capabilities, increasing its adoption rate, and ensuring that it is integrated into existing forest fire management systems.

In conclusion, the recommendations provided by stakeholders highlight the importance of user-friendliness, accessibility, sustainability, training, expert review, and communication in the success of the TREEADS platform. It is essential to consider these recommendations and integrate them into the platform's development and implementation to ensure its effectiveness in managing forest fires.

LESSONS LEARNED

Wildfires have become an increasingly serious concern in many countries, causing devastation to communities, ecosystems, and economies. To mitigate the risk and impact of wildfires, stakeholders from various countries have been utilising advanced technologies and platforms, such as the TREEADS platform, to improve wildfire detection, prevention, and response. Through their experiences, stakeholders have gained valuable insights and lessons learned in dealing with wildfires, taking into account each country's unique geography, wildfire occurrence, detection facilities, and socioeconomic conditions.

In Austria, stakeholders have highlighted the importance of using GIS technology for wildfire detection, as well as the need for the TREEADS platform to be problem-oriented and easy to use. Stakeholders in Germany have emphasised the need for simplicity and user-friendliness in the platform, with a focus on features such as fire area detection and forecast models. The Spanish stakeholders have emphasised the importance of early detection and effective management of wildfires, with a focus on cooperation between different agencies and stakeholders. They have also highlighted the need for better use of technology, such as drones and satellite imagery, for wildfire monitoring and prevention. In Greece, stakeholders have underscored the importance of integrating multiple tools and services, as well as making the platform accessible and understandable for the general public. Stakeholders in Romania have emphasised the importance of community engagement in wildfire prevention and management, particularly in rural areas where wildfires are more common. They have also stressed the need for greater investment in technology and infrastructure to improve early detection and rapid response to wildfire events.

Meanwhile, in Taiwan, stakeholders have prioritised technology providers and emphasised the importance of detection and response, restoration and adaptation, and prevention and preparation. Overall, the lessons learned from these stakeholders highlight the need for advanced technologies and platforms in the fight against wildfires, while also stressing the importance of simplicity, accessibility, and problem-oriented solutions to ensure their effectiveness.

PILOT USE CASE 1: WILDFIRES IN NORTHERN EUROPE

Norway is a country that is geographically diverse, with fjords, mountains, and forests dominating its landscape. Due to its geographical features, wildfires pose a significant threat to the country's forests and ecosystems, especially during the dry season. To address this issue, stakeholders in Norway have utilised the Wildfire GIS, which utilises the DSB map to identify areas with high forest fire potential, and NIBIO to provide critical information about the country's forests.

The TREEADS platform is one of the latest technological solutions aimed at addressing wildfire-related issues in Norway. The stakeholders have identified the preventive monitoring and information during a fire, as well as the opportunity for simulation and training, as the most valuable features of the platform. However, stakeholders have expressed concerns about the large views with a lot of data handling, and the cost level and user requirements associated with the platform.

To address these concerns, stakeholders recommend that the gap between the platform and end-users should not be too significant at the start, and that the system should be scalable. Additionally, stakeholders recommend that the TREEADS platform should be fully financed for the end-users or authorities involved in the project.

In conclusion, Norway's unique geography, wildfire occurrence, and wildfire detection facilities have played a significant role in shaping the lessons learned from stakeholders. The use of technology, such as the Wildfire GIS and the TREEADS platform, presents an opportunity to address wildfire-related issues in Norway effectively. However, the concerns raised by stakeholders regarding the platform's cost, user requirements, and data handling capabilities must be addressed to ensure the platform's successful implementation.

PILOT USE CASE 2: CABLE CAR SYSTEM IN THE SORRENTO PENINSULA

Italy is a country with a varied geography that is prone to wildfires. The country is mostly mountainous, with numerous forests, which increases the risk of fires. In recent years, the occurrence of wildfires has increased due to the effects of climate change, with hotter and drier summers, as well as human activities such as deforestation and agricultural expansion.

Italy has a number of wildfire detection facilities, including satellite monitoring, drones, and sensors. The Italian Space Agency (ASI) has been monitoring wildfires using satellite data for several years. In addition, the Italian Civil Protection Agency operates a number of aircraft equipped with infrared sensors and drones for monitoring wildfires. However, despite these efforts, wildfires still pose a significant threat to Italy's environment, economy, and society.

Socioeconomic conditions in Italy also play a role in the country's ability to manage wildfires. Italy is one of the most densely populated countries in Europe, with a large urban population. This makes it difficult to evacuate people during a wildfire, and also increases the risk of fires starting due to human activities such as careless cigarette disposal or fireworks. In addition, Italy has a significant agricultural sector, with many farms and vineyards located in rural areas, which increases the risk of fires spreading to these areas.

Despite the challenges posed by wildfires in Italy, there were no stakeholders who answered to the TREEADS platform survey for building and validating TREEADS platform V1. However, the lack of stakeholder input should not be taken as an indication that the platform is not needed or useful in Italy. On the contrary, the platform could provide valuable tools for monitoring and preventing wildfires, as well as improving emergency response and evacuation efforts. The contribution of the Italian Stakeholders will be added to TREEADS platform survey for building and validating TREEADS platform V2.

In conclusion, the risk of wildfires in Italy is significant, and the country faces a number of challenges in managing this risk. The TREEADS platform could provide valuable tools for addressing these challenges, although it is important to take into account Italy's unique geography, socioeconomic conditions, and wildfire detection facilities when implementing the platform. Even though there was no stakeholder input in the survey, the platform could still be useful and valuable for Italy in its efforts to manage wildfires.

PILOT USE CASE 3: WILDFIRE IN A NATIONAL PARK

Romania is a country located in southeastern Europe with a diverse geography ranging from the Carpathian Mountains to the Black Sea coast. Wildfires are common in Romania, especially during the summer months, and the country has experienced significant damage to its forests and wildlife as a result of these fires. Despite this, only one stakeholder who participated in the survey reported using Wildfire GIS, highlighting a potential lack of awareness or utilisation of wildfire detection facilities in the country.

The stakeholders in Romania found several features of the TREEADS platform valuable, including the possibility of following the evolution of the fire in real-time, the inclusion of innovative technologies and systems to protect against vegetation fires, weekly mapping of activities in protected natural areas, and timely notification of outbreaks. However, concerns were raised about the accessibility and intuitive use of the platform, the security of user data, and the need for user training on how to implement and use the platform. Stakeholders also recommended that the platform be simple and intuitive to use, and that its features be developed to be useful in real-life situations.

In conclusion, Romania faces significant wildfire risks, and stakeholders recognise the potential value of the TREEADS platform in detecting, monitoring, and responding to these risks. However, there is a need for greater awareness and utilisation of wildfire detection facilities in the country, as well as a focus on user training and accessibility to ensure the platform is useful and effective for those who need it most. The feedback from stakeholders in Romania will be crucial in developing and refining the TREEADS platform to better serve the needs of the country and its communities.

PILOT USE CASE 4: WIDE AREA WILDFIRES

Spain is a country with a varied geography, ranging from the mountainous regions of the Pyrenees and the Sierra Nevada to the coastal plains and the interior plateaus. This diverse landscape is also prone to wildfires, with an average of 13,000 wildfires per year. Therefore, it is essential to have effective wildfire detection facilities and management systems in place to prevent and mitigate the devastating impacts of wildfires.

The TREEADS platform has received mixed feedback from the stakeholders in Spain. While some stakeholders appreciated the multi-sectoral approach and the use of innovative solutions in the platform, others were concerned about the longevity and practicality of the platform. Only two stakeholders had prior experience with Wildfire GIS, while the majority had no experience. This highlights the need for increased awareness and training for such systems in the region.

The stakeholders in Spain identified the post-fire restoration phase and sensor monitoring, prevention maps, fire location maps, and post-fire severity maps as the most valuable features of the TREEADS platform. They also highlighted the importance of support systems for quick and effective decision-making, fire prevention and detection, and simulations and landscape/fuel updated parameters.

However, stakeholders expressed concerns regarding the platform's longevity and the ability to update data such as vegetation parameters and weather. Additionally, they were concerned about the wide coverage of technological functions and services and the need for the mapping and data collection to translate into practical applications. The stakeholders also recommended that the platform be more pedagogical, reviewed by experts in the field of fire and forestry, and understandable for those who are not experts in the field. They also recommended that the platform be implemented as soon as possible, despite not having all the details developed.

The stakeholders' feedback highlights the need for a comprehensive and practical wildfire detection and management system in Spain. The TREEADS platform's potential to address these needs is promising, but it needs to be accessible, sustainable, and adaptable to the specific needs of the region. Increased awareness, training, and communication with stakeholders at all levels can ensure that the platform's development and implementation are successful. Additionally, continuous updates and improvements to the platform can address stakeholders' concerns and ensure that it remains relevant and useful over time.

PILOT USE CASE 5: PERI-URBAN WILDFIRE, VIENNA

Austria, with its diverse geography and forested areas, is susceptible to wildfires, and as such, there is a need for efficient wildfire detection and management. The stakeholders in Austria who have utilised Wildfire GIS have provided valuable insights into the features they find most valuable in the TREEADS platform.

According to the stakeholders, the most valuable features of the TREEADS platform are fire risk, fire spread, and bark beetle development (brad dev). This information is essential in creating an effective and efficient response to wildfire outbreaks. The platform provides real-time information on the severity of the fire and the areas at risk, enabling stakeholders to take appropriate measures in containing and extinguishing the fire.

However, one significant concern among stakeholders is the language barrier, which may hinder the platform's effectiveness in Austria, given its diverse linguistic landscape. The platform must be accessible to users in their preferred language to ensure efficient communication and decision-making during wildfire outbreaks.

Another concern is the compatibility of different national and international interfaces. The platform must be compatible with existing systems and interfaces to ensure seamless integration and effective wildfire management.

In light of these concerns, stakeholders recommend that the platform be as simple as possible and problem-oriented to ensure ease of use and application. Furthermore, there is a need for more networking within the partners and more practice-oriented research and application to ensure the platform's effectiveness.

In conclusion, the lessons learned from the stakeholders in Austria highlight the need for effective wildfire management and the role that technology can play in achieving this goal. The TREEADS platform provides valuable tools and features that can enhance wildfire management in Austria. However, there is a need to address the concerns raised by stakeholders, including the language barrier and compatibility issues, to ensure the platform's effective implementation and use.

PILOT USE CASE 6: FIRE SCIENCE OF WILDFIRES AND SAFETY MEASURES

Germany is a country that is no stranger to wildfires. In recent years, Germany has witnessed an increase in the frequency and severity of wildfires due to factors such as climate change, drought, and human activities. As a result, there is a growing need for effective wildfire management strategies and tools that can help prevent and control wildfires. The TREEADS platform is one such tool that has been developed to aid in wildfire management.

The stakeholders in Germany who have utilised the wildfire GIS include the GIS system of Lower Austria and the Landes GIS System. According to these stakeholders, the most valuable features of the TREEADS platform are fire area detection, propagation models, embers detection, smoke propagation models, forecast models, fast data processing in the event of a fire event, and appraisal for insurance. These features provide a comprehensive understanding of the fire's behaviour and can help prevent and control wildfires. Additionally, fast data processing is critical in a wildfire event as it enables quick and effective decision-making.

However, the stakeholders in Germany have also expressed concerns about the TREEADS platform. The platform is deemed too complex overall and only usable for experts. Additionally, there are concerns about the platform's availability and price. The platform's many features and factors can be overwhelming, and stakeholders are uncertain about how they can use it and what it will cost them.

To address these concerns, stakeholders in Germany recommend that the TREEADS platform should be kept simple and problem-oriented. The platform should focus on practical software solutions that are usable every day, such as the KISS principle (Keep it Simple, Stupid). The platform should be designed to be more user-friendly and accessible to non-experts. Additionally, stakeholders recommend that the platform should be written in German to eliminate any language barriers.

In conclusion, the stakeholders in Germany have valuable insights into the use of the TREEADS platform for wildfire management. The platform's features are helpful, but the complexity of the platform and its availability and pricing are major concerns. To address these concerns, the platform must be kept simple and problem-oriented, with a focus on practical software solutions that are usable every day. The platform should be accessible to non-experts and written in German to eliminate any language barriers. By taking these recommendations into account, the TREEADS platform can be a valuable tool for wildfire management in Germany.

PILOT USE CASE 7: HUMAN AND ANIMAL EVACUATION

Greece is a country with a diverse geography that includes mountainous terrain, islands, and a Mediterranean climate. Unfortunately, this geographical diversity also makes Greece highly susceptible to wildfires. In recent years, wildfires in Greece have caused devastating damage to natural habitats, human settlements, and critical infrastructure. These wildfires are not only caused by natural factors, such as high temperatures and dry weather conditions, but also by human factors, such as illegal burning, arson, and negligence.

In order to address the threat of wildfires in Greece, stakeholders have been utilising various tools and technologies, including wildfire GIS systems like Engage. However, only a minority of stakeholders have actually utilised these systems, indicating the need for greater awareness and education around these tools. The stakeholders in Greece have identified several features of the TREEADS platform that are valuable to them. One of the most important is the readiness of the app in case of a fire event, as well as its ability to manage the traffic load and demand for information during such events. They also emphasised the importance of risk management and incident management, minimising fire deaths, reducing accidental fire ignitions, and reducing emissions from fires. Additionally, they highlighted the significance of fire detection and behaviour, monitoring, and showing the way to escaping routes for the public.

One of the greatest concerns of the stakeholders in Greece is the integration of multiple available tools and services into the TREEADS platform. They are also concerned about the sustainability and non-operation of the platform, equipment durability, real-time data coordination, operation, complexity, accuracy, and connectivity. These are legitimate concerns that must be addressed in order to ensure the success of the platform in Greece.

The stakeholders in Greece have several recommendations for the TREEADS platform. They suggest that the platform should be user-friendly and simple for end-users. Additionally, they recommend greater notification and information to the general public about the program to raise awareness and support its actions. The platform should also be easy to use by end-users with low maintenance and operation costs. The stakeholders also recommend the creation of a unified system of communication and receiving knowledge of events and resources attempted by all civil protection agencies involved. This will require a good planning structure and user interfaces to ensure ease of use.

Socioeconomic conditions also play a role in the threat of wildfires in Greece. Poverty, unemployment, and lack of resources can contribute to the risk of wildfires by making it more difficult for individuals to maintain their properties and clear debris. Furthermore, poverty can limit access to education and information about the dangers of wildfires and how to prevent them. These socioeconomic factors highlight the need for greater investment in education and resources to help prevent wildfires in Greece.

In conclusion, the stakeholders in Greece have recognised the importance of incorporating technology into wildfire management to minimise damages caused by fires. The TREEADS platform has many valuable features that can aid in this effort. However, concerns regarding its integration, sustainability, and complexity must be addressed. The recommendations of the stakeholders in Greece, including user-friendliness, greater awareness, and ease of use, will be vital in ensuring the success of the platform in the country.

PILOT USE CASE 8: NON-EUROPEAN PILOT

Taiwan, a small island nation located in East Asia, has a unique geography, climatic conditions, and socioeconomic status that pose various challenges to its wildfire management. Taiwan is known for its rugged terrain, steep slopes, and dense vegetation cover, which make it vulnerable to forest fires. The island's hot and humid summers, coupled with strong winds, exacerbate the risk of wildfires.

The stakeholders in Taiwan, primarily concerned with detection and response, restoration and adaptation, and prevention and preparation, have found the TREEADS platform's technology providers to be the most valuable feature. This feature may be related to the need for advanced technology in detecting and responding to wildfire events.

Taiwan's wildfire detection facilities have significantly improved over the years. The island's wildfire management authorities have deployed various detection technologies, including remote sensing and geographic information systems (GIS), to monitor and detect wildfires. In addition, the country has an extensive network of fire lookout stations, cameras, and aerial surveillance systems to detect wildfires early.

The socioeconomic conditions of Taiwan also play a significant role in wildfire management. The island's densely populated areas and rapid urbanisation have increased the risk of wildfire ignition, particularly in areas where human activities, such as farming and construction, are common. Additionally, the country's economic status and limited resources make it challenging to manage and respond to wildfire events effectively.

The TREEADS platform's ability to provide accurate and timely information on fire risk, spread, and behaviour, as well as forecast models, can aid Taiwan's wildfire management authorities in minimising the risk of wildfire occurrence. However, the stakeholders have also expressed concerns about the complexity of the platform and its potential impact on their limited resources.

To address these concerns, the TREEADS platform could be designed to be more user-friendly and accessible to a broader range of stakeholders, including those with limited technical knowledge. Additionally, more significant efforts could be made to raise public awareness of the platform's benefits and to involve the community in wildfire prevention and preparedness efforts.

In conclusion, Taiwan faces significant challenges in managing wildfires due to its unique geography, climatic conditions, and socioeconomic status. The TREEADS platform's technology providers can offer significant benefits in detecting and responding to wildfire events. However, to ensure its effectiveness, the platform must be user-friendly, accessible, and widely adopted by all stakeholders involved in wildfire management in Taiwan.

ADOPTION OF THE SURVEY OBSERVATIONS

As the project develops into the second and final stages, a presentation of the observations that were taken forward would be very useful. To this end, a display of all recommendations for improvement of the platform follows.

According to the analysis results, the majority of responders preferred email for the notification service in addition to others, such as SMS and instant messaging. Based on this information extracted from the analysis, the email option will be an additional feature of the TREEADS platform. For the Detection and Response phase in particular, most of the participants preferred to receive information about an emerging fire related situation via SMS messaging, while a great number also preferred the instant messaging as well as the email option. Therefore, these services are the main notification services of the platform as it is developed.

In the context of improving the platform, several observations have been made. Regarding security services the survey indicated that the most necessary feature is user authentication, since the majority of participants selected it. Additionally, responders were really interested in the user, session and role management feature. This suggests that users are concerned with the security of their data and that is why these features are included in the second and final stages of the platform's development. Another helpful recommendation extracted from the analysis was the selection of user roles included in the Security Services category. Based on the analysis results most of stakeholders preferred the Registered role while a great number of participants also showed interest in the Anonymous role as well as the Administrator role. Thus, all of these roles are included in the platform. Survey participants expressed a clear preference for Role-Based Access Control (RBAC) as the preferred access control system for a wildfire-related IT application. Additionally, in terms of authentication, they indicated a strong preference for the implementation of two-factor authentication (2FA) and single sign-on (SSO). These identified features will be seamlessly integrated into the TREEADS platform through the utilization of the Identity and Access Management (IAM) tool, Keycloak. The incorporation of Keycloak as the chosen authentication and authorization tool ensures a seamless and robust management of roles and permissions within the platform. Keycloak not only supports RBAC but also facilitates SSO and 2FA, aligning perfectly with the identified preferences of the survey participants.

As for the map viewer, according to the survey, participants were more interested in functionalities such as "zoom", "pan", "coordinates" and "place search". They also preferred "view layer list" and the "turn layers on/off" functionalities. Lastly, the "select base layer" functionality was another one that stakeholders mentioned indicating the need of all these features of the TREEADS platform. In alignment with these functionalities the TREEADS platform will feature basic map management controls, including zoom, pan, and coordinates indication, ensuring a seamless user experience. Additionally, users will benefit from a robust search functionality for given locations. Enhancing the versatility of the map viewer, the platform will offer a layer switcher, a layer catalogue, and a base layer selector. Users will lastly be able to choose their desired background layer, selecting from options like satellite, hybrid, or terrain views.

The survey findings highlighted a predominant preference for the LoRaWAN protocol for data collection, a preference that aligns with the TREEADS platform's approach to gathering information from the environmental sensor network. Furthermore, a noteworthy proportion of respondents indicated their preference for the MQTT protocol in facilitating communication between IoT sensors and the TREEADS platform. To implement this, the platform will employ the open-source Eclipse Mosquito as the MQTT Broker. This choice allows for the seamless exchange of information, employing the publication/subscription model for efficient communication between sensors and the TREEADS platform.

In addition, regarding the Social Media monitoring category based on the analysis results, responders considered useful the real-time monitoring of social media posts. More specifically, the TREEADS platform will incorporate a social media analysis tool for the detection of a fire event.

As for the fire and smoke propagation service, the characteristics of the fire spread area that stakeholders preferred to be provided was information of the burned area as well as information of the burning area. Furthermore, almost half of all responders declared that they were interested in getting information of the perimeter of the provided area and all these recommendations were taken under consideration during the second and final stages of the platform's development.

According to the participants' feedback, a spatial resolution of 20 meters emerged as the preferred choice for precise mapping of fire-affected areas, representing the higher resolution among the available options. The participants' inclination towards high resolution is in harmony with the hotspot detection services within TREEADS, which leverage data from various sources and scales, encompassing both satellites (several tenths of meters) and drones (decimetres).

Most of respondents express a preference for utilizing thermographic images from drones or zeppelins for hotspot detection, while a substantial number of participants favour data from EFFIS or FIRMS. This aligns with TREEADS's hotspot detection service, which focuses on visualizing and downloading EFFIS/FIRMS products, detecting new hotspots using data from higher-resolution satellites or drones, and enhancing the spatial resolution of products employed by EFFIS/FIRMS.

As for the chemical soil properties, most of the participants were more interested in learning about the organic matter and the pH of the soil. Additionally, some stakeholders mentioned their interest in the values of inorganic matters giving extremely helpful insights in the second and last stages of the platform's development. Thus, the post-fire soil properties assessment will encompass chemical characteristics, including the examination of organic matter such as soil organic carbon, inorganic components like iron (hematite), and pH levels.

Regarding the recommendation of possible interventions in post-fire maps, the main sentiment among respondents is their desire for the inclusion of salvage logging which refers to the harvesting of trees affected by wildfires. Within the TREEADS platform, the post-fire decision support system will evaluate the optimal management objectives for areas within the fire perimeter and provide actionable recommendations. The

participants' preference will be incorporated by introducing a wood extraction suitability map, guiding the removal of wood from areas like a forest.

Participants expressed a major preference for the automatic collision avoidance functionality for UAVs. This preference aligns with TREEADS's adoption of a UAV platform called CERBERUS, leveraging on-board AI computational capabilities to facilitate tasks such as object detection and collision avoidance.

The consensus among respondents underscores the paramount importance of a user-friendly platform, emphasizing a simple and intuitive interface to enable effective and efficient operation irrespective of users' background or education. While participants express concern about the system's complexity and accuracy, they advocate for accurate and actionable information. Striking a balance between system functionality and user-friendliness is a shared desire, ensuring that users can quickly access and interpret the provided information. To address these concerns, significant emphasis is placed on crafting straightforward web interfaces, facilitating users' ease of interaction with the platform while ensuring a clear understanding of how to perform preferred actions. The foundation of the TREEADS platform will be a global WebGIS, serving as an end-user access web interface equipped with essential functionalities including a map viewer and advanced WebGIS tools. This framework will be expanded and enhanced by integrating additional functionalities through the incorporation of various TREEADS tools, each corresponding to specific phases, as widgets. The central WebGIS presents a more intuitive experience for users, eliminating the need for distinct WebGIS interfaces for each action phase. This unified environment streamlines user learning, as they only need to familiarize themselves with a single interface, ensuring a cohesive and globally accessible visual aspect.

In conclusion, the integration of the recommended features and functionalities by TREEADS stakeholders is an ongoing, iterative process that will be continually assessed throughout the platform's development until its final implementation.

UTILISATION AND EXTENSION OF PRE-EXISTING PLATFORMS

The TREEADS project aims to create novel products and incorporate them into a comprehensive Fire Management platform. Its objective is to optimize and reuse existing socio-technological resources for the prevention, detection, and restoration of forests at risk of wildfires. Specifically, the TREEADS platform seeks to enhance environmental sustainability and the safety of urban and rural ecosystems by redefining and strengthening forest protection and management. The project aims to achieve this through the development and validation of an innovative, sustainable, and practical holistic approach to wildfire management.

Various platforms for wildfire management have emerged, each addressing different facets of prevention, detection, and response. These platforms leverage advanced technologies such as GIS, remote sensing, and data analytics to enhance wildfire management capabilities. Some platforms focus on real-time monitoring, utilizing satellite data and ground sensors to detect and track fire incidents promptly. Others prioritize data analysis and predictive modeling, helping authorities assess fire risk and plan preventive measures.

Additionally, certain platforms emphasize user training and guidelines, providing resources for emergency services and forestry staff to enhance their preparedness. Coordination and communication platforms facilitate efficient collaboration among firefighting resources, ensuring a synchronized response to wildfires. Overall, these diverse platforms contribute to a comprehensive and technology-driven approach to wildfire management.

EFFIS (European Forest Fire Information System) stands out as a vital system for forest fire management, supporting services responsible for safeguarding forests in the European Union (EU) and neighbouring regions. Designed as a modular web geographic information system, EFFIS provides timely and historical data on wildland fires across Europe, the Middle East, and North Africa. Covering the entire fire cycle, EFFIS delivers insights into pre-fire conditions and evaluates post-fire damages. Its applications include an active wildfire viewer, statistical data portal, news portal, and climate anomaly forecasts. EFFIS also offers a data service presenting indicators for fire danger forecasts, active fires, burned areas, and fuel maps. With modules like Fire Danger Assessment, Emissions Assessment, Smoke Dispersion, Rapid Damage Assessment, Potential Soil Loss Assessment, and Vegetation Regeneration, EFFIS emerges as a comprehensive and multifaceted tool for effective wildfire management.

TREEADS aims to enhance and integrate the existing services offered by EFFIS, providing a comprehensive set of improvements. This includes an analysis of high-risk areas identified by the fire daily forecasting module, calculation of brightness temperature for hotspots or fire zones, improved spatial resolution for hotspot detection, surface area assessment of burnt regions, and the validation of hotspots using drone technology.

The connection with EFFIS extends to the early warning system, which supplements the current EFFIS indices, enriching the understanding of fire dynamics. TREEADS is building upon this early warning system by utilising a four layered approach (satellite, zeppelin, high drone, low drone). This strategic integration aims to enhance the capabilities of the EFFIS systems, providing a more detailed and comprehensive understanding of wildfires. Leveraging EFFIS Active Fire Detection, the hotspot service actively identifies and monitors hot spots and smoke plumes. This involves visualizing and downloading EFFIS products while enhancing their spatial resolution through unmixing algorithms.

Moreover, the fire daily forecasting module, a critical component for wildfire risk assessment, incorporates burned area records from EFFIS, including MODIS active fire data. The fire perimeter, integral to fire severity mapping for assessing wildfire impact and intensity, can be sourced from the EFFIS database. In addition, TREEADS integrates the latest burnt area data from EFFIS services and data, ensuring a more robust and sophisticated approach to wildfire management.

In conclusion, while EFFIS has established itself as a robust early warning system for forest fires in the European Union and neighbouring regions, the TREEADS platform represents a significant evolution in wildfire management. The TREEADS platform builds upon EFFIS's foundation, introducing innovative layers of satellite, zeppelin, and drone technologies for a more intricate and detailed assessment of wildfire conditions. This four-layered approach not only enhances the capabilities of EFFIS but also signifies a pioneering step toward a more advanced and comprehensive wildfire management system. The comparison underscores the TREEADS platform's commitment to optimizing existing

resources and technologies for a holistic and sustainable approach to prevent, detect, and restore areas at risk of wildfires.

CONCLUSIONS

In conclusion, the TREEADS platform has the potential to revolutionise forest fire management by providing a comprehensive set of features that enable real-time detection and response, quick and effective decision-making, innovative solutions, and a multisectoral approach to fire management. The responses from stakeholders highlight the importance of using advanced technologies, providing relevant information and training, enabling effective communication and collaboration, and designing the platform with scalability and flexibility in mind.

However, the concerns expressed by stakeholders regarding connectivity, complexity, user training, language barriers, socioeconomic factors, and cost highlight the importance of taking a comprehensive and thoughtful approach to developing and implementing the system. It is essential to ensure that the platform is accessible to all users regardless of their socioeconomic status or educational background and that adequate training is provided to maximise its potential.

The TREEADS platform can become a valuable tool for effective forest fire management and help protect our natural resources for generations to come. It is up to us to address the concerns of stakeholders and work collaboratively to create a platform that can meet the needs of all users and stakeholders. By doing so, we can minimise the devastating impact of forest fires on our environment, wildlife, and communities.

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ANNEX

To ensure that survey results are accurate and unbiased, it is crucial to provide transparency around the survey questions and their translations. The survey report, which contains the full survey questions and their corresponding translations. The annex provides readers with access to the exact questions asked in the survey and their translations in various languages.

ANNEX 1: SURVEY IN ENGLISH

Introduction	
What is the name of your company / organisation?	
What is your position / job title?	
How much are you aware about H2020 TREEADS?	[range] Never heard of it - Know all about it
FrontEnd	
Wildfire IT Applications (webGIS)	
Wildfire APP is a Web interface for end user's access to TREEADS platform, based on a map viewer, which will allow spatial information management mainly through the visualisation of maps, risk indices and routes.	
Do you require the wildfire-related IT apps for any of the following?	[checkboxes] Prevention and preparation Detection and response Restoration and adaptation
Have you utilised a wildfire GIS in the past?	[yes/no]
If yes, state which one?	

How would you like to access the application?	[checkboxes] Web browser Desktop application Mobile application Other
AR/VR Training	
TREEADS Virtual Reality (VR) application will be used as an online training and modelling system that allows users to build experience pre-built VR training resources but also to create interactive training content for training purposes.	
Have you had access to AR/VR training before?	[yes/no]
Do you have the resources or the expertise to access the simulations without TREEADS support?	[yes/no]
What would you like to do with such a tool?	[checkboxes] Run simulations View lessons/training materials Build custom scenarios View reports with progress and statistics Other
The scenario builder will allow trainers to assemble a custom simulation based on the existing environments. Which of the following tools do you need to assemble a useful simulation?	[checkboxes] Elements hazards Pieces of equipment Avatars Other

Please select which training materials you would utilise.	[checkboxes] Tool handling Fire truck functions Drone piloting Mapping procedures Cutting procedures Other
BackEnd	
Security Services	
TREEADS will require a set of User Authentication services to define the different levels of access according to the user's role.	
Which of the following features do you find necessary?	[checkboxes] User Authentication User, session, and role management Security features to protect data Server configuration Access Control Other
Please select the access control system type you would prefer.	[checkboxes] Discretionary Access Control (DAC) Mandatory Access Control (MAC) Role Based Access Control (RBAC) Other
What type of notification services do you prefer?	[checkboxes] Email SMS Instant messaging Other

Which of the following user roles would you like to be included in this tool?	[checkboxes] Anonymous/ Guests Registered Administrator Other
What types of authentication would you like to be supported?	Single-Factor/Primary Authentication Two-Factor Authentication (2FA) Multi-Factor Authentication (MFA) Single Sign-On (SSO)
Risk Analysis	
The Risk analysis tool module is a set of tools and risk indicators from realtime monitoring of fuel, atmosphere, and ground by a web information system. The fire exposure and risk assessment tool will be an Earth Observation based service kit for fire exposure and risk assessment. Using Copernicus time-series, it will provide services related to wildfire exposure and risk estimation.	
Please select the time period you consider adequate in order to create a map of activities in protected areas.	[checkboxes] Monthly Weekly Daily Other
Please select the time period you consider adequate for the detection of new constructions.	[checkboxes] Annually Every 6 months Every 3 months Monthly Weekly Other

Please select the time period you consider adequate for monitoring of drought areas.	[checkboxes] Monthly Weekly Daily Other
The agroforestry index will provide an accurate value for each forest area such as plant and tree species. Which of the following variables will you require to see the specific percentages?	[checkboxes] Soil property Percentage of crown cover Organic matter Soil erosion Stratification of crown cover Bulk density Vegetation Biomass Soil moisture Species diversity Other
The Accurate Forest Mapping tool provides physical and geometric characteristics. Please select which will you require information about.	[checkboxes] Tree species Tree height Biomass Fuel type Fuel conditions Other

Please select which of the following socioeconomic factors should be considered for the fire prevention system.	[checkboxes] Population Humanactivities Cultural traditions The proportion of population working in agriculture and service sectors Unemployment rate Illegal cutting The proportion of working population in the service sector Other
The Fire Prevention System tool will make suggestions regarding cleaning and maintenance in these areas by providing risk and priority maps. Please select the type of map you will prefer the maps will show the outputs.	[checkboxes] Percentages Colour Coded Heat-Map Traffic light approach Other
Map Services	
Map services are responsible for making maps available on the Internet. A map service makes maps, entities, and data attributes available within many types of client applications and at different levels.	

Please select which functionalities would you like to have in a map viewer.	[checkboxes] Zoom Pan View layer list Turn layers on/off Select base layer Find location Coordinate indicator Other
Please select the formats you would like to extract the map.	[checkboxes] Shapefile CSV / Spreadsheet KML GeoJSON TIFF/TIF PNG JPG GIF SVG Other
Fire and Smoke Propagation	
The Fire and Smoke Propagation Module is a toolbox designed for the simulation of some of the most important physical processes in the framework of forest fires. It will be composed of three different simplified physical models that can work independently or coupled, namely, a fire spread model, PhyFire; a smoke dispersion model, PhyNX; and a high-definition wind field model, HDWind.	

Please select which of the following characteristics of the fire spread area you would like to be provided.	[checkboxes] Burned area Burning area Mass fraction of consumed fuel Other
Please select the information of the area you want to be provided.	[checkboxes] Perimeter Position Thickness Other
Please select the preferred input and output format of the three models (PhyFire, HDWind, PhyNX).	[checkboxes] ASCII file format MEDIT file format VTK file format Avizo file format WTK file format Other
Please select which of the technical aspects of analysis of fire behaviour and spread you require for the development of safety measures.	[checkboxes] Temperature Velocity Soot fraction Smoke gas components Heat release rate in each grid point of the computational domain, Smoke layer height Flame thickness Other

Would you like to obtain visual explanations for the statistical models' decisions?	[yes/no]
Remote Sensors - IoT	
A system that consists of a multitude of low-cost IoT platforms consisting of sensors strategically spread in the forest which will be able to monitor nearby flammable gas and smoke emissions (such as LPG), local temperature and humidity, capture images and sounds and detect motion. This component is in charge of the cloud-based IoT system.	
This tool will include the utilisation of multiple sensors spread in the forest. Which of the following would you like to monitor?	[checkboxes] Flammable gas Smoke emissions Air quality Temperature Humidity Wind speed Wind direction Soil moisture Sounds / audio Images / video Motion Other
Which of the following protocols would you like to be used for data collection?	[checkboxes] LoRaWAN COAP MQTT Modbus/TCP AMQP Other
Evacuation and Planning	

This module will implement the tools that help those responsible for managing a fire scenario, for optimisation of route management and patrol in the area.	
Please select which of the following you would utilise the evacuation and planning tool.	[checkboxes] Optimise route management and patrol Find potential evacuation routes Estimate the evolution of the incident Other
Please rank the information you would like to know for a successful evacuation and planning from most relevant to least relevant.	[checkboxes] Spread of the fire Direction of the wind Condition of the road network Presence of humans, animals or vehicles Other
The iCrowd platform is an agent-based crowd simulator, capable of simulating small-(tens of agents) and large-scale (thousands of agents) crowds. It can be utilised for scenarios in any bounded area, such as buildings' interior and exterior, stadiums, open-air festivals, and public areas of increased traffic.	
Please select the areas that you would like to run the iCrowd simulation.	[checkboxes] Building interior Building exterior Stadium Open-air festival Public spaces Other
Please select which of the following you would like to track during the iCrowd simulation.	[checkboxes] People Vehicles Livestock Other

UAV Solutions	
This component will manage the UAV command and control system (CCS) that represents the main interface for users to access to the functionalities deployed in the HAPS via MCC, allowing the monitoring of the UAV, the request of multispectral images (EO/IR), and the image processing.	
Do you have access to UAVs?	[yes/no]
Please select what type of UAV you have available?	[checkboxes] Multi-Rotor Drones Fixed-Wing Drones Single-Rotor Drones Fixed-Wing Hybrid VTOL Other
Please select the actions you would like to perform with the UAV Command and Control System tool.	[checkboxes] Navigate UAV Monitor telemetry Request multispectral images Other
The UAV will have motion collision/manual avoidance functionality. Please select what type of avoidance functionality you would prefer.	[checkboxes] Motion Collision/ Manual avoidance Automatic collision avoidance Other

VLOS (Visual Line of Sight) where the drone must be always clearly visible by the drone operator without any additional aid. EVLOS (Extended Visual Line of Sight) where the drone operation coverage can be extended using one or visual observers who keep a visual contact with the drone. BVLOS (Beyond Visual Line of Sight) where the operator can remotely control the drone without maintaining visual contact at all times and without assistance from observers.	
With which of the following regarding the drone line of sight would you be satisfied?	[checkboxes] VLOS EVLOS BVLOS Other
Resource Management System	
Resource management component is responsible for enabling end-users to coordinate resources and efficiently manage the available material and human resources in an area, in order to have an Optimal Situational Awareness during a fire. This information is of interest in order to coordinate tactical, strategic and operational activities in the event of an alarm.	
Please select if you have used any of the following software.	[checkboxes] D4H ESO Fire RMS New World Public Safety TargetSolutions TCP Aladtec Scheduling Rhodium Incident Management FireHouse Manager ImageTrend EMS Critical Care High Plains RMS ImageTrend Fire RMS Other

Please select which of the following functions you would utilise.	[checkboxes] Optimise resource planning Manage people allocations Predict resource utilisation Equipment Management Incident Management Post-Emergency Analysis Incident and Emergency Planning Mass Notifications Third-Party Data Mining Volunteer Management Other
Please select the codes that need to be met from the RMS you utilise.	[checkboxes] National Fire Incident Reporting Systems (NFIRS) codes National Fire Protection Association (NFPA) codes International Code Council (ICC) codes Other
Post Fire Restoration	
This module comprises the tools to create pre-fire condition models for accurate post-fire restoration. As well as key indicators in the evaluation of burned areas and soil restoration	
What categories of recommended interventions would you like to be visualised in post-fire maps?	[checkboxes] No intervention areas Salvage logging Natural generation Drone seed spread Other

Please select which of the physical properties of the soil you would require values.	[checkboxes] Texture Structure Weight Density Colour Temperature Permeability Porosity Plasticity Compressibility Erodibility Other
Please select which of the following chemical properties of the soil you would like values to be provided.	[checkboxes] pH (acidity / alkalinity) Organic matters Inorganic matters Other
Please select which data sources you would like the soil evaluation to provide.	[checkboxes] Satellite data Data from drones Data from sensors Other
What is your preferred spatial resolution for the accurate mapping of the area affected by a fire?	[checkboxes] 20 meters 60 meters 250 meters 500 meters Other

Please select which types of costs estimations you would like to be provided.	[checkboxes] Fire damage Economic Direct Indirect Insured Non-insured Other
Please select which of the following sectors you would like to obtain the cost estimations.	[checkboxes] Insurance Infrastructures Buildings Forestry Biodiversity/ ecosystems Other
Detection And Response Processes	
The present module belongs to the detection and response phase.	
Please select the features you would expect to be used for the hotspot detection.	[checkboxes] Data from EFFIS (Copernicus) Data from FIRMS (NASA) Ground cameras Thermographic images from drones/zeppelins Other

Please select which actions you would expect the visual object recognition tool to provide.	[checkboxes] Detect and track people, animals, or goods in danger Detect objects that could pose a threat Monitor traffic Assist in vehicle and personnel monitoring Assist in search and rescue missions Oversee evacuation missions Other
The wildfire response engine is activated upon the identification of an emerging fire related situations communicating the message to the various stakeholders (first responders, citizens, authorities etc.) Please select the type of message you would prefer to receive.	[checkboxes] Email SMS Instant messaging Other
Social Media Analysis	
This module will focus on the monitoring of fire events as they are expressed on social media (Twitter, in particular) by individuals, such as online users that are noticing a fire or indications of a potential fire, e.g., smoke.	
Do you believe that monitoring (in real-time) social media (Twitter) posts to detect a fire event or an indication of a fire (e.g., smoke) could be useful?	[yes/no]

Please select which location that can be retrieved from posts you would be more interested in.	[checkboxes] From Tweets From posts/texts From attached images Other
Would you be interested in the identification of users and user communities that play an important role in the case of a fire event?	[yes/no]
Summary	
Which features of the TREEADS platform are most valuable to you?	
What is your greatest concern about the TREEADS platform?	
What recommendations do you have for the TREEADS platform?	

ANNEX 2: SURVEY TRANSLATED IN NORWEGIAN

Introduksjon	
Hva er navnet på din bedrift/organisasjon?	

Hva er din stilling/jobbtittel?	
Hvor mye vet du om H2020 TREEADS?	[område] Aldri hørt om det - vet alt om det
FrontEnd	
Wildfire IT Applikasjoner (webGIS)	
Wildfire APP er et webgrensesnitt for sluttbrukers tilgang til TREEADS-plattformen, basert på en kartviser, som vil tillate romlig informasjonshåndtering hovedsakelig gjennom visualisering av kart, risikoindekser og ruter.	
Trenger du skogbrannrelaterte IT-apper for noen av følgende?	[avmerkingsbokser] Forebygging og forberedelse Deteksjon og respons Restaurering og tilpasning
Har du brukt et skogbrann-GIS tidligere?	[Ja / Nei]
Hvis ja, oppgi hvilken?	
Hvordan vil du ha tilgang til applikasjonen?	[avmerkingsbokser] Nettleser Desktop-applikasjon Mobil applikasjon Annet
AR/VR Training	
TREEADS Virtual Reality (VR)-applikasjonen vil bli brukt som et nettbasert opplærings- og modelleringssystem som lar brukere bygge opp erfaring forhåndsbygde VR-treningsressurser, men også lage interaktivt treningsinnhold for treningsformål.	
Har du hatt tilgang til AR/VR-trening før?	[ja/nei]

Har du ressursene eller ekspertisen til å få tilgang til simuleringene uten TREEADS-støtte?	[ja/nei]
Hva vil du gjøre med et slikt verktøy?	[avmerkingsbokser] Kjøre simuleringer Se leksjoner/opplæringsmateriell Bygge tilpassede scenarier Se rapporter med fremdrift og statistikk Annet
Scenariobyggeren vil tillate trenere å sette sammen en tilpasset simulering basert på de eksisterende miljøene. Hvilket av følgende verktøy trenger du for å sette sammen en nyttig simulering?	[avmerkingsbokser] Fare elementer Utstyr Avatarer Annet
Velg hvilket opplæringsmateriell du vil bruke.	[avmerkingsbokser] Verktøyhåndtering Brannbilfunksjoner Dronekjøring Kartleggingsprosedyrer Kutteprosedyrer Annet
BackEnd	
Sikkerhetstjenester	
TREEADS vil kreve et sett med brukerautentiseringstjenester for å definere de forskjellige tilgangsnivåene i henhold til brukerens rolle.	

Which of the following features do you find necessary?	[avmerkingsbokser] Bruker autentisering Bruker-, økt- og rollestyring Sikkerhetsfunksjoner for å beskytte data Serverkonfigurasjon Adgangskontroll Annet
Vennligst velg typen tilgangskontrollsyste m du foretrekker.	[avmerkingsbokser] Skjønnsmessig tilgangskontroll (DAC) Obligatorisk tilgangskontroll (MAC) Rollebasert tilgangskontroll (RBAC) Annet
Hvilken type varslingstjenester foretrekker du?	[avmerkingsbokser] E-post SMS Direktemeldinger Annet
Hvilke av følgende brukerroller vil du ha med i dette verktøyet?	[avmerkingsbokser] Anonym/ Gjester Registrert Administrator Annet
Hvilke typer autentisering ønsker du at støttes?	Enkeltfaktor/primær autentisering Tofaktorautentisering (2FA) Multi-Factor Authentication (MFA) Enkel pålogging (SSO)
Risk Analysis	

Risikoanalyseverktøymodulen er et sett med verktøy og risikoindikatorer fra sanntidsovervåking av drivstoff, atmosfære og bakke ved hjelp av et webinformasjonssystem. Brannekseponerings- og risikovurderingsverktøyet vil være et jordobservasjonsbasert servicesett for brannekseponering og risikovurdering. Ved å bruke Copernicus-tidsserier vil den tilby tjenester relatert til eksponering for skogbrann og risikoestimering.	
Velg tidsperioden du anser som tilstrekkelig for å lage et kart over aktiviteter i verneområder.	[avmerkingsbokser] Månedlig Ukentlig Daglig Annet
Vennligst velg tidsperioden du anser som tilstrekkelig for oppdagelse av nye konstruksjoner.	[avmerkingsbokser] Årlig Hver 6. måned Hver 3. måned Månedlig Ukentlig Annet
Velg tidsperioden du anser som tilstrekkelig for overvåking av områder utsatt for tørke.	[avmerkingsbokser] Månedlig Ukentlig Daglig Annet

Agroforestry-indeksen vil gi en nøyaktig verdi for hvert skogområde som plante- og treslag. Hvilken av de følgende variablene trenger du for å se de spesifikke prosentene?	[avmerkingsbokser] Jordeiendom Prosent av kronedekke Organisk materiale Jorderosjon Stratifisering av kronedekke Romvekt Vegetasjon Biomasse Jordfuktighet Artsmangfold Annet
Verktøyet Accurate Forest Mapping gir fysiske og geometriske egenskaper. Velg hva du vil ha informasjon om.	[avmerkingsbokser] Treslag Trehøyde Biomasse Drivstoff type Drivstoffforhold Annet
Velg hvilke av følgende sosioøkonomiske faktorer som skal vurderes for det brannforebyggende systemet.	[avmerkingsbokser] Befolkning Menneskelige aktiviteter Kulturelle tradisjoner Andelen av befolkningen som jobber i landbruk og tjenesteytende sektorer Arbeidsledighet Ulovlig kutting Andelen yrkesaktive i tjenestesektoren Annet

Verktøyet for brannforebyggende system vil gi forslag angående rengjøring og vedlikehold i disse områdene ved å gi risiko- og prioriterte kart. Velg karttypen du foretrekker, kartene vil vise utdataene.	[avmerkingsbokser] Prosentandeler Fargekodet varmekart Trafikklys tilnærming Annet
Karttjenester	
Karttjenester har ansvar for å gjøre kart tilgjengelig på Internett. En karttjeneste gjør kart, enheter og dataattributter tilgjengelige innenfor mange typer klientapplikasjoner og på forskjellige nivåer.	
Velg hvilke funksjoner du vil ha i en kartviser.	[avmerkingsbokser] Zoom Pan Se lagliste Slå lag på/av Velg basislag Finn plassering Koordinatindikator Annet

Velg formatene du vil trekke ut kartet.	[avmerkingsbokser] Shapefil CSV / regneark KML GeoJSON TIFF/TIF PNG JPG GIF SVG Annet
Brann- og røykspredning	
Brann- og røykspredningsmodulen er en verktøykasse designet for simulering av noen av de viktigste fysiske prosessene innenfor rammen av skogbranner. Den vil være sammensatt av tre forskjellige forenklede fysiske modeller som kan fungere uavhengig eller koblet, en brannspredningsmodell, PhyFire; en røykspredningsmodell, PhyNX; og en høyoppløselig vindfeltmodell, HDWind.	
Vennligst velg hvilke av følgende egenskaper ved brannspredningsområdet du ønsker å få.	[avmerkingsbokser] Brent område Brennende område Massefraksjon av forbrukt drivstoff Annet
Vennligst velg området du ønsker å få informasjonen om.	[avmerkingsbokser] Omkrets Posisjon Tykkelse Annet

Vennligst velg det foretrukne inngangs- og utdataformatet for de tre modellene (PhyFire, HDWind, PhyNX).	[avmerkingsbokser] ASCII-filformat MEDIT filformat VTK filformat Avizo filformat WTK filformat Annet
Velg hvilke av de tekniske aspektene ved analyse av brannatferd og spredning du trenger for utvikling av sikkerhetstiltak.	[avmerkingsbokser] Temperatur Hastighet Sotfraksjon Røykgasskomponenter Varmefrigjøringshastighet i hvert rutenettpunkt i beregningsdomenet, Høyde på røyklag Flammetykkelse Annet
Ønsker du å få visuelle forklaringer på de statistiske modellenes beslutninger?	[ja/nei]
Fjernsensorer - IoT	
Et system som består av en mengde rimelige IoT-plattformer bestående av sensorer strategisk spredt i skogen som vil kunne overvåke brannfarlig gass og røykutslipp (som LPG), lokal temperatur og fuktighet, fange bilder og lyder og oppdage bevegelse. Denne komponenten er ansvarlig for det skybaserte IoT-systemet.	

Dette verktøyet vil inkludere bruk av flere sensorer spredt i skogen. Hvilket av det følgende vil du overvåke?	[avmerkingsbokser] Brannfarlig gass Røykutslipp Luftkvalitet Temperatur Luftfuktighet Vindfart Vindretning Jordfuktighet Lyder/lyd Bilder / video Bevegelse Annet
Hvilket av de følgende protokoller vil du bruke for datainnsamling?	[avmerkingsbokser] LoRaWAN COAP MQTT Modbus/TCP AMQP Annet
Evakuering og planlegging	
Denne modulen skal implementere verktøyene som hjelper de ansvarlige for å håndtere et brannscenario, for optimalisering av rutestyring og patruljering i området.	
Velg hvilket av det følgende du vil bruke evakuerings- og planleggingsverktøyet.	[avmerkingsbokser] Optimaliser rutestyring og patruljering Finn potensielle evakueringsveier Estimer utviklingen av hendelsen Annet

Ranger informasjonen du ønsker å vite noe om for en vellykket evakuering og planlegging fra mest relevant til minst relevant.	[avmerkingsbokser] Spredning av brannen Vindens retning Veinettets tilstand Tilstedeværelse av mennesker, dyr eller kjøretøy Annet
iCrowd-plattformen er en agentbasert publikumsimulator, som er i stand til å simulere små (tivis av agenter) og store (tusenvis av agenter) folkemengder. Den kan brukes til scenarier i ethvert avgrenset område, som bygningers interiør og eksteriør, stadioner, friluftsfestivaler og offentlige områder med økt trafikk.	
Velg områdene du vil kjøre iCrowd-simuleringen.	[avmerkingsbokser] Bygg interiør Bygning eksteriør Stadion Friluftsfestival Offentlige rom Annet
Velg hvilket av følgende du ønsker å spore under iCrowd-simuleringen.	[avmerkingsbokser] Mennesker Kjøretøy Husdyr Annet
UAV Løsninger	
Denne komponenten vil administrere UAV-kommando- og kontrollsystemet (CCS) som representerer hovedgrensesnittet for brukere for å få tilgang til funksjonaliteten som er distribuert i HAPS via MCC, som tillater overvåking av UAV, forespørsel om multispektrale bilder (EO/IR), og bildebehandling.	
Har du tilgang til UAV-er?	[ja/nei]

Vennligst velg hvilken type UAV du har tilgjengelig?	[avmerkingsbokser] Droner med flere rotorer Droner med faste vinger Droner med én rotor Hybrid med faste vinger VTOL Annet
Vennligst velg handlingene du ønsker å utføre med UAV Command and Control System-verktøyet.	[avmerkingsbokser] Navigere UAV Overvåke telemetri Forespørre multispektrale bilder Annet
UAV-en vil ha bevegelseskollisjons-/manuell unngåelsesfunksjonalitet. Velg hvilken type unnvikelsesfunksjonalitet du foretrekker.	[avmerkingsbokser] Bevegelseskollisjon/ Manuell unngåelse Automatisk unngåelse av kollisjoner Annet
VLOS (Visual Line of Sight) hvor dronen alltid skal være godt synlig for droneoperatøren uten ekstra hjelpemidler. EVLOS (Extended Visual Line of Sight) hvor droneoperasjonsdekningen kan utvides ved hjelp av en eller visuelle observatører som holder en visuell kontakt med dronen. BVLOS (Beyond Visual Line of Sight) hvor operatøren kan fjernstyre dronen uten å opprettholde visuell kontakt til enhver tid og uten assistanse fra observatører.	
Hvilket av de følgende alternativ angående drone-siktelinjen ville du være fornøyd med?	[avmerkingsbokser] VLOS EVLOS BVLOS Annet
Ressursstyringssystem	

Ressursstyringskomponenten er ansvarlig for å gjøre sluttbrukere i stand til å koordinere ressurser og effektivt administrere tilgjengelig materiale og menneskelige ressurser i et område, for å ha en optimal situasjonsbevissthet under en brann. Denne informasjonen er av interesse for å koordinere taktiske, strategiske og operasjonelle aktiviteter ved alarm.	
Vennligst velg om du har brukt for en av følgende programvarene.	[avmerkingsbokser] D4H ESO Fire RMS New World Public Safety TargetSolutions TCP Aladtec Scheduling Rhodium Incident Management FireHouse Manager ImageTrend EMS Critical Care High Plains RMS ImageTrend Fire RMS Annet
Velg hvilke av følgende funksjoner du vil bruke.	[avmerkingsbokser] Optimalisere ressursplanlegging Administrere personallokeringer Forutsi ressursutnyttelse Utstyrsledelse Hendelseshåndtering Analyse etter nødstilfelle Hendelse og beredskapsplanlegging Massevarsler Tredjeparts datautvinning Frivillighetsledelse Annet

Velg kodene som må oppfylles fra RMS-en du bruker.	[avmerkingsbokser] National Fire Incident Reporting Systems (NFIRS) koder National Fire Protection Association (NFPA) koder International Code Council (ICC) koder Annet
Restaurering etter brann	
Denne modulen inneholder verktøyene for å lage tilstandsmodeller før brann for nøyaktig gjenoppretting etter brann. Samt sentrale indikatorer i evaluering av brente områder og jordrestaurering.	
Hvilke kategorier av anbefalte inngrep ønsker du å bli visualisert i kart etter brann?	[avmerkingsbokser] Ingen tiltaksområder Bergingslogging Naturlig generasjon Dronefrø spredning Annet
Vennligst velg hvilke verdier av de fysiske jordegenskapene du vil skal oppgis.	[avmerkingsbokser] Tekstur Struktur Vekt Tetthet Farge Temperatur Permeabilitet Porøsitet Plastisitet Komprimerbarhet Eroderbarhet Annet

Velg hvilke av de følgende kjemiske verdier av jordegenskapene du vil at skal oppgis.	[avmerkingsbokser] pH (surhet / alkalitet) Organiske saker Uorganiske saker Annet
Velg hvilke datakilder du vil at jordevalueringen skal gi.	[avmerkingsbokser] Satellittdata Data fra droner Data fra sensorer Annet
Hva er din foretrukne romlige oppløsning for nøyaktig kartlegging av området som er berørt av en brann?	[avmerkingsbokser] 20 meter 60 meter 250 meter 500 meter Annet
Velg hvilke typer kostnadsestimater du vil ha.	[avmerkingsbokser] Brannskader Økonomisk Direkte Indirekte Forsikret Ikke forsikret Annet

Velg hvilke av de følgende sektorene du ønsker å få kostnadsestimater for.	[avmerkingsbokser] Forsikring Infrastrukturer Bygninger Skogbruk Biologisk mangfold/økosystemer Annet
Deteksjons- og responsprosesser	
Den nåværende modulen tilhører deteksjons- og responsfasen.	
Velg funksjonene du forventer å bli brukt for hotspot-deteksjon.	[avmerkingsbokser] Data fra EFFIS (Copernicus) Data fra FIRMS (NASA) Bakkekameraer Termografiske bilder fra droner/zeppelins Annet
Velg hvilke handlinger du forventer at verktøyet for visuell objektgjenkjenning skal gi.	[avmerkingsbokser] Oppdag og spor personer, dyr eller varer i fare Oppdag objekter som kan utgjøre en trussel Overvåke trafikken Bistå med kjøretøy- og personellovervåking Bistå i søk og redningsoppdrag Overvåke evakueringsoppdrag Annet

Brannreaksjonsmotoren aktiveres ved identifisering av en ny brannrelatert situasjon som kommuniserer meldingen til de ulike interessentene (Redningstjenestene, innbyggere, myndigheter osv.) Vennligst velg meldingstypen du foretrekker å motta.	[avmerkingsbokser] Email SMS Direktemelding Annen
Social Media Analyser	
Denne modulen vil fokusere på overvåking av brannhendelser slik de kommer til uttrykk på sosiale medier (spesielt Twitter) av enkeltpersoner, for eksempel nettbrukere som legger merke til en brann eller indikasjoner på en potensiell brann, for eksempel røyk.	
Tror du at det kan være nyttig å overvåke (i sanntid) innlegg i sosiale medier (Twitter) for å oppdage en brannhendelse eller en indikasjon på brann (f.eks. røyk)?	[ja/nei]
Velg hvilken plassering som kan hentes fra innlegg du vil være mer interessert i.	[avmerkingsbokser] Fra Tweets Fra innlegg/tekster Fra vedlagte bilder Annet

Vil du være interessert i identifisering av brukere og brukermiljøer som spiller en viktig rolle i tilfelle en brannhendelse?	[ja/nei]
Sammendrag	
Hvilke funksjoner ved TREEADS-plattformen er mest verdifulle for deg?	
Hva er din største bekymring ved TREEADS-plattformen?	
Hvilke anbefalinger har du for TREEADS-plattformen?	

ANNEX 3: SURVEY TRANSLATED IN GERMAN

Einführung	
Wie lautet der Name Ihres Unternehmens / Ihrer Organisation?	

Was ist Ihre Position / Berufsbezeichnung?	
Wie viel wissen Sie über H2020 TREEADS?	[Bereich] Noch nie davon gehört - Alles darüber wissen
FrontEnd	
Wildfire IT-Anwendungen (webGIS)	
Wildfire APP ist eine Webschnittstelle für den Zugang des Endnutzers zur TREEADS-Plattform, die auf einem Kartenbetrachter basiert und die Verwaltung räumlicher Informationen hauptsächlich durch die Visualisierung von Karten, Risikoindizes und Routen ermöglicht.	
Benötigen Sie die IT-Anwendungen im Zusammenhang mit Waldbränden für einen der folgenden Bereiche?	[Kontrollkästchen] Prävention und Vorbereitung Erkennung und Einsatz Wiederherstellung und Anpassung
Haben Sie in der Vergangenheit ein GIS für Waldbrände genutzt?	[ja/nein]
Wenn ja, welche?	
Wie möchten Sie die Anwendung nutzen?	[Kontrollkästchen] Web-Browser Desktop-Anwendung Mobile Anwendung Andere
AR/VR-Ausbildung	

Die TREEADS Virtual Reality (VR)-Anwendung wird als Online-Schulungs- und Modellierungssystem eingesetzt, das es den Benutzern ermöglicht, vorgefertigte VR-Schulungsressourcen zu erleben, aber auch interaktive Schulungsinhalte für Schulungszwecke zu erstellen.	
Hatten Sie schon einmal Zugang zu einer AR/VR-Schulung?	[ja/nein]
Haben Sie die Ressourcen oder das Fachwissen, um die Simulationen ohne TREEADS-Unterstützung zu nutzen?	[ja/nein]
Was würden Sie gerne mit einem solchen Werkzeug machen?	[Kontrollkästchen] Simulationen durchführen Lektionen/Schulungsmaterialien ansehen Benutzerdefinierte Szenarien erstellen Berichte mit Fortschritten und Statistiken anzeigen Andere

Der Szenario-Builder ermöglicht es Ausbildern, eine benutzerdefinierte Simulation auf der Grundlage der vorhandenen Umgebungen zusammenzustellen. Welche der folgenden Werkzeuge benötigen Sie, um eine nützliche Simulation zusammenzustellen?	[Kontrollkästchen] Elemente Gefährdungen Teile der Ausrüstung Avatare Andere
Bitte wählen Sie aus, welche Schulungsmaterialien Sie verwenden möchten.	[Kontrollkästchen] Handhabung der Werkzeuge Funktionen des Feuerwehrautos Drohnenpiloten Kartierungsverfahren Schneideverfahren Andere
BackEnd	
Sicherheitsdienste	
TREEADS benötigt eine Reihe von Benutzerauthentifizierungsdiensten, um die verschiedenen Zugriffsebenen je nach Rolle des Benutzers zu definieren.	

Welche der folgenden Funktionen halten Sie für notwendig?	[Kontrollkästchen] Benutzerauthentifizierung Benutzer-, Sitzungs- und Rollenmanagement Sicherheitsfunktionen zum Schutz der Daten Server-Konfiguration Zugangskontrolle Andere
Bitte wählen Sie den von Ihnen gewünschten Zugangskontrollsystemtyp aus.	[Kontrollkästchen] Diskretionäre Zugangskontrolle (DAC) Obligatorische Zugangskontrolle (MAC) Rollenbasierte Zugriffskontrolle (RBAC) Andere
Welche Art von Benachrichtigungsdiensten bevorzugen Sie?	[Kontrollkästchen] E-Mail SMS Sofortige Nachrichtenübermittlung Andere
Welche der folgenden Benutzerrollen möchten Sie in dieses Tool aufnehmen?	[Kontrollkästchen] Anonym/ Gäste Registriert Verwalter Andere
Welche Arten der Authentifizierung möchten Sie unterstützen?	Ein-Faktor-/Primär-Authentifizierung Zwei-Faktoren-Authentifizierung (2FA) Multi-Faktor-Authentifizierung (MFA) Einmalige Anmeldung (SSO)
Risikoanalyse	

Das Risikoanalyse-Tool Modul ist eine Reihe von Werkzeugen und Risikoindikatoren aus der Echtzeit-Überwachung von Brennstoff, Atmosphäre und Boden durch ein Web-Informationssystem. Das Instrument zur Bewertung der Brandgefahr und des Brandrisikos wird ein auf Erdbeobachtung basierendes Dienstleistungspaket für die Bewertung der Brandgefahr und des Brandrisikos sein. Unter Verwendung von Copernicus-Zeitreihen wird es Dienste im Zusammenhang mit der Abschätzung von Waldbrandgefahr und -risiko anbieten.	
Bitte wählen Sie den Zeitraum, den Sie für angemessen halten, um eine Karte der Aktivitäten in geschützten Gebieten zu erstellen.	[Kontrollkästchen] Monatlich Wöchentlich Täglich Andere
Bitte wählen Sie den Zeitraum aus, den Sie für die Erfassung von Neubauten für angemessen halten.	[Kontrollkästchen] Jährlich Alle 6 Monate Alle 3 Monate Monatlich Wöchentlich Andere
Bitte wählen Sie den Zeitraum, den Sie für die Überwachung von Dürregebieten für angemessen halten.	[Kontrollkästchen] Monatlich Wöchentlich Täglich Andere

Der Agroforst-Index liefert einen genauen Wert für jede Waldfläche, z. B. für Pflanzen- und Baumarten. Welche der folgenden Variablen benötigen Sie, um die spezifischen Prozentsätze zu ermitteln?	[Kontrollkästchen] Eigenschaft des Bodens Prozentsatz der Kronendeckung Organisches Material Erosion des Bodens Schichtung der Kronendecke Schüttdichte Vegetation Biomasse Feuchtigkeit des Bodens Artenvielfalt Andere
Das Tool "Accurate Forest Mapping" liefert physische und geometrische Merkmale. Bitte wählen Sie aus, zu welchen Merkmalen Sie Informationen benötigen.	[Kontrollkästchen] Baumarten Höhe des Baumes Biomasse Brandlasttyp Brandlastbedingungen Andere
Bitte wählen Sie aus, welche der folgenden sozioökonomischen Faktoren im Rahmen des Brandschutzsystems berücksichtigt werden sollten.	[Kontrollkästchen] Bevölkerung Menschliche Aktivitäten Kulturelle Traditionen Der Anteil der Bevölkerung, der in der Landwirtschaft und im Dienstleistungssektor arbeitet Arbeitslosenzahl Illegales Schneiden Der Anteil der erwerbstätigen Bevölkerung im Dienstleistungssektor Andere

Das Brandverhütungssystem macht Vorschläge für die Reinigung und Instandhaltung in diesen Bereichen, indem es Risiko- und Prioritätskarten bereitstellt. Bitte wählen Sie die Art der Karte, die Sie bevorzugen, die Karten zeigen die Ergebnisse.	[Kontrollkästchen] Prozentsätze Farbkodierte Heat-Map Ampelkonzept Andere
Kartendienste	
Kartendienste sind für die Bereitstellung von Karten im Internet verantwortlich. Ein Kartendienst stellt Karten, Entitäten und Datenattribute in vielen Arten von Client-Anwendungen und auf verschiedenen Ebenen zur Verfügung.	
Bitte wählen Sie aus, welche Funktionalitäten Sie in einem Kartenviewer haben möchten.	[Kontrollkästchen] Vergrößern Pan Ebenenliste anzeigen Ebenen ein-/ausschalten Basisschicht auswählen Standort finden Koordinatenanzeige Andere

Bitte wählen Sie die Formate aus, in denen Sie die Karte extrahieren möchten.	[Kontrollkästchen] Shapefile CSV / Tabellenkalkulation KML GeoJSON TIFF/TIF PNG JPG GIF SVG Andere
Ausbreitung von Feuer und Rauch	
Das Feuer- und Rauchausbreitungsmodul ist eine Toolbox, die für die Simulation einiger der wichtigsten physikalischen Prozesse im Zusammenhang mit Waldbränden entwickelt wurde. Es besteht aus drei verschiedenen vereinfachten physikalischen Modellen, die unabhängig voneinander oder gekoppelt arbeiten können, nämlich einem Brandausbreitungsmodell, PhyFire, einem Rauchausbreitungsmodell, PhyNX, und einem hochauflösenden Windfeldmodell, HDWind.	
Bitte wählen Sie aus, welche der folgenden Merkmale des Brandausbreitungsgebiets Sie zur Verfügung gestellt bekommen möchten.	[Kontrollkästchen] Verbrannte Fläche Brennendes Gebiet Massenanteil der verbrauchten Brandlast Andere
Bitte wählen Sie die Informationen aus, die Sie erhalten möchten.	[Kontrollkästchen] Perimeter Position Dicke Andere

Bitte wählen Sie das bevorzugte Eingangs- und Ausgangsformat der drei Modelle (PhyFire, HDWind, PhyNX).	[Kontrollkästchen] ASCII-Dateiformat MEDIT-Dateiformat VTK-Dateiformat Avizo-Dateiformat WTK-Dateiformat Andere
Bitte wählen Sie aus, welche der technischen Aspekte der Analyse des Brandverhaltens und der Brandausbreitung Sie für die Entwicklung von Sicherheitsmaßnahmen benötigen.	[Kontrollkästchen] Temperatur Geschwindigkeit Rußanteil Rauchgaskomponenten Wärmefreisetzungsrate in jedem Gitterpunkt des Berechnungsgebiets, Höhe der Rauchschicht Dicke der Flamme Andere
Möchten Sie visuelle Erklärungen für die Entscheidungen der statistischen Modelle erhalten?	[ja/nein]
Ferngesteuerte Sensoren - IoT	
Ein System, das aus einer Vielzahl kostengünstiger IoT-Plattformen besteht, die sich aus strategisch im Wald verteilten Sensoren zusammensetzen, die in der Lage sind, in der Nähe entflammbare Gas- und Rauchemissionen (z. B. Flüssiggas), die lokale Temperatur und Luftfeuchtigkeit zu überwachen, Bilder und Geräusche zu erfassen und Bewegungen zu erkennen. Diese Komponente ist für das cloudbasierte IoT-System zuständig.	

Dieses Instrument umfasst die Verwendung mehrerer im Wald verteilter Sensoren. Welche der folgenden Punkte würden Sie gerne überwachen?	[Kontrollkästchen] Entflammbares Gas Rauchemissionen Luftqualität Temperatur Luftfeuchtigkeit Windgeschwindigkeit Windrichtung Feuchtigkeit des Bodens Klänge/Audio Bilder / Video Antrag Andere
Welche der folgenden Protokolle möchten Sie für die Datenerhebung verwenden?	[Kontrollkästchen] LoRaWAN COAP MQTT Modbus/TCP AMQP Andere
Evakuierung und Planung	
In diesem Modul werden Werkzeuge implementiert, die den Verantwortlichen für die Verwaltung eines Brandszenarios bei der Optimierung des Streckenmanagements und der Patrouillen in dem Gebiet helfen.	
Bitte wählen Sie aus, in welchen der folgenden Fälle Sie das Evakuierungs- und Planungsinstrument nutzen würden.	[Kontrollkästchen] Optimierung von Routenmanagement und Streifendienst Finden Sie mögliche Evakuierungsrouten Abschätzung der Entwicklung des Vorfalls Andere

Bitte ordnen Sie die Informationen, die Sie für eine erfolgreiche Evakuierung und Planung wissen möchten, in der Reihenfolge von "am wichtigsten" bis "am wenigsten wichtig".	[Kontrollkästchen] Ausbreitung des Brandes Richtung des Windes Zustand des Straßennetzes Anwesenheit von Menschen, Tieren oder Fahrzeugen Andere
Die iCrowd-Plattform ist ein agentenbasierter Crowd-Simulator, der kleine (einige Dutzend Agenten) und große (Tausende von Agenten) Menschenmengen simulieren kann. Sie kann für Szenarien in jedem begrenzten Bereich eingesetzt werden, z. B. in Innen- und Außenbereichen von Gebäuden, Stadien, Open-Air-Festivals und öffentlichen Bereichen mit hohem Verkehrsaufkommen.	
Bitte wählen Sie die Bereiche aus, für die Sie die iCrowd-Simulation durchführen möchten.	[Kontrollkästchen] Gebäude innen Gebäude außen Stadion Open-Air-Festival Öffentliche Räume Andere
Bitte wählen Sie aus, welche der folgenden Punkte Sie während der iCrowd-Simulation verfolgen möchten.	[Kontrollkästchen] Menschen Fahrzeuge Viehbestand Andere
UAV-Lösungen	
Diese Komponente verwaltet das UAV-Befehls- und Kontrollsystem (CCS), das die Hauptschnittstelle für den Zugang der Nutzer zu den im HAPS über MCC bereitgestellten Funktionen darstellt und die Überwachung des UAV, die Anforderung von Multispektralbildern (EO/IR) und die Bildverarbeitung ermöglicht.	
Haben Sie Zugang zu UAVs?	[ja/nein]

Bitte wählen Sie aus, welche Art von UAV Sie zur Verfügung haben?	[Kontrollkästchen] Multi-Rotor Drohnen Fixed-Wing -Drohnen Single-Rotor Drohnen Fixed-Wing Hybrid VTOL Andere
Bitte wählen Sie die Aktionen, die Sie mit dem UAV Command and Control System durchführen möchten.	[Kontrollkästchen] UAV navigieren Telemetrie überwachen Multispektralbilder anfordern Andere
Das UAV wird über eine Funktion zur Vermeidung von Bewegungskollisionen/manuellen Bewegungen verfügen. Bitte wählen Sie aus, welche Art von Ausweichfunktionalität Sie bevorzugen würden.	[Kontrollkästchen] Bewegung Kollision/ Manuelle Vermeidung Automatische Kollisionsvermeidung Andere
VLOS (Visual Line of Sight), bei der die Drohne für den Drohnenbetreiber ohne zusätzliche Hilfsmittel stets gut sichtbar sein muss. EVLOS (Extended Visual Line of Sight), bei dem die Reichweite der Drohne durch einen oder mehrere visuelle Beobachter, die mit der Drohne in Sichtkontakt bleiben, erweitert werden kann. BVLOS (Beyond Visual Line of Sight), bei dem der Bediener die Drohne fernsteuern kann, ohne jederzeit Sichtkontakt zu halten und ohne Unterstützung durch Beobachter.	
Mit welcher der folgenden Aussagen zur Sichtlinie der Drohne wären Sie zufrieden?	[Kontrollkästchen] VLOS EVLOS BVLOS Andere

Ressourcen-Management-System	
Die Komponente Ressourcenmanagement ist dafür verantwortlich, dass die Endnutzer die Ressourcen koordinieren und die verfügbaren materiellen und personellen Ressourcen in einem Gebiet effizient verwalten können, um während eines Brandes ein optimales Lagebild zu erhalten. Diese Informationen sind für die Koordinierung taktischer, strategischer und operativer Aktivitäten im Falle eines Alarms von Interesse.	
Bitte wählen Sie aus, ob Sie eine der folgenden Software verwendet haben.	[Kontrollkästchen] D4H ESO Feuer RMS Neue Welt Öffentliche Sicherheit TargetSolutions TCP Aladtec Terminplanung Rhodium Incident Management FireHouse Manager ImageTrend EMS Critical Care Hochebene RMS ImageTrend Feuer RMS Andere
Bitte wählen Sie aus, welche der folgenden Funktionen Sie in Anspruch nehmen möchten.	[Kontrollkästchen] Optimieren Sie die Ressourcenplanung Verwaltung von Personalzuweisungen Vorhersage der Ressourcennutzung Verwaltung der Ausrüstung Management von Zwischenfällen Analyse nach der Katastrophe Störfall- und Notfallplanung Massenbenachrichtigungen Datenauswertung durch Dritte Freiwilligen-Management Andere

Bitte wählen Sie aus dem von Ihnen verwendeten RMS die Codes aus, die erfüllt werden müssen.	[Kontrollkästchen] National Fire Incident Reporting Systems (NFIRS) Codes Vorschriften der National Fire Protection Association (NFPA) Codes des International Code Council (ICC) Andere
Wiederherstellung nach einem Brand	
Dieses Modul umfasst die Werkzeuge zur Erstellung von Modellen des Zustands vor einem Brand für eine genaue Wiederherstellung nach einem Brand. sowie Schlüsselindikatoren für die Bewertung verbrannter Flächen und die Bodensanierung	
Welche Kategorien von empfohlenen Maßnahmen sollten Ihrer Meinung nach in den Karten nach dem Brand visualisiert werden?	[Kontrollkästchen] Keine Interventionsgebiete Bergungsholzeinschlag Natürliche Erzeugung Ausbringung von Samen mit Drohnen Andere
Bitte wählen Sie aus, für welche der physikalischen Eigenschaften des Bodens Sie Werte benötigen.	[Kontrollkästchen] Textur Struktur Gewicht Dichte Farbe Temperatur Durchlässigkeit Porosität Plastizität Komprimierbarkeit Erodierbarkeit Andere

Bitte wählen Sie aus, für welche der folgenden chemischen Eigenschaften des Bodens Sie Werte erhalten möchten.	[Kontrollkästchen] pH-Wert (Säuregrad / Alkalinität) Organische Stoffe Anorganische Stoffe Andere
Bitte wählen Sie aus, welche Datenquellen die Bodenbewertung liefern soll.	[Kontrollkästchen] Satellitendaten Daten von Drohnen Daten von Sensoren Andere
Welche räumliche Auflösung bevorzugen Sie für die genaue Kartierung des von einem Brand betroffenen Gebiets?	[Kontrollkästchen] 20 Meter 60 Meter 250 Meter 500 Meter Andere
Bitte wählen Sie aus, welche Arten von Kostenschätzungen Sie erhalten möchten.	[Kontrollkästchen] Brandschaden Wirtschaft Direkt Indirekt Versichert Nicht versichert Andere

Bitte wählen Sie aus, in welchem der folgenden Bereiche Sie die Kostenschätzungen erhalten möchten.	[Kontrollkästchen] Versicherung Infrastruktureinrichtungen Gebäude Forstwirtschaft Biologische Vielfalt/ Ökosysteme Andere
Erkennungs- und Reaktionsprozesse	
Das vorliegende Modul gehört zur Erkennungs- und Reaktionsphase.	
Bitte wählen Sie die Funktionen aus, die Sie für die Hotspot-Erkennung verwenden möchten.	[Kontrollkästchen] Daten von EFFIS (Copernicus) Daten von FIRMS (NASA) Bodenkameras Thermografische Bilder von Drohnen/Zeppelinen Andere
Bitte wählen Sie aus, welche Aktionen Sie von der visuellen Objekterkennung erwarten würden.	[Kontrollkästchen] Aufspüren und Verfolgen von Menschen, Tieren oder Gütern in Gefahr Objekte erkennen, die eine Bedrohung darstellen könnten Verkehr überwachen Unterstützung bei der Überwachung von Fahrzeugen und Personal Mithilfe bei Such- und Rettungseinsätzen Evakuierungseinsätze beaufsichtigen Andere

Das Brandmeldesystem wird aktiviert, sobald eine brandbedingte Situation erkannt wird, und übermittelt die Nachricht an die verschiedenen Beteiligten (Ersthelfer, Bürger, Behörden usw.). Bitte wählen Sie die Art der Nachricht, die Sie erhalten möchten.	[Kontrollkästchen] E-Mail SMS Sofortige Nachrichtenübermittlung Andere
Analyse sozialer Medien	
Dieses Modul konzentriert sich auf die Überwachung von Brandereignissen, wie sie in sozialen Medien (insbesondere Twitter) von Einzelpersonen geäußert werden, z. B. von Online-Nutzern, die ein Feuer oder Anzeichen eines potenziellen Feuers, z. B. Rauch, bemerken.	
Glauben Sie, dass die Überwachung (in Echtzeit) von Beiträgen in sozialen Medien (Twitter) zur Erkennung eines Brandereignisses oder eines Hinweises auf einen Brand (z. B. Rauch) nützlich sein könnte?	[ja/nein]
Bitte wählen Sie den Ort aus, der von den Stellen abgerufen werden kann, an denen Sie mehr Interesse haben.	[Kontrollkästchen] Von Tweets Aus Beiträgen/Texten Aus den beigefügten Bildern Andere
Wären Sie an der Identifizierung von Nutzern und Nutzergemeinschaften interessiert, die im Falle eines Brandereignisses eine wichtige Rolle spielen?	[ja/nein]

Zusammenfassung	
Welche Funktionen der TREEADS-Plattform sind für Sie am wertvollsten?	
Was ist Ihre größte Sorge in Bezug auf die TREEADS-Plattform?	
Welche Empfehlungen haben Sie für die TREEADS-Plattform?	

ANNEX 4: SURVEY TRANSLATED IN SPANISH

Introducción	
¿Cuál es el nombre de tu empresa / organización?	
¿Cuál es tu cargo?	
¿Qué conocimiento tienes sobre el proyecto H2020 TREEADS?	❑ No conozco nada ❑ Conozco todo del proyecto
FrontEnd	
Aplicaciones informáticas sobre incendios forestales (SIG web)	
Wildfire APP es una aplicación web para el acceso de usuarios finales a la plataforma TREEADS, basada en un visor de mapas que permite la gestión de información espacial a través de la visualización de mapas, índices de riesgo y rutas.	
¿Necesitas alguna aplicación informática relacionada con los incendios forestales para alguno de los siguientes usos?	❑ Prevención y preparación ❑ Detección y respuesta ❑ Restauración post incendio y adaptación.

¿Has utilizado en el pasado algún SIG sobre incendios forestales?	❑ Si ❑ No
Si la respuesta es "sí", detalla cuál.	
¿Cómo te gusta acceder a estas aplicaciones?	❑ Navegador web ❑ Aplicación de escritorio ❑ Aplicación para móvil ❑ Otros

Formación AR/VR	
La aplicación TREEADS de Realidad Virtual (VR) se utilizará como un sistema de formación y modelado online que permita a los usuarios acceder y experimentar a recursos de formación de Realidad Virtual y a crear contenidos de formación interactiva.	
¿Has tenido acceso a formación en Realidad Virtual o Realidad Aumentada antes?	❑ Si ❑ No
¿Dispones de los recursos o la experiencia para acceder a simulaciones sin el apoyo de TREEADS?	❑ Si ❑ No
¿Qué te gustaría hacer con una herramienta de Realidad Virtual?	❑ Simulaciones ❑ Acceder a formación o materiales formativos ❑ Desarrollar escenarios de simulación propios ❑ Acceder a informes con estadísticas y progresos ❑ Otros

El simulador de escenarios permitirá a los usuarios ejecutar una simulación propia basada en escenarios existentes. ¿Cuál de las siguientes herramientas necesitarías para ejecutar una simulación útil?	❑ Elementos de riesgo ❑ Equipamiento ❑ Avatares ❑ Otros
Por favor, selecciona los materiales formativos que utilizarías.	❑ Herramientas de manejo ❑ Funciones de camión de bombero ❑ Manejo de drones ❑ Desarrollo de mapas ❑ Procedimientos de corta ❑ Otros
Servicios	
Servicios de Seguridad	
TREEADS solicitará unos servicios de Identificación de Usuario para definir los distintos niveles de acceso de acuerdo a cada rol de usuario.	
¿Cuál de las siguientes características son necesarias para ti?	❑ Identificación de usuario ❑ Usuario, sesión y gestión de roles ❑ Características de seguridad para protección de datos ❑ Configuración ❑ Control de acceso ❑ Otros

Por favor, selecciona el sistema de control de acceso que preferirías.	❑ Control de Acceso Discrecional (DAC) ❑ Control de Acceso Obligatorio (MAC) ❑ Control de Acceso basado en Roles (RBAC) ❑ Otros
¿Qué tipo de servicios de notificación prefieres?	❑ Email ❑ SMS ❑ Mensajería instantánea ❑ Otros
¿Cuál de los siguientes roles de usuario te gustaría que se incluyeran en la herramienta?	❑ Anónimo / Invitado ❑ Registrado ❑ Administrador ❑ Otros
¿Qué tipo de autentificación te gustaría que se realizara?	❑ Un factor / Autentificación primaria ❑ Dos factores de autentificación (2FA) ❑ Autentificación múltiple (MFA) ❑ Inicio de sesión único (SSO)
Análisis de Riesgo	
El módulo de Análisis de Riesgo es un conjunto de herramientas e indicadores de riesgo con monitorización en tiempo real de combustible, atmósfera y datos en campo basados en un sistema de información web. La exposición al fuego y la herramienta de análisis de riesgo se basará en servicios de Observación de la Tierra. Utilizando series temporales de Copernicus, proveerá servicios relacionados con la exposición al fuego y la estimación del riesgo de incendios.	
Por favor, selecciona el periodo de tiempo que consideras adecuado para crear mapas de actividades	❑ Mensualmente ❑ Semanalmente ❑ Diariamente ❑ Otros

en áreas con potencial de incendio.	
Por favor, selecciona el periodo de tiempo que consideras adecuado para detector nuevas construcciones en el territorio.	❑ Anualmente ❑ Cada 6 meses ❑ Cada 3 meses ❑ Mensualmente ❑ Semanalmente ❑ Otros
Por favor, selecciona el periodo de tiempo que consideras adecuado para monitorizar eventos de sequía.	❑ Mensualmente ❑ Semanalmente ❑ Diariamente ❑ Otros
El Índice Agroforestal aportará un valor adecuado para cada zona forestal según las especies de árboles y plantas. ¿Cuál de las siguientes variables crees que son necesarias para ser identificadas?	❑ Propiedad del terreno ❑ Porcentaje de cubierta vegetal ❑ Materia orgánica ❑ Erosión del suelo ❑ Estratificación y cobertura ❑ Densidad de cobertura ❑ Tipo de vegetación ❑ Biomasa ❑ Tipo de suelo ❑ Diversidad de especies ❑ Otros
La herramienta del Mapa de Detalle Forestal aporta información física y geográfica. Por favor, selecciona qué tipo de información sería necesario.	❑ Especies de árboles ❑ Altura de arbolado ❑ Biomasa ❑ Tipo de combustible ❑ Condiciones de combustible ❑ Otros

Por favor, selecciona cuál de los siguientes factores socioeconómicos deben considerarse en el sistema de prevención de incendios.	❑ Población ❑ Actividades humanas ❑ Eventos culturales ❑ Proporción de población en el sector agrario y en sector servicios ❑ Tasa de desempleo ❑ Cortas ilegales ❑ Proporción de población en el sector servicios ❑ Otros
La herramienta del Sistema de Prevención de Incendios sugerirá aspectos relacionados con la limpieza y mantenimiento de zonas de acuerdo al riesgo y mapas de prioridad. Por favor, selecciona el tipo de mapa que preferirías para mostrar esos resultados.	❑ Porcentajes ❑ Código de color – Mapa de color ❑ Semáforo de colores ❑ Otros
Servicios de mapas	
Los servicios de mapas son responsables de hacer disponibles mapas desde internet. Un servicio de mapa proporciona mapas, entidades y atributos de datos disponibles dentro de muchos tipos de aplicaciones de clientes y a distintos niveles.	

Por favor, selecciona qué funcionalidades crees que serían necesarias para disponer en un visor de mapa.	❑ Zoom ❑ Pan ❑ Visor de lista de capas ❑ Activación/ desactivación de capas ❑ Selección de capa base ❑ Encontrar localización ❑ Coordinar indicadores ❑ Otros
Por favor, selecciona los formatos en que necesitarías exportar los mapas.	❑ Shapefile ❑ CSV / Hoja de cálculo ❑ KML ❑ GeoJSON ❑ TIFF/TIF ❑ PNG ❑ JPG ❑ GIF ❑ SVG ❑ Otros
Propagación del Fuego y del Humo	
El Módulo de Propagación del Fuego y el Humo es una herramienta diseñada para la simulación de algunos de los procesos físicos más importantes en el marco de los incendios forestales. Estará compuesto por tres modelos físicos simplificados diferentes que pueden funcionar de forma independiente o acoplados, llamados: modelo de propagación del fuego, PhyFire; modelo de dispersión del humo, PhyNX; y modelo de viento de alta definición, HDWind.	
Por favor, selecciona cuáles de las siguientes características de la zona de propagación del incendio deseas que se te faciliten.	❑ Área quemada ❑ Área quemando ❑ Fracción de combustible consumida ❑ Otros

Por favor, selecciona la información del área que deseas que se te facilite.	❑ Perímetro ❑ Posición ❑ Grosor ❑ Otros
Por favor, selecciona el formato de entrada y salida que prefieres de los tres modelos (PhyFire, HDWind, PhyNX).	❑ Formato ASCII ❑ Formato MEDIT ❑ Formato VTK ❑ Formato Avizo ❑ Formato WTK ❑ Otros
Por favor, selecciona qué factores técnicos del análisis del comportamiento y propagación del fuego necesitas para el desarrollo de medidas de seguridad.	❑ Temperatura ❑ Velocidad ❑ Fracción d hollín ❑ Componentes gaseosos del humo ❑ Tasa de liberación de calor en cada punto de la malla del campo de cálculo ❑ Altura de la capa de humo ❑ Grosor de la llama ❑ Otros
¿Desea obtener explicaciones graficas de las decisiones de los modelos estadísticos?	❑ Si ❑ No
Sensores Remotos - IoT	
Un sistema que consta de multitud de plataformas IoT de bajo coste compuestas por sensores repartidos estratégicamente por el bosque que podrán vigilar las emisiones cercanas de gases inflamables y humos (como el GLP), la temperatura y la humedad locales, captar imágenes y sonidos y detectar el movimiento. Este componente se encarga del sistema IoT basado en la nube (*cloud-based*).	

Esta herramienta incluirá la utilización de múltiples sensores repartidos por el bosque. ¿Qué te gustaría monitorear?	❑ Gases inflamables ❑ Emisiones de humo ❑ Calidad del aire ❑ Temperatura ❑ Humedad ❑ Velocidad del viento ❑ Dirección del viento ❑ Humedad del suelo ❑ Sonidos / audio ❑ Imágenes / vídeo ❑ Movimiento ❑ Otros
¿Cuál de los siguientes protocolos te gustaría que se utilizara para la recogida de datos?	❑ LoRaWAN ❑ COAP ❑ MQTT ❑ Modbus/TCP ❑ AMQP ❑ Otros
Planificación y evacuación	
Este módulo implementará las herramientas que ayuden a los responsables de la gestión en un escenario de incendio, para la optimización de la gestión de rutas y patrullas en la zona.	
Selecciona cuál de las siguientes opciones utilizarías de la herramienta de evacuación y planificación.	❑ Optimizar la gestión de rutas y patrullas ❑ Encontrar posibles rutas de evacuación ❑ Estimar la evolución del incidente ❑ Otros
Por favor, ordena la información que te gustaría conocer para una evacuación y planificación satisfactorias, de más relevante a menos relevante.	❑ Propagación del incendio ❑ Dirección del viento ❑ Estado de la red de carreteras ❑ Presencia de personas, animales o vehículos ❑ Otros

La plataforma iCrowd es un simulador de multitudes basado en actores, capaz de simular multitudes a pequeña (decenas de actores) y gran escala (miles de actores). Puede utilizarse para escenarios en cualquier zona delimitada, como el interior y el exterior de edificios, estadios, festivales al aire libre y zonas públicas de gran afluencia de público.	
Por favor, selecciona las zonas en las que deseas realizar la simulación de iCrowd.	Interior del edificio Exterior del edificio Estadio Festival al aire libre Espacios públicos Otros
Por favor, selecciona cuál de las siguientes opciones te gustaría seguir durante la simulación de iCrowd.	❑ Personas ❑ Vehículos ❑ Ganado ❑ Otros
Soluciones para UAV (vehículo aéreo no tripulado)	
Este componente gestionará el sistema de mando y control del UAV (CCS) que representa la interfaz principal para que los usuarios accedan a las funcionalidades desplegadas en el HAPS a través del MCC, permitiendo la monitorización del UAV, la solicitud de imágenes multiespectrales (EO/IR), y el procesado de imágenes.	
¿Tiene acceso a vehículos aéreos no tripulados (UAVs)?	❑ Si ❑ No
Por favor, selecciona el tipo de UAV del que dispones	❑ Drones multirotor ❑ Drones de ala fija ❑ Drones monorotor ❑ VTOL híbrido de ala fija ❑ Otros
Por favor, selecciona las acciones que deseas realizar con la herramienta Sistema de Mando y Control de UAV.	❑ Navegación del UAV Monitorizar telemetría ❑ Solicitar imágenes multiespectrales ❑ Otros
El UAV tendrá funcionalidad de anti-colisión/evasión de	❑ Movimiento Colisión/ Evasión manual ❑ Prevención automática de colisiones ❑ Otros

colisión manual. Por favor, selecciona qué tipo de funcionalidad de evasión prefieres.	
VLOS (Visual Line of Sight): el dron debe ser siempre claramente visible por el operador del dron sin ninguna ayuda adicional. EVLOS (Extended Visual Line of Sight): la cobertura de la operación del dron puede ampliarse utilizando uno o varios observadores visuales que mantengan un contacto visual con el dron. BVLOS (Beyond Visual Line of Sight) cuando el operador puede controlar a distancia el dron sin mantener contacto visual en todo momento y sin ayuda de observadores.	
¿Con cuál de los siguientes puntos relativos a la línea de visión del dron estarías satisfecho?	❑ VLOS ❑ EVLOS ❑ BVLOS ❑ Otros
Sistema de Gestión de Recursos	
El sistema de gestión de recursos se encarga de permitir a los usuarios finales coordinar y gestionar eficazmente los recursos materiales y humanos disponibles en una zona, con el fin de tener un Conocimiento Óptimo de la Situación durante un incendio. Esta información es de interés para coordinar las actividades tácticas, estratégicas y operativas en caso de alarma.	
Por favor, selecciona los programas que hayas usado.	❑ D4H ❑ ESO Fire RMS ❑ New World Public Safety ❑ TargetNSolutions ❑ TCP Aladtec Scheduling ❑ Rhodium Incident Management ❑ FireHouse Manager ❑ ImageTrend EMS Critical Care ❑ High Plains RMS ❑ ImageTrend Fire RMS ❑ Otros

Por favor, selecciona cuál de las siguientes funciones utilizarías.	❑ Optimización planificación de recursos ❑ Gestión de la localización de las personas ❑ Predicción de la utilización de recursos ❑ Gestión del equipamiento ❑ Gestión de incidentes ❑ Análisis post-emergencia ❑ Planificación de incidentes y emergencias ❑ Notificaciones en masa ❑ Explotación de datos por terceros (*data mining*) ❑ Gestión de voluntarios ❑ Otros
Por favor, selecciona los códigos que necesitan cumplirse según el sistema de gestión de recursos (SGR) que utiliza.	❑ Códigos del Sistema Nacional de Recopilación de Incendios (NFIRS, USA) ❑ Códigos de la Asociación Nacional de Protección contra Incendios (NFPA, USA) ❑ Consejo Internacional de Códigos (ICC) ❑ Otros
Restauración post-fuego	

Stakeholders Recommendations

Este módulo incluye las herramientas para crear modelos de las condiciones previas al incendio para una restauración posterior precisa. También incluye los indicadores clava en la evaluación de las áreas quemadas, así como la restauración del suelo.	
¿Qué categorías de intervenciones recomendadas te gustaría que se visualizaran en los mapas posteriores al incendio?	❑ Áreas de no intervención ❑ Corta de recuperación ❑ Regeneración natural ❑ Siembra de semillas mediante dron ❑ Otros
Por favor, selecciona cuáles de las siguientes propiedades físicas del suelo le gustaría que se proporcionaran valores.	❑ Textura ❑ Estructura ❑ Peso ❑ Densidad ❑ Color ❑ Temperatura ❑ Permeabilidad ❑ Porosidad ❑ Plasticidad ❑ Compresibilidad ❑ Erosionabilidad ❑ Otros
Por favor, selecciona cuáles de las siguientes propiedades químicas del suelo le gustaría que se proporcionaran valores.	❑ pH (acidez/ alcalinidad) ❑ Materia orgánica ❑ Materia inorgánica ❑ Otros
Por favor, seleccione las fuentes de datos que desea que proporcione la evaluación del suelo.	❑ Datos satelitales ❑ Datos de drones ❑ Datos de sensores ❑ Otros
¿Cuál sería la resolución espacial ideal para el mapeo preciso de zonas quemadas?	❑ 20 metros ❑ 60 metros ❑ 250 metros ❑ 500 metros ❑ Otros

Por favor, selecciona qué tipo de estimaciones de costes te gustaría obtener.	❑ Daños por fuego ❑ Económicos ❑ Directos ❑ Indirectos ❑ Asegurados ❑ No-asegurados ❑ Otros
Por favor, selecciona cuáles de los siguientes sectores te gustaría obtener estaciones de costes.	❑ Seguros ❑ Infraestructuras ❑ Edificios ❑ Silvicultura ❑ Biodiversidad/ ecosistemas ❑ Otros
Procesos de Detección y Respuesta	
El siguiente modulo pertenece a la fase de detección y respuesta.	
Por favor, seleccione las fuentes que espera que se utilicen para la detección de puntos calientes.	❑ Datos de EFFIS (Copernicus) ❑ Dato de FIRMS (NASA) ❑ Cámaras en el terreno ❑ Imágenes termográficas de drones/zepelines ❑ Otros

Por favor, selecciona las acciones que espera que proporcione la herramienta de reconocimiento visual de objetos.	❑ Detección y seguimiento de persones, animales o bienes en peligro ❑ Detección de objetos que puedan representar una amenaza ❑ Supervisión del tráfico ❑ Asistencia en el monitoreo de vehículos y personal ❑ Asistencia en las misiones de búsqueda y rescate ❑ Supervisión de planes de evacuación ❑ Otros
El dispositivo de respuesta a incendios forestales se activa cuando se identifica una situación emergente de incendio y comunica el mensaje a las distintas partes interesadas (cuerpos de respuesta, ciudadanos, autoridades, etc.). Selecciona el tipo de mensaje que prefieres recibir.	❑ Correo electrónico ❑ SMS ❑ Mensajería instantánea ❑ Otros
Análisis de Sociales	
Este módulo se centrará en el seguimiento de casos de incendio expresados en las redes sociales (Twitter, en particular) por particulares, como usuarios en línea que se percatan de un incendio o de indicios de un posible incendio, por ejemplo, humo.	
¿Cree que podría ser útil monitorear (en tiempo real) las publicaciones en las redes sociales (Twitter) para detectar un incendio	❑ Si ❑ No

o un indicio de incendio (por ejemplo, humo)?	
¿De qué parte de la publicación crees que es más interesante obtener información?	❑ De Tweets ❑ De posts/textos ❑ De imágenes adjuntas ❑ Otros
¿Te interesaría identificar a los usuarios y comunidades de usuarios que desempeñan un papel importante en caso de incendio?	❑ Si ❑ No
Resumen	
¿Qué características de la plataforma TREEADS son más útiles para ti?	
¿Qué es lo que te parece más interesante de la plataforma TREEADS?	
¿Qué recomendaciones tienes para la plataforma TREEADS?	

ANNEX 5: SURVEY TRANSLATED IN GREEK

Εισαγωγή	
Ποιο είναι το όνομα της εταιρείας/του οργανισμού σας;	
Ποια είναι η θέση / ο τίτλος εργασίας σας;	

Πόσο ενήμεροι είστε για το H2020 TREEADS;	[εύρος] Δεν έχω ακούσει ποτέ για αυτό - Γνωρίζω τα πάντα για αυτό
FrontEnd	
Εφαρμογές IT πυρκαγιών (webGIS)	
Wildfire APP είναι μια διεπαφή Ιστού (web Interface) για την πρόσβαση του τελικού χρήστη στην πλατφόρμα TREEADS, βασισμένη σε πρόγραμμα προβολής χαρτών, η οποία θα επιτρέπει τη διαχείριση χωρικών πληροφοριών κυρίως μέσω της απεικόνισης χαρτών, δεικτών κινδύνου και διαδρομών.	
Χρειάζεστε τις εφαρμογές IT που σχετίζονται με την πυρκαγιά για οποιοδήποτε από τα παρακάτω;	[checkboxes] Πρόληψη και προετοιμασία Ανίχνευση και απόκριση Αποκατάσταση και προσαρμογή
Έχετε χρησιμοποιήσει GIS πυρκαγιάς στο παρελθόν;	[ναι/όχι]
Αν ναι, δηλώστε ποιο;	
Με τι μέσο θα θέλατε να εισάγεστε στην εφαρμογή;	[checkboxes] Διαδικτυακή εφαρμογή Εφαρμογή Η/Υ Κινητή Εφαρμογή Άλλο
AR/VR Εκπαίδευση	
Η TREEADS εφαρμογή εικονική πραγματικότητα (VR) θα χρησιμοποιηθεί ως ένα διαδικτυακό σύστημα εκπαίδευσης και μοντελοποίησης που επιτρέπει στους χρήστες να δημιουργήσουν προκατασκευασμένους πόρους εκπαίδευσης VR αλλά και να δημιουργήσουν διαδραστικό εκπαιδευτικό περιεχόμενο για εκπαιδευτικούς σκοπούς.	
Είχατε πρόσβαση σε εκπαίδευση AR/VR στο παρελθόν;	[ναι/όχι]

Έχετε τους πόρους ή την τεχνογνωσία για πρόσβαση στις προσομοιώσεις χωρίς την υποστήριξη του TREEADS;	[ναι/όχι]
Τι θα θέλατε να κάνετε με ένα τέτοιο εργαλείο;	[checkboxes] Εκτελέστε προσομοιώσεις Δείτε μαθήματα/ εκπαιδευτικό υλικό Δημιουργήστε προσαρμοσμένα σενάρια Δείτε αναφορές με πρόοδο και στατιστικά Άλλο
Το πρόγραμμα δημιουργίας σεναρίων θα επιτρέψει στους εκπαιδευτές να συναρμολογήσουν μια προσαρμοσμένη προσομοίωση με βάση τα υπάρχοντα περιβάλλοντα. Ποιο από τα παρακάτω εργαλεία χρειάζεστε για να συναρμολογήσετε μια χρήσιμη προσομοίωση;	[checkboxes] Κίνδυνοι στοιχείων Κομμάτια εξοπλισμού Avatars Άλλο
Επιλέξτε ποιο εκπαιδευτικό υλικό θα χρησιμοποιούσατε.	[checkboxes] Χειρισμός εργαλείων Λειτουργίες πυροσβεστικού οχήματος Πλοήγηση drone Διαδικασίες χαρτογράφησης Διαδικασίες κοπής Άλλο
BackEnd	
Υπηρεσίες ασφαλείας	

Stakeholders Recommendations

Το TREEADS θα απαιτήσει ένα σύνολο υπηρεσιών ελέγχου ταυτότητας χρήστη για τον καθορισμό των διαφορετικών επιπέδων πρόσβασης ανάλογα με τον ρόλο του χρήστη.	
Ποιο από τα παρακάτω χαρακτηριστικά θεωρείτε απαραίτητο;	[checkboxes] Έλεγχος ταυτότητας χρήστη Διαχείριση χρηστών, συνεδριών και ρόλων Λειτουργίες ασφαλείας για την προστασία των δεδομένων Διαμόρφωση διακομιστή Έλεγχος πρόσβασης Άλλο
Επιλέξτε τον τύπο συστήματος ελέγχου πρόσβασης που προτιμάτε.	[checkboxes] Διακριτικός έλεγχος πρόσβασης (DAC) Υποχρεωτικός έλεγχος πρόσβασης (MAC) Έλεγχος πρόσβασης βάσει ρόλου (RBAC) Άλλο
	[checkboxes] Email SMS Αμεσο μήνυμα Άλλο
Ποιοι από τους παρακάτω ρόλους χρήστη θα θέλατε να συμπεριληφθούν σε αυτό το εργαλείο;	[checkboxes] Ανώνυμος/ Επισκέπτης χρήστης Εγγεγραμμένος Διαχειριστής Άλλο
Ποιοι τύποι ελέγχου ταυτότητας θα θέλατε να υποστηρίζονται;	Έλεγχος ταυτότητας ενός παράγοντα/πρωτεύοντος Έλεγχος ταυτότητας δύο παραγόντων (2FA) Έλεγχος ταυτότητας πολλαπλών παραγόντων (MFA) Single Sign-On (SSO)

Ανάλυση κινδύνου	
Η ενότητα εργαλείου ανάλυσης κινδύνου είναι ένα σύνολο εργαλείων και δεικτών κινδύνου από παρακολούθηση σε πραγματικό χρόνο των καυσίμων, της ατμόσφαιρας και του εδάφους από ένα διαδικτυακό σύστημα πληροφοριών. Το εργαλείο έκθεσης σε πυρκαγιά και αξιολόγησης κινδύνου θα είναι ένα κιτ εξυπηρέτησης βασισμένο στη γεωσκόπηση για έκθεση σε πυρκαγιά και εκτίμηση κινδύνου. Χρησιμοποιώντας τη χρονοσειρά Copernicus, θα παρέχει υπηρεσίες που σχετίζονται με την έκθεση σε δασικές πυρκαγιές και την εκτίμηση κινδύνου.	
Επιλέξτε τη χρονική περίοδο που θεωρείτε επαρκή για να δημιουργήσετε έναν χάρτη δραστηριοτήτων σε προστατευόμενες περιοχές.	[checkboxes] Μηνιαίο Εβδομαδιαίος Καθημερινά Άλλο
Επιλέξτε τη χρονική περίοδο που θεωρείτε επαρκή για τον εντοπισμό νέων κατασκευών.	[checkboxes] Ετησίως Κάθε 6 μήνες Κάθε 3 μήνες Μηνιαίο Εβδομαδιαίος Άλλο
Επιλέξτε τη χρονική περίοδο που θεωρείτε επαρκή για την παρακολούθηση των περιοχών ξηρασίας.	[checkboxes] Μηνιαίο Εβδομαδιαίος Καθημερινά Άλλο

Ο δείκτης αγροδασοκομίας θα παρέχει μια ακριβή τιμή για κάθε δασική έκταση, όπως φυτά και είδη δέντρων. Ποια από τις παρακάτω μεταβλητές θα χρειαστείτε να δείτε τα συγκεκριμένα τους ποσοστά;	[checkboxes] Ιδιότητα εδάφους Ποσοστό κάλυψης στέμματος Οργανική ύλη Διάβρωση του εδάφους Στρωματοποίηση καλύμματος κορώνας Χύδην πυκνότητα Βλάστηση Βιομάζα Υγρασία εδάφους Ποικιλότητα ειδών Άλλο
Το εργαλείο Accurate Forest Mapping παρέχει φυσικά και γεωμετρικά χαρακτηριστικά. Παρακαλώ επιλέξτε για ποια θα χρειαστείτε πληροφορίες.	[checkboxes] Είδη δέντρων Ύψος δέντρου Βιομάζα Τύπος καυσίμου Συνθήκες καυσίμου Άλλο
Επιλέξτε ποιοι από τους παρακάτω κοινωνικοοικονομικούς παράγοντες πρέπει να ληφθούν υπόψη για το σύστημα πρόληψης πυρκαγιάς.	[checkboxes] Πληθυσμός Ανθρώπινες δραστηριότητες Πολιτιστικές παραδόσεις Το ποσοστό του πληθυσμού που εργάζεται στους τομείς της γεωργίας και των υπηρεσιών Ποσοστό ανεργίας Παράνομη κοπή Το ποσοστό του ενεργού πληθυσμού στον τομέα των υπηρεσιών Άλλο

Το εργαλείο Fire Prevention System θα κάνει προτάσεις σχετικά με τον καθαρισμό και τη συντήρηση σε αυτές τις περιοχές παρέχοντας χάρτες κινδύνου και προτεραιότητας. Επιλέξτε τον τύπο χάρτη που θα προτιμήσετε, οι χάρτες θα εμφανίζουν τα αποτελέσματα.	[checkboxes] Ποσοστά Χρωματική κωδικοποίηση Heat-Map Προσέγγιση φαναριού Άλλο
Υπηρεσίες χαρτών	
Οι υπηρεσίες χαρτών είναι υπεύθυνες για τη διάθεση χαρτών στο Διαδίκτυο. Μια υπηρεσία χαρτών καθιστά διαθέσιμους χάρτες, οντότητες και χαρακτηριστικά δεδομένων σε πολλούς τύπους εφαρμογών πελατών και σε διαφορετικά επίπεδα.	
Επιλέξτε ποιες λειτουργίες θα θέλατε να έχετε σε ένα πρόγραμμα προβολής χαρτών.	[checkboxes] Zoom Pan Προβολή λίστας επιπέδων Ενεργοποιήστε/απενεργοποιήστε τα επίπεδα Επιλέξτε το βασικό στρώμα Βρείτε τοποθεσία Ένδειξη συντεταγμένων Άλλο

Επιλέξτε τις μορφές που θέλετε να εξαγάγετε τον χάρτη.	[checkboxes] Shapefile CSV / Spreadsheet KML GeoJSON TIFF/TIF PNG JPG GIF SVG Άλλο
Διάδοση της φωτιάς και του καπνού	
Η Μονάδα Διάδοσης Φωτιάς και Καπνού είναι μια εργαλειοθήκη σχεδιασμένη για την προσομοίωση μερικών από τις πιο σημαντικές φυσικές διεργασίες στο πλαίσιο των δασικών πυρκαγιών. Θα αποτελείται από τρία διαφορετικά απλουστευμένα φυσικά μοντέλα που μπορούν να λειτουργήσουν ανεξάρτητα ή συνδυασμένα, συγκεκριμένα, ένα μοντέλο εξάπλωσης πυρκαγιάς, PhyFire. ένα μοντέλο διασποράς καπνού, PhyNX. και ένα μοντέλο αιολικού πεδίου υψηλής ευκρίνειας, το HDWind.	
Επιλέξτε ποια από τα ακόλουθα χαρακτηριστικά της περιοχής εξάπλωσης της πυρκαγιάς θα θέλατε να σας παρασχεθεί.	[checkboxes] Καμένη περιοχή Φλεγόμενη περιοχή Κλάσμα μάζας καυσίμου που καταναλώθηκε Άλλο
Επιλέξτε τις πληροφορίες της περιοχής που θέλετε να παρέχονται.	[checkboxes] Περίμετρος Θέση Πάχος Άλλο

Επιλέξτε την προτιμώμενη μορφή εισόδου και εξόδου των τριών μοντέλων (PhyFire, HDWind, PhyNX).	[checkboxes] ASCII file format MEDIT file format VTK file format Avizo file format WTK file format Άλλο
Επιλέξτε ποια από τις τεχνικές πτυχές της ανάλυσης της συμπεριφοράς και της εξάπλωσης πυρκαγιάς χρειάζεστε για την ανάπτυξη μέτρων ασφαλείας.	[checkboxes] Θερμοκρασία Ταχύτητα Κλάσμα αιθάλης Συστατικά αερίων καπνού Ρυθμός απελευθέρωσης θερμότητας σε κάθε σημείο πλέγματος του υπολογιστικού τομέα, Ύψος στρώματος καπνού Πάχος φλόγας Άλλο
Θα θέλατε να λάβετε οπτικές εξηγήσεις για τις αποφάσεις των στατιστικών μοντέλων;	[ναι/όχι]
Αισθητήρες τηλεχειρισμού - IoT	
Ένα σύστημα που αποτελείται από ένα πλήθος πλατφορμών IoT χαμηλού κόστους που αποτελείται από αισθητήρες στρατηγικά απλωμένους στο δάσος, οι οποίοι θα μπορούν να παρακολουθούν τις κοντινές εκπομπές εύφλεκτων αερίων και καπνού (όπως το υγραέριο), την τοπική θερμοκρασία και υγρασία, να καταγράφουν εικόνες και ήχους και να ανιχνεύουν κίνηση. Αυτό το στοιχείο είναι υπεύθυνο για το σύστημα IoT που βασίζεται σε σύννεφο.	

Αυτό το εργαλείο θα περιλαμβάνει τη χρήση πολλαπλών αισθητήρων που απλώνονται στο δάσος. Ποιο από τα παρακάτω θα θέλατε να παρακολουθήσετε;	[checkboxes] Εύφλεκτο αέριο Εκπομπές καπνού Ποιότητα αέρα Θερμοκρασία Υγρασία Ταχύτητα Ανέμου Κατεύθυνση ανέμου Υγρασία εδάφους Ήχος Εικόνες / βίντεο Κίνηση Άλλο
Ποιο από τα παρακάτω πρωτόκολλα θα θέλατε να χρησιμοποιηθεί για τη συλλογή δεδομένων;	[checkboxes] LoRaWAN COAP MQTT Modbus/TCP AMQP Άλλο
Εκκένωση και Σχεδιασμός	
Αυτή η ενότητα θα εφαρμόσει τα εργαλεία που βοηθούν τους υπεύθυνους για τη διαχείριση ενός σεναρίου πυρκαγιάς, για τη βελτιστοποίηση της διαχείρισης της διαδρομής και της περιπολίας στην περιοχή.	
Επιλέξτε ποιο από τα παρακάτω θα χρησιμοποιήσετε το εργαλείο εκκένωσης και σχεδιασμού.	[checkboxes] Βελτιστοποιήστε τη διαχείριση και την περιπολία διαδρομής Βρείτε πιθανές διαδρομές εκκένωσης Υπολογίστε την εξέλιξη του περιστατικού Άλλο

Κατατάξτε τις πληροφορίες που θα θέλατε να γνωρίζετε για την επιτυχή εκκένωση και τον προγραμματισμό από τις πιο σχετικές προς τις λιγότερο σχετικές.	[checkboxes] Εξάπλωση της φωτιάς Διεύθυνση του ανέμου Κατάσταση οδικού δικτύου Παρουσία ανθρώπων, ζώων ή οχημάτων Άλλο
Η πλατφόρμα iCrowd είναι ένας προσομοιωτής πλήθους βασισμένος σε πράκτορες, ικανός να προσομοιώνει πλήθη μικρής (δεκάδες πράκτορες) και μεγάλης κλίμακας (χιλιάδες πράκτορες). Μπορεί να χρησιμοποιηθεί για σενάρια σε οποιαδήποτε οριοθετημένη περιοχή, όπως εσωτερικά και εξωτερικά κτίρια, στάδια, υπαίθρια φεστιβάλ και δημόσιους χώρους αυξημένης κυκλοφορίας.	
Επιλέξτε τις περιοχές που θέλετε να εκτελέσετε την προσομοίωση iCrowd.	[checkboxes] Εσωτερικό κτιρίου Εξωτερικό κτίριο Στάδιο Υπαίθριο φεστιβάλ Δημόσιοι χώροι Άλλο
Επιλέξτε ποιο από τα παρακάτω θέλετε να παρακολουθήσετε κατά τη διάρκεια της προσομοίωσης iCrowd.	[checkboxes] Ανθρωποι Οχήματα Ζώα Άλλο
Λύσεις UAV	
Αυτό το στοιχείο θα διαχειρίζεται το σύστημα εντολών και ελέγχου UAV (CCS) που αντιπροσωπεύει την κύρια διεπαφή για πρόσβαση των χρηστών στις λειτουργίες που αναπτύσσονται στο HAPS μέσω MCC, επιτρέποντας την παρακολούθηση του UAV, το αίτημα πολυφασματικών εικόνων (EO/IR), και την επεξεργασία εικόνας.	
Έχετε πρόσβαση σε UAV;	[ναι/όχι]

Επιλέξτε τι τύπο UAV έχετε διαθέσιμο;	[checkboxes] Drone με πολλαπλούς ρότορες Drones σταθερής πτέρυγας Μονόστροφα Drones Fixed-Wing Hybrid VTOL 'Αλλο
Επιλέξτε τις ενέργειες που θέλετε να εκτελέσετε με το εργαλείο Συστήματος εντολών και ελέγχου UAV.	[checkboxes] Πλοηγηθείτε με UAV Παρακολούθηση τηλεμετρίας Ζητήστε πολυφασματικές εικόνες Άλλο
Το UAV θα έχει λειτουργία σύγκρουσης κίνησης/χειροκίνητη αποφυγή. Επιλέξτε ποιον τύπο λειτουργικότητας αποφυγής προτιμάτε.	[checkboxes] Σύγκρουση κίνησης/ Χειροκίνητη αποφυγή Αυτόματη αποφυγή σύγκρουσης Άλλο
VLOS (Visual Line of Sight) όπου το drone πρέπει να είναι πάντα ευδιάκριτο από τον χειριστή του drone χωρίς καμία πρόσθετη βοήθεια. EVLOS (Extended Visual Line of Sight) όπου η κάλυψη λειτουργίας του drone μπορεί να επεκταθεί χρησιμοποιώντας έναν ή οπτικούς παρατηρητές που διατηρούν οπτική επαφή με το drone. BVLOS (Beyond Visual Line of Sight) όπου ο χειριστής μπορεί να ελέγχει εξ αποστάσεως το drone χωρίς να διατηρεί οπτική επαφή ανά πάσα στιγμή και χωρίς βοήθεια από παρατηρητές.	

Με ποιο από τα παρακάτω σχετικά με τη γραμμή όρασης του drone θα ήσασταν ικανοποιημένοι;	[checkboxes] VLOS EVLOS BVLOS 'Αλλο
Σύστημα Διαχείρισης Πόρων (RMS)	
Το στοιχείο διαχείρισης πόρων είναι υπεύθυνο για να δίνει τη δυνατότητα στους τελικούς χρήστες να συντονίζουν τους πόρους και να διαχειρίζονται αποτελεσματικά το διαθέσιμο υλικό και ανθρώπινο δυναμικό σε μια περιοχή, προκειμένου να έχουν Βέλτιστη Επίγνωση της Κατάστασης κατά τη διάρκεια πυρκαγιάς. Αυτές οι πληροφορίες παρουσιάζουν ενδιαφέρον για τον συντονισμό τακτικών, στρατηγικών και επιχειρησιακών δραστηριοτήτων σε περίπτωση συναγερμού.	
Επιλέξτε εάν έχετε χρησιμοποιήσει κάποιο από τα παρακάτω λογισμικά για την διαχείρηση πόρων.	[checkboxes] D4H ESO Fire RMS New World Public Safety TargetSolutions TCP Aladtec Scheduling Rhodium Incident Management FireHouse Manager ImageTrend EMS Critical Care High Plains RMS ImageTrend Fire RMS Άλλο

Επιλέξτε ποια από τις παρακάτω λειτουργίες θα χρησιμοποιήσετε.	[checkboxes] Βελτιστοποιήστε τον προγραμματισμό πόρων Διαχείριση κατανομών ατόμων Πρόβλεψη χρήσης πόρων Διαχείριση Εξοπλισμού Διαχείριση Συμβάντων Ανάλυση μετά την έκτακτη ανάγκη Σχεδιασμός Συμβάντων και Έκτακτης Ανάγκης Μαζικές Ειδοποιήσεις Εξόρυξη δεδομένων από τρίτους Διαχείριση Εθελοντών Άλλο
Επιλέξτε τους κωδικούς που πρέπει να πληρούνται από το RMS που χρησιμοποιείτε.	[checkboxes] Κωδικοί Εθνικών Συστημάτων Αναφοράς Συμβάντων Πυρκαγιάς (NFIRS). Κωδικοί Εθνικής Ένωσης Πυροπροστασίας (NFPA). Κώδικες του Διεθνούς Συμβουλίου Κώδικα (ICC). Άλλο
Αποκατάσταση μετά την πυρκαγιά	
Αυτή η ενότητα περιλαμβάνει τα εργαλεία για τη δημιουργία μοντέλων κατάστασης πριν από την πυρκαγιά για ακριβή αποκατάσταση μετά την πυρκαγιά. Καθώς και βασικούς δείκτες στην αξιολόγηση των καμένων περιοχών και την αποκατάσταση του εδάφους.	
Ποιες κατηγορίες προτεινόμενων παρεμβάσεων θα θέλατε να απεικονίζονται στους χάρτες μετά την πυρκαγιά;	[checkboxes] Χωρίς περιοχές παρέμβασης Καταγραφή διάσωσης Φυσική γενιά Άπλωμα σπόρων Drone Άλλο

Επιλέξτε ποιες από τις φυσικές ιδιότητες του εδάφους θα απαιτούσατε τιμές.	[checkboxes] Υφή Δομή Βάρος Πυκνότητα Χρώμα Θερμοκρασία Διαπερατό Αραιότητα της ύλης Πλαστικότητα Συμπιεστό Διαβρωσιμότητα Άλλο
Επιλέξτε ποιες από τις παρακάτω χημικές ιδιότητες του εδάφους θα θέλατε να παρέχονται τιμές.	[checkboxes] pH (οξύτητα / αλκαλικότητα) Οργανικά θέματα Ανόργανες ουσίες Άλλο
Επιλέξτε ποιες πηγές δεδομένων θα θέλατε να παρέχει η αξιολόγηση εδάφους.	[checkboxes] Δορυφορικά δεδομένα Δεδομένα από drones Δεδομένα από αισθητήρες Άλλο
Ποια είναι η προτιμώμενη χωρική ανάλυση για την ακριβή χαρτογράφηση της περιοχής που έχει πληγεί από μια πυρκαγιά;	[checkboxes] 20 μέτρα 60 μέτρα 250 μέτρα 500 μέτρα Άλλο

Επιλέξτε ποιους τύπους εκτιμήσεων κόστους θα θέλατε να παρέχονται.	[checkboxes] Ζημιά από πυρκαγιά Οικονομικός Απευθείας Εμμέσος Ασφαλισμένο Μη ασφαλισμένος Άλλο
Επιλέξτε ποιον από τους παρακάτω τομείς θα θέλατε να λάβετε τις εκτιμήσεις κόστους.	[checkboxes] Ασφάλιση Υποδομές Κτίρια Δασοκομία Βιοποικιλότητα/οικοσυστήματα Άλλο
Διαδικασίες Ανίχνευσης και Απόκρισης	
Η παρούσα ενότητα ανήκει στη φάση ανίχνευσης και απόκρισης.	
Επιλέξτε τις λειτουργίες που θα περιμένατε να χρησιμοποιηθούν για τον εντοπισμό hotspot.	[checkboxes] Δεδομένα από το EFFIS (Copernicus) Δεδομένα από FIRMS (NASA) Κάμερες εδάφους Θερμογραφικές εικόνες από drones/zeppelins Άλλο

Επιλέξτε ποιες ενέργειες θα περιμένατε να παρέχει το εργαλείο οπτικής αναγνώρισης αντικειμένων.	[checkboxes] Εντοπίστε και παρακολουθήστε ανθρώπους, ζώα ή αγαθά που βρίσκονται σε κίνδυνο Εντοπίστε αντικείμενα που θα μπορούσαν να αποτελέσουν απειλή Παρακολούθηση της κυκλοφορίας Βοηθήστε στην παρακολούθηση οχημάτων και προσωπικού Βοηθήστε σε αποστολές έρευνας και διάσωσης Επίβλεψη αποστολών εκκένωσης Άλλο
Η μηχανή απόκρισης πυρκαγιάς ενεργοποιείται με την αναγνώριση αναδυόμενων καταστάσεων που σχετίζονται με την πυρκαγιά, μεταδίδοντας το μήνυμα στους διάφορους ενδιαφερόμενους φορείς (πρώτοι ανταποκριτές, πολίτες, αρχές κ.λπ.). Επιλέξτε τον τύπο μηνύματος που θα προτιμούσατε να λάβετε.	[checkboxes] Email SMS Αμεσο μήνυμα Άλλο
Ανάλυση μέσων κοινωνικής δικτύωσης	
Αυτή η ενότητα θα επικεντρωθεί στην παρακολούθηση των συμβάντων πυρκαγιάς όπως αυτά εκφράζονται στα μέσα κοινωνικής δικτύωσης (ιδίως στο Twitter) από άτομα, όπως οι διαδικτυακοί χρήστες που παρατηρούν φωτιά ή ενδείξεις πιθανής πυρκαγιάς, π.χ. καπνός.	

Πιστεύετε ότι η παρακολούθηση (σε πραγματικό χρόνο) αναρτήσεων στα μέσα κοινωνικής δικτύωσης (Twitter) για τον εντοπισμό ενός συμβάντος πυρκαγιάς ή μιας ένδειξης πυρκαγιάς (π.χ. καπνός) θα μπορούσε να είναι χρήσιμη;	[ναι/όχι]
Επιλέξτε ποια τοποθεσία μπορεί να ανακτηθεί από αναρτήσεις που θα σας ενδιέφερε περισσότερο.	[checkboxes] Από Tweets Από αναρτήσεις Από συνημμένες εικόνες Άλλο
Θα σας ενδιέφερε ο προσδιορισμός των χρηστών και των κοινοτήτων χρηστών που διαδραματίζουν σημαντικό ρόλο σε περίπτωση πυρκαγιάς;	[ναι/όχι]
Περίληψη	
Ποια χαρακτηριστικά της πλατφόρμας TREEADS είναι πιο πολύτιμα για εσάς;	
Ποια είναι η μεγαλύτερη ανησυχία σας για την πλατφόρμα TREEADS;	

Τι προτάσεις έχετε για την πλατφόρμα TREEADS;	

ANNEX 6: SURVEY TRANSLATED IN ROMANIAN

Introducere	
Care este numele companiei/organizației dvs?	
Care este poziția ocupată/denumirea postului?	
Cât de familiar sunteți cu proiectul H2020 TREEADS?	[interval] Nu am auzit vreodată – Știu totul despre proiect
FrontEnd	
Aplicații IT pentru incendii de vegetație (webGIS) Wildfire IT Applications (webGIS)	
Wildfire APP este o interfață web pentru accesul utilizatorilor finali la platforma TREEADS, bazat pe o componentă de vizualizare hărți, care va permite gestionarea informațiilor spațiale în principal prin vizualizarea de hărți, indici de risc și trasee	

Considerați ca necesare aplicații IT în legătură cu incendii de vegetație pentru oricare din următoarele?	căsuțe de bifat Prevenire și pregătire Detecție și răspuns Restaurare și adaptare
Ați utilizat o aplicație GIS pentru incendii de vegetație până acum?	[DA/NU]
Dacă da, menționați care dintre ele?	
Care ar fi modalitatea de acces aplicație preferată?	[Casuță de bifat] Web browser/Motor de căutare Aplicație desktop Aplicație mobilă Altele
Training AR/VR AR/VR Training	
Aplicatia pentru forestiere este o interfață web pentru a oferi accesul utilizatorului final pe Platforma TREEADS, bazată pe o vizualizare a hărților care va permite gestionarea informațiilor spațiale, în pricipal prin vizualizarea hărților, a indicatorilor de risc și a traseelor	
Ați avut acces la antrenament AR/VR până acum?	DA/NU

Dispuneți de resurse sau expertiză pentru a accesa simulatoare fără sprijinul TREEADS?	[DA/Nu]
Ce ați dori să faceți cu un asemenea instrument?	Casuță de Bifat Derulare simulări Vizualizare lecții/materiale de antrenament Construire scenarii personalizate Vizualizare rapoarte de progres și statistici Altele
Constructorul de scenarii va oferi antrenorilor posibilitatea de a compune o simulare personalizată bazată pe condițiile de mediu existente. Care din următoarele instrumente vă sunt necesare pentru a compune o simulare utilă?	[Casuta de bifat] Elemente de Pericol Piese ale echipamentelor Avataruri Altele
Vă rugăm slectați ce materiale de antrenament ați utiliza.	Casuta de Bifat Utilizarea instrumentelor Funcțiile autospecialelor de pompieri Pilotarea dronelor Proceduri de cartografieri Proceduri de tăiere Altele
BackEnd	

Servicii de securitate	
TREEADS va avea nevoie de un set de servicii de Autentificare utilizator pentru a defini niveluri de acces diferențiate în funcție de rolul utilizatorului	
Care dintre următoarele componente le considerați că sunt necesare?	[Casutade bifat] Autentificare utilizator Manager utilizator, sesiune și rol Componente de securitate pentru protecția datelor Configurare server Cofigurarea Serverului Control Acces Altele
Vă rugăm selectați tipul de sistem control acces pe care îl preferați	[Casuta de bifat] Discretionary Access Control (DAC) Mandatory Access Control (MAC) Controlul Accesului obligatoriu (MAC) Role Based Access Control (RBAC) Controlul accesului bazat pe roluri Altele

Ce tip de servicii de notificare preferați?	[Casuta de Bifat] Email SMS Mesaje instant Altele
Care dintre următoarele roluri de utilizator ați dori să fie incluse în cadrul acestui instrument?	[Casuta de Bifat] Anonim/Invitat Înregistrat Administrator Altele
Ce tipuri de autentificare ați dori să fie suportate?	Casuta de Bifat Un singur Factor/Autentificare Primră Autentificare cu doi factori Autentficarecu factori multipli (MFA) Autentificare cu un singur factor (SSO)
Analiza de risc	

Modulul de analiza de risc este un set de instrumente și indicatori de risc rezultați din monitorizarea în timp real a combustibilului, atmosferei și terenului printr-un sistem informatic în rețea. Expunerea la incediu și instrumenul de evaluare a riscului va fi un kit bazat pe observarea Pământului pentru expunerea la foc și evaluarea riscului. Utilizând secvențele de timp oferite de Copernicus acest intrument va oferi servicii privind expunerea la incendii de vegetație și estimarea riscului.	
Vă rugăm selectați perioada de timp pe care o considerați adecvată pentru a crea o cartare a activităților în ariile protejate	[Casuta de Bifat] Lunar Săptămânal Zilnic Altele
Vă rugăm selectați perioada de timp pe care o considerați adecvată pentru detectarea de construcții noi .	[Casuta de Bifat] Anual La fiecare 6 luni La fiecare 3 luni Lunar Săptămânal Altele
Vă rugăm selectați perioada de timp pe care o considerați adecvată pentru monitorizarea zonelor secetoase.	[Casuta de Bifat] Lunar Săptămânal Zilnic Altele

Indicele agroforestier va oferi o valoare reală pentru fiecare zonă de pădure cum ar fi speciile de plante și arbori. Pentru care dintre următoarele variabile solicitați să fie prezentate procente specifice?	[Casuta de Bifat] Proprietățile solului Procent de acoperire a coronamentului Materie organică Eroziunea solului Stratificarea acoperirii coronamentului Densitatea aglomerărilor Vegetația Biomasa Umiditatea solului Diversitatea speciilor Altele
Instrumentul de Cartografiere Precisă a Pădurii prezintă caracteristici fizice și geometrice. Vă rugăm selectați de ce informații aveți nevoie .	[Casuta de bifat] Specii de arbori Înălțimea arborilor Biomasă Tipul combustibil Starea combustibilului Altele

Vă rugăm selectați care dintre următorii factori socio-economici trebuie să luați în considerare pentru sistemul de prevenire a incendiilor.	[Casuta de selectare] Populația Activitățile umane Tradiții culturale Procentul din populația care lucrează în sectoarele agricultură și servicii Rata de șomaj/neocupare Tăierile ilegale Procentul de populație active care lucrează în sectorul servicii Altele
Sitemul de Prevenire Incendii va face propuneri privind curățarea și întreținerea în aceste zone prin prezentarea de hărți privind riscuri și priorități. Vă rugăm selectați tipul de hartă preferat pentru prezentarea acestor rezulate cartografiate.	[Casuta de bifat] Procente Colour Coded Heat-Map Abordare de tip "semafor" Altele
Servicii de cartare	
Serviciile de cartografiere sunt responsabile pentru punerea la dispoziție a hărților pe Internet. Un serviciu de cartare construiește hărți, entități și atribute de date disponibile în multe tipuri de aplicații client și la diferite niveluri.	

Vă rugăm selectați ce funcționalități vă doriți într-un vizualizator de hărți (map viewer). .	[Casuta de bifat] Mărire Adâncitură Vizualizare listă de straturi Buton on/off pentru straturi Selecatre strat de bază Găsire locație Indicator coordonate Altele
Vă rugăm selectați formatul droit pentru exportul/extragerea unei hărți.	[casuta de bifat] Profil CSV / format fișier CSV / format fișier KML KML GeoJSON TIFF/TIF TIFF/TIF PNG PNG JPG JPG GIF GIF SVG SVG Altele

Raspândirea Focului și a Fumului	
Modulul de propagare a focului și a fumului reprezintă un set de instrumente de concepute pentru simularea unora dintre cele mai importante procese fizice în cadrul incediilor forestiere. Acesta va fi compus din trei module fizice simplificate diferrite care pot funcționa independent sau cuplat și anume , un model de propagare a incediului, , PhyFire și un model de camp eolian de înaltă definiție, HDWind	
Vă rugam sa selectati care dintre urmatoarele caracteistici ale zonei de raspandire a incediului roiți să vi se furnizeze.	[casuta de bifat] Zona de afectat Zona de ardere Fractie de combustibil consumat Altele
Va rugam sa selectati zona de la care doriti sa primiti informatiile	[Casuta de bifat] Perimetru Poziíe Grosime Altele
Please select the preferred input and output format of the three models (PhyFire, HDWind, PhyNX). Pentru cele trei module, ce format de intare si iesire doriti sa selectati	[casuta de bifat] ASCII- format fisier MEDIT format fisier VTK format fisier Avizo format fisier WTK format fisier Altele

Va rugam sa selectati care dintre aspectele thnice ale analizei modului de raspandire a focului aveti nevoie pentru elaborarea masurilor de siguranță.	[Casuta de bifat] Temperatură viteză Soot fraction Fracțiune de funingine Componentele fumului Rata de elibrare a căldurii în fiecare punct al grileidin domeniul de calcul Înălțimea stratului de fum Grosimea flacării Altele
Doriți să obțineți explicații vizuale pentru deciziile privind modelele statistice?	[DA/NU]
Senzori la distanță	
AUn sistem care constă dintr-o multiudine de platforme cu costuri scăzute constând din senzori răspândiți strategic în pădure care vor fi capabili să monitorizeze emisiile de gaze inflamabile și de fum din apropriere (cum ar fi GPL) , temperature și umiditate locală, să capteze imagini și sunete să să detecteze mișcare. Această component este responabilă de sistemul IoT bazazt pe nori.	

Acest instrument va include utilizarea a mai multor sezori răspândiți în pădure. Care dintre acești senzori doriți să-i monitorizați?	[Casuță e bifat] Flammable gas Gaz inflamabil Smoke emissions Emisii de fum Air quality Calitatea aerului Temperatură Umiditate Viteza vantului Direcția vantului Umiditatea Solului Sunetele/ Audio Imagini / video Mișcare Altele
Care dintre următoarele protocoale ați dori să fie utilizate în vederea colecătrii datelor?	[Casută de bifat] LoRaWAN COAP MQTT Modbus/TCP AMQP Altele
Planul de evacuare	
Acest modul va implementa instrumentele care ii ajută pe cei responsabili cu gestionarea unui scenario de incendiu pentru optimizarea managementului rutei și a patrulării zonei	

Vă rugăm să selectați care dintre următoarele instrumente de evacuare șiplanificare le-ați utiliza ?	[casută de bifat] Gestionarea optimizată a traseelor și a patrulelor Găsirea potențialelor căi de evacuare Estimarea evoluției incidentului Altele
Vă rugăm să calificați informațiile pe care doriți să le cunoașteți pentru o evaluare și o planificare de success de la cea mai relevantă până la cea mi puțin relevantă.	[căsuță de bifat] Răspândirea focului Direcția vântului Starea rețelei de drumuri Prezența animalelor și a vehiculelor Altele
Platforma iCrowd este un simulator de mulțimi bazazt pe agenți , capabil să simuleze mulțimi mai mici (zeci de agenți) și la scare mare (mii de agenți). Poate fi utilizat pentru scenarii din orice zonă delimitată, cum ar fi interiorul și exteriorul cladirilor, stadioanelor,festivalurilor în aer liber și a zonelor publice cu traffic crescut	
Vă rugăm să selectați zonele în care doriți să rulați simularea iCrowd	[casuta de bifat] Building interior Interiorul cladirilor Building exterior Exteriorul Cladirilor Stadiu Open-air festival Festivale în aer liber Spații publice Altele

Vă rugăm să selectați care dintre următoarele doriți să urmăriți în timpul simulării iCrowd	[căsuță de bifat] Oamenii Vehicule Aimale de fermă Altele
Soluții UAV	
Această componentă va gestiona sistemul de comandă și control al UAV (CCS) care reprezintă interfața pricipală pentru accesul utilizatorilor pivind funcționalitățile implementate în HAPS prin MCC permițând monintorizare UAV, solicitarea de imginii multispectrale(EO/IR) și procesare imaginii	
Do you have access to UAVs? Aveți acces la UVAVS?	[DA/NU]
Vă rugăm să selectați ce tip de UAV aveți la dispoziție	[casuță de bifat] Donă multi-rotor Drone cu aripi fixe Dorne cu un singur rotor Drone cu apripi fixe Altele
Vă rugăm să selectați acțiunile p care doriți să le efectuați cu ajutorul instrumentului de comandă și control UAV	[checkboxes] Navigare UAV Monitorizarea telemetriei Solicitare de imagini multispectrale Altele

UAV-ul va avea funcția de coliziune /evitare manuală. Vă rugăm să selectați ce tip de funcție de evitare preferați	[căsuță de bifat] Mișacare cu ciocnire/evitare manuală Evitare automata a coliziunilor Altel
VLOS (Visual Line of Sight) Întotdeauna Drona trebuie săfie pilotată de căte pilot fără niciun ajutor sulimentar. EVLOS (Linie vizuală extinsă) unde acoperirea pilotării dronei poate fi extinăde către unul sau mai mulți observatori vizuali care mențin contactul visual cu drona. BVLOS (Dincolo de linia vizuală) unde operatorul poate controla de la distanță drone fără a menține contactul visual în orice moment și fără asistență din partea observtorilor.	
Urmărind linia vizuală a dronei , cee ați alege?	[casuță de bifat] VLOS EVLOS BVLOS Altele
Sistemul de management al resurselor	
Componenta de management al resurselor este responsabilă pentru a permite utilizatorilor finali să coordoneze resursele și să gestioneze eficient resursele materiale și umane disponibile într-o zonă, pentru a avea o conștientizare optimă a situației în timpul unui incendiu. Aceste informații sunt de interes pentru coordonarea activităților tactice, strategice și operaționale în cazul unei alarme.	

Stakeholders Recommendations

Please select if you have used any of the following software. Vă rugăm să selectați care dintre următoarele programe le ați folosi	[căsuță de bifat] D4H ESO Fire RMS Siguranță Publică Soluții Tință Programare TCP Aladtec Managementul Incidentelor Rhodium Administrator Centru de Pompieri ImageTrend EMS Critical Care Campii Înalte RMS ImageTrend Foc RMS Altele
Vă rugăm să selectați care dintre următoarele funcții le -ți utiliza	[căsuță de bifat] *Planul optim de resurse* *Gestionați alocările de oameni* *Preziceți utilizarea resurselor* *Preziceți utilizarea resurselo*r *Gestionarea incidentelor* *Analiza post-urgență* *Planificarea incidentelor și a situațiilor de urgență* *Notificări în masă* *Exploatarea datelor de la terți* *Managementul voluntarilor* Alteler

Vă rugăm să selectați codurile care trebuie îndeplinite cand utilizati RMS	[căsuță de bifat] Codurile sistemelor naționale de raportare a incidentelor de incendiu Codurile Asociației Naționale pentru Protecția împotriva incendiilor Condurile ale Consilului Internațional (ICC) Altele
Restaurare după incendiu	
Acest modul cuprinde instrumentele pentru a crea modele de condiții înainte de incendiu pentru restaurarea precisă după incendiu. Precum și indicatori cheie în evaluarea zonelor arse și refacerea solului	
Ce categorii de intervenții doriți sa recomandați sa fie vizualizate în harțile post-incediu?	[casuță de bifare] *Fără zone de intervenție* *Exploatare forestiere* *Productie naturală* *Raspandirea semintelor de drone* Altele

Vă rugăm sa selectati care dintre prorpietățile fizice ale solului necesită date	[căsută de selectare] Textură Structură Greutate Densitate Culoare Temperatură Permeabilitate Porozitate Plasticitate Compresibilitate Erodabilitate Altele
Vă rugăm sa selectati care dintre prorpietățile chimice ale solului necesită date	[[căsută de selectare] pH (aciditate / alcalinitate) *Materii Organice* *Materii anorganice* Altele
Vă rugăm să selectați ce informații privind evaluarea solului doriți sa primiți	[căsuță de selectare] Date obținute prin Satelit Data obținute de la Drone Date obținute de la senzori Altele

Care este rezolutia spațială dorită pentru cartografierea precisă a zonei afectate de un incendiu?	[căsuță de selectare] 20 metri 60 metri 250 metri 500 metri Altele
Vă rugăm să selectați tipurile de cheltuieli estimative pe care doriți să obțineți.	[căsuță de selectare] Daune provocate de incendiu Cheltuieli financiare Cheltuieli directe Cheltuieli indirecte Asigurare Neasigurare Altele
Din următoarele secțiuni, vă rugăm să selectați ce cheltuieli estimative doriți să obțineți.	[căsuță de selectare] Asigurare Insfrastructură Clădiri Sivilcutură Biodiversitate/ecosisteme Altele
Procese de detectare și răspuns	
Modulul de față aparține fazei de detectare și răspuns.	

Vă rugăm să selectați funcțiile pe care doriți să le utilizați în vederea detectării punctului de acces .	[căsuță de selectare] Data obținute de la EFFIS (Copernicus) Data obținute de la FIRMS (NASA) Date obținute în urma imaginilor luate de la sol Imagini termografice obținute de la drone/zeppelins Altele
Vă rugăm să selectați ce acțiuni v-ați aștepta să le ofere instrumentul de recunoaștere a obiectelor vizuale.	[căsuță de selectare] *Detectează și urmărește oamenii,animalele sau bunurile care se află în pericol.* *Detectează obiecte care ar putea reprezenta o amenințare* *Monitorizarea traficului* *Asistență privind monitorizarea persoanelor și a vehiculelor* *Asistență în misiunile de căutare și salvare* *Supravegherea misiunilor de evacuare* Altele
Categoria de răspuns la incendiu de vegetație se activează la identificarea unei situații emergente legate de incendiu, comunicând mesajul către diferitele părți interesate (primul răspuns, cetățeni, autorități etc.). Vă rugăm să selectați tipul de mesaj pe care doriți să îl primiți.	[căsuuță de selectare] Email mesaje Mesaje instante Altele
Analiza rețelelor sociale	

Acest modul se va concentra pe monitorizarea evenimentelor de incendiu de vegetație , așa cum sunt exprimate pe rețelele sociale (în special Twitter) de către persoane, cum ar fi utilizatorii online care observă un incendiu sau indicii ale unui potențial incendiu, de exemplu, fum	
Considerați că ar putea fi utilă monitorizarea (în timp real) a postărilor din rețelele sociale (Twitter) pentru a detecta un eveniment de incendiu sau un indiciu al unui incendiu (de exemplu, fum)?	[DA/NU]
Vă rugăm să selectați ce locație poate fi recuperate de la postul de la care ati mai fi interesat. .	[ccăsuță de selectare] De la Tweets Din postări/texte Din imagini atașate
Ați fi interesat in identficarea unui utilizator sau a unui utilizator din cadrul comunităților care joacă un rol important în cazul unui incediu	[DA/NU]
Rezumat	
Pentru dumneavostră ce caracteristici ale platformei TREEADS le considerați importante?	
Care este cea mai mare preocupare a dvs referitor la platforma TREEADS?	
Ce recomandări aveți în legătură cu platforma TREEADS?	

ANNEX 7: SURVEY TRANSLATED IN ITALIAN

Introduzione	
Qual è il nome della tua azienda/organizzazione?	

Qual è la tua posizione/titolo di lavoro?	
Quale conoscenza hai del progetto H2020 TREEADS?	[range-dominio] Non ne ho mai sentito parlare – So tutto a riguardo
FrontEnd	
Applicazioni sugli incendi boschivi (webGIS)	
La Wildfire APP è un'interfaccia Web per l'accesso dell'utente finale alla piattaforma TREEADS, basata su un visualizzatore di mappe, che consentirà la gestione delle informazioni spaziali principalmente attraverso la visualizzazione di mappe, indici di rischio e percorsi.	
Hai bisogno di una App relativa agli incendi boschivi per una delle seguenti operazioni?	[caselle] ☐ Prevenzione e organizzazione ☐ Rilevamento e replica ☐ Ripristino e adattamento
Hai mai usato un GIS sugli incendi boschivi in passato?	[sì/no]
Se sì, indicare quale	
Come vorresti accedere all'applicazione?	[caselle] ☐ Browser ☐ Applicazione desktop ☐ Applicazione mobile ☐ Altro
Formazione AR/VR	
L'applicazione TREEADS Virtual Reality (VR) sarà utilizzata come sistema di formazione e modellazione online che consente agli utenti di costruire percorsi formativi predefiniti in realtà virtuale (VR), ma anche di creare contenuti formativi interattivi.	
Hai già avuto accesso alla formazione AR/VR?	[sì/no]

Hai le risorse o le competenze per accedere a tali simulazioni senza il supporto di TREEADS?	[sì/no]
Cosa ti piacerebbe fare con uno strumento del genere?	[caselle] ☐ Eseguire simulazioni ☐ Visualizzare lezioni/materiali formativi ☐ Sviluppare scenari personalizzati ☐ Visualizzare report con i avanzamenti e statistiche ☐ Altro
Il costruttore di scenari consentirà agli istruttori di creare una simulazione personalizzata basata sugli ambienti esistenti. Di quale dei seguenti strumenti hai bisogno per assemblare una simulazione?	[caselle] ☐ Elementi di Rischio ☐ Componenti, attrezzature ☐ Avatar ☐ Altro
Seleziona i materiali didattici che utilizzeresti.	[caselle] ☐ Uso di attrezzature ☐ Funzioni del camion dei pompieri ☐ Pilotaggio di droni ☐ Procedure di mappatura ☐ Procedure di taglio ☐ Altro

BackEnd
Servizi di sicurezza
TREEADS richiederà una serie di servizi di Autenticazione Utente per definire i diversi livelli di accesso in base al ruolo dell'utente.

Quale delle seguenti caratteristiche ritieni necessarie?	[caselle] ☐ Autenticazione utente ☐ Gestione di utenti, sessioni e ruoli ☐ Funzioni di sicurezza per proteggere i dati ☐ Configurazione del server ☐ Controllo di accesso ☐ Altro
Seleziona il sistema di controllo degli accessi che preferisci.	[caselle] ☐ Controllo discrezionale degli accessi (DAC) ☐ Controllo obbligatorio degli accessi (MAC) ☐ Controllo degli accessi basato sui ruoli (RBAC) ☐ Altro
Quale tipo di servizi di notifica preferisci?	[caselle] ☐ E-mail ☐ SMS ☐ Messaggistica istantanea ☐ Altro
Quale dei seguenti ruoli utente vorresti fosse incluso in questo strumento?	[caselle] ☐ Anonimo/ Ospiti ☐ Registrato ☐ Amministratore ☐ Altro
Quali tipi di autenticazione vorresti fosse supportato?	☐ Autenticazione a fattore singolo/basilare ☐ Autenticazione a due fattori (2FA) ☐ Autenticazione a più fattori (MFA) ☐ Accesso singolo (SSO)
Analisi di Rischio	
Il modulo di analisi del rischio è un insieme di strumenti e indicatori di rischio basati sul monitoraggio in tempo reale del combustibile, dell'atmosfera e del suolo tramite un sistema informativo web. Lo strumento per l'esposizione al fuoco e la valutazione del rischio sarà basato su un servizio di Osservazione della Terra. Utilizzando le serie storiche del sistema Copernicus, fornirà servizi relativi all'esposizione agli incendi e alla stima del rischio.	

Seleziona l'intervallo di tempo che ritieni adeguato per creare una mappa delle attività nelle aree protette.	[caselle] ☐ Mensile ☐ Settimanale ☐ Quotidiano ☐ Altro
Seleziona l'intervallo di tempo che ritieni adeguato per il rilevamento di nuove costruzioni.	[caselle] ☐ Annuale ☐ Ogni 6 mesi ☐ Ogni 3 mesi ☐ Mensile ☐ settimanale ☐ Altro
Seleziona il periodo di tempo che ritieni adeguato per il monitoraggio delle aree siccitose.	[caselle] ☐ Mensile ☐ settimanale ☐ Quotidiano ☐ Altro
L'indice agroforestale fornirà un valore accurato per ogni area forestale (ad esempio specie vegetali e arboree). Per quale delle seguenti variabili ti servirà vedere le percentuali specifiche?	[caselle] ☐ Proprietà del suolo ☐ Percentuale di copertura della cima ☐ Materia organica ☐ Erosione del suolo ☐ Stratificazione della copertura della cima ☐ Densità apparente ☐ Vegetazione ☐ Biomassa ☐ Umidità del suolo ☐ Diversità delle specie ☐ Altro
Lo strumento Accurate Forest Mapping fornisce caratteristiche fisiche e geometriche. Selezionare le caratteristiche di interesse.	[caselle] ☐ Specie arboree ☐ Altezza dell'albero ☐ Biomassa ☐ Tipo di combustibile ☐ Condizioni del combustibile ☐ Altro

Seleziona quale dei seguenti fattori socioeconomici dovrebbe essere considerato per il sistema di prevenzione degli incendi.	[caselle] ☐ Popolazione ☐ Attività umane ☐ Tradizioni culturali ☐ Percentuale di popolazione occupata in agricoltura o servizi ☐ Tasso di disoccupazione ☐ Taglio illegale ☐ La percentuale di popolazione occupata nei servizi ☐ Altro
Lo strumento Sistema di Prevenzione Incendi fornirà suggerimenti per la pulizia e la manutenzione delle aree fornendo mappe di rischio e priorità. Seleziona il tipo di mappa che preferisci sia mostrata in output.	[caselle] ☐ Percentuali ☐ Mappa termica con codice colore ☐ Metodo semaforo ☐ Altro
Servizi cartografici	
I servizi cartografici sono responsabili della pubblicazione delle mappe su Internet. Un servizio di mappe rende disponibili mappe, entità geometriche e attributi per molti tipi di applicazioni client a diversi livelli.	
Seleziona le funzionalità che desideri avere in un visualizzatore di mappe.	[caselle] ☐ Ingrandisci (Zoom) ☐ Fai una panoramica (Pan) ☐ Visualizza elenco layer (livelli informativi) ☐ Attiva/disattiva i livelli ☐ Seleziona il livello di base ☐ Trova posizione ☐ Indicatore delle coordinate ☐ Altro

Seleziona i formati in cui desideri estrarre la mappa.	[caselle] ☐ Shapefile ☐ CSV/Foglio di calcolo ☐ KML ☐ GeoJSON ☐ TIFF/TIF ☐ PNG ☐ JPG ☐ GIF ☐ SVG ☐ Altro

Propagazione del fuoco e del fumo	
Il Modulo per la Propagazione del Fuoco e del Fumo è uno strumento progettato per la simulazione di alcuni dei più importanti processi fisici nell'ambito degli incendi boschivi. Sarà composto da tre diversi moduli fisici semplificati che possono funzionare indipendentemente o in combinazione, ovvero un Modello di Propagazione dell'Incendio, PhyFire; un Modello di Dispersione del Fumo, PhyNX e un Modello ad alta definizione del Campo di Vento, HDWind.	
Si prega di selezionare quale delle seguenti caratteristiche dell'area di propagazione dell'incendio si desidera venga fornita.	[caselle] ☐ Zona bruciata ☐ Zona in fiamme ☐ Frazione consumata della massa di combustibile ☐ Altro
Si prega di selezionare le informazioni dell'area che si desidera fornire.	[caselle] ☐ Perimetro ☐ Posizione ☐ Spessore ☐ Altro
Selezionare il formato di input e output preferito dei tre modelli (PhyFire, HDWind, PhyNX).	[caselle] ☐ Formato file ASCII ☐ Formato file MEDIT ☐ Formato file VTK ☐ Formato file Avizo ☐ Formato file WTK ☐ Altro

Selezionare quale degli aspetti tecnici dell'analisi del comportamento e della propagazione dell'incendio è necessario per lo sviluppo delle misure di sicurezza.	[caselle] ☐ Temperatura ☐ Velocità ☐ Frazione fuliggine ☐ Componenti gassosi del fumo ☐ Heat Release Rate (Calore rilasciato) in ciascuna cella del dominio analizzato ☐ Altezza dello strato di fumo ☐ Spessore della fiamma ☐ Altro
Desideri ottenere spiegazioni illustrative in merito alle decisioni dei modelli statistici?	[sì/no]
Sensori remoti - IoT	
Si tratta di un sistema che consiste in una moltitudine di piattaforme IoT a basso costo costituite da sensori strategicamente distribuiti nel bosco che saranno in grado di monitorare le emissioni di gas e fumi infiammabili nelle vicinanze (come il GPL), temperatura e umidità locali, acquisire immagini e suoni o rilevare movimenti. Tale componente è responsabile del sistema IoT basato sul cloud.	
Questo strumento includerà l'utilizzo di più sensori sparsi nel bosco. Quale di questi vorresti monitorare?	[caselle] ☐ Gas infiammabile ☐ Emissioni di fumo ☐ Qualità dell'aria ☐ Temperatura ☐ Umidità ☐ Velocità del vento ☐ La direzione del vento ☐ Umidità del suolo ☐ Suoni/audio ☐ Immagini/video ☐ Movimento ☐ Altro

Quale dei seguenti protocolli vorresti utilizzare per la raccolta dei dati?	[caselle] ☐ LoRaWAN ☐ COAP ☐ MQTT ☐ Modbus/TCP ☐ AMQP ☐ Altro
Evacuazione e Pianificazione	
Questo modulo implementerà gli strumenti di supporto ai responsabili della gestione di uno scenario di incendio, per l'ottimizzazione della gestione del percorso e del pattugliamento sul territorio.	
Quale delle seguenti opzioni dello strumento di evacuazione e pianificazione utilizzeresti?	[caselle] ☐ Ottimizza la gestione del percorso di pattugliamento ☐ Trovare potenziali percorsi di evacuazione ☐ Stimare l'evoluzione dell'incidente ☐ Altro
Si prega di classificare le informazioni che si ritiene più utili per l'evacuazione e la pianificazione. Dal più rilevante al meno rilevante.	[caselle] ☐ Propagazione del fuoco ☐ Direzione del vento ☐ Stato della rete stradale ☐ Presenza di persone, animali o veicoli ☐ Altro
La piattaforma iCrowd è un simulatore di folla basato sull'agente, in grado di simulare piccole (decine di agenti) e grandi (migliaia di agenti) affollamenti. Può essere utilizzata per scenari in qualsiasi area delimitata, come interni ed esterni di edifici, stadi, feste all'aperto e aree pubbliche a traffico intenso.	
Seleziona le aree in cui desideri eseguire la simulazione iCrowd.	[caselle] ☐ Interno dell'edificio ☐ Esterno dell'edificio ☐ stadio ☐ Festa all'aperto ☐ Spazi pubblici ☐ Altro

Seleziona quale delle seguenti opzioni desideri monitorare durante la simulazione iCrowd.	[caselle] ☐ La gente ☐ Veicoli ☐ Bestiame ☐ Altro

Soluzioni UAV – Gestione Droni

Questo componente gestirà il sistema di comando e controllo dell'UAV (CCS) che rappresenta la principale interfaccia di accesso degli utenti alle funzionalità implementate nell'HAPS tramite MCC, consentendo il monitoraggio dell'UAV, la richiesta di immagini multispettrali (EO/IR), e l'elaborazione delle immagini.

Hai accesso a degli UAV?	[sì/no]
Seleziona che tipo di UAV hai a disposizione?	[caselle] ☐ Droni multirotore ☐ Droni ad ala fissa ☐ Droni a rotore singolo ☐ VTOL ibrido ad ala fissa ☐ Altro
Seleziona le azioni che desideri eseguire con lo strumento Sistema di Comando e Controllo UAV.	[caselle] ☐ Pilotare il drone ☐ Monitorare la telemetria ☐ Richiedere immagini multispettrali ☐ Altro
L'UAV avrà funzionalità anti-collisione automatica o di guida manuale. Seleziona il tipo di funzionalità di guida che preferisci.	[caselle] ☐ Anti Collisione (Aut.) /Contenimento manuale ☐ Anti Collisione automatica ☐ Altro

VLOS (Visual Line of Sight): il drone deve essere sempre ben visibile dall'operatore del drone senza alcun ausilio aggiuntivo.

EVLOS (Extended Visual Line of Sight): la copertura operativa del drone può essere estesa utilizzando uno o osservatori visivi che mantengono un contatto visivo con il drone.

BVLOS (Beyond Visual Line of Sight): l'operatore può controllare a distanza il drone senza mantenere il contatto visivo in ogni momento e senza l'assistenza degli osservatori.

Di quale delle seguenti opzioni relative alla linea di vista dei droni hai bisogno?	[caselle di controllo] ☐ VLOS ☐ EVLOS ☐ BVLOS ☐ Altro
Sistema di gestione delle risorse	
Il componente Gestione delle Risorse è responsabile dell'abilitazione degli utenti finali al coordinamento delle risorse ed alla gestione efficiente dei materiali e delle risorse umane disponibili in un'area, al fine di avere una Optimal Operational Awareness (Consapevolezza Operativa Ottimale). Le seguenti informazioni sono importanti per coordinare le attività tattiche, strategiche e operative in caso di allarme.	
Seleziona tra i seguenti software quello che hai già utilizzato.	[caselle] ☐ D4H ☐ ESO Fire RMS ☐ New World Public Safety ☐ TargetSolutions ☐ TCP Aladtec Scheduling ☐ Rhodium Incident Management ☐ FireHouse Manager ☐ ImageTrend EMS Critical Care ☐ High Plains RMS ☐ ImageTrend Fire RMS ☐ Altro
Si prega di selezionare quale delle seguenti funzioni si desidera utilizzare.	[caselle] ☐ Ottimizzare la pianificazione delle risorse ☐ Gestire le allocazioni delle persone ☐ Prevedere l'utilizzo delle risorse ☐ Gestire le attrezzature ☐ Gestire degli incidenti ☐ Analisi post-emergenza ☐ Pianificazione degli incidenti e delle emergenze ☐ Notifiche di massa ☐ Data mining su terze parti ☐ Gestione dei volontari ☐ Altro

Seleziona i codici necessari per l'RMS che usi.	[caselle] ☐ Codici National Fire Incident Reporting Systems (NFIRS). ☐ Codici della National Fire Protection Association (NFPA). ☐ Codici dell'International Code Council (ICC). ☐ Altro
Ripristino post incendio	
Questo modulo include gli strumenti per creare modelli delle condizioni pre-incendio per un accurato ripristino post-incendio, oltre ad indicatori fondamentali per valutazione delle aree incendiate e nel ripristino del suolo	
Quali categorie di interventi consigliati vorresti fossero visualizzate nelle mappe post-incendio?	[caselle] ☐ Nessuna area di intervento ☐ Registrazione di salvataggio ☐ Generazione naturale ☐ Semina da Drone ☐ Altro
Si prega di selezionare quali proprietà fisiche del suolo si desidera stimare.	[caselle] ☐ Tessitura (grana) ☐ Struttura ☐ Peso ☐ Densità ☐ Colore ☐ Temperatura ☐ Permeabilità ☐ Porosità ☐ Plasticità ☐ Comprimibilità ☐ Erodibilità ☐ Altro
Seleziona per quale delle seguenti proprietà chimiche del suolo desideri che vengano stimate.	[caselle] ☐ pH (acidità/alcalinità) ☐ Questioni organiche ☐ Materie inorganiche ☐ Altro

Seleziona le fonti dei dati che desideri vengano fornite dalla valutazione del suolo.	[caselle] ☐ Dati satellitari ☐ Dati dai droni ☐ Dati dai sensori ☐ Altro
Qual è la tua risoluzione auspicabile per una accurata mappatura dell'area interessata da un incendio?	[caselle] ☐ 20 metri ☐ 60 metri ☐ 250 metri ☐ 500 metri ☐ Altro
Si prega di selezionare le tipologie di stime dei costi che si desidera ricevere.	[caselle] ☐ Danno da fuoco ☐ Economico ☐ Diretto ☐ Indiretto ☐ Assicurato ☐ Non assicurato ☐ Altro
Si prega di selezionare i settori per i quali si desidera ottenere le stime dei costi.	[caselle] ☐ Assicurazione ☐ Infrastrutture ☐ Edifici ☐ Silvicoltura ☐ Biodiversità/ ecosistemi ☐ Altro
Processi di rilevamento e risposta	
Il presente modulo è relativo alla fase di rilevamento e risposta.	
Seleziona le funzionalità che ti aspetteresti di utilizzare per il rilevamento dell'hotspot.	[caselle] ☐ Dati da EFFIS (Copernicus) ☐ Dati da FIRMS (NASA) ☐ Telecamere da terra ☐ Immagini termografiche da droni/zeppelin ☐ Altro

Seleziona le azioni che ti aspetti vengano fornite dallo strumento di riconoscimento visivo degli oggetti.	[caselle] ☐ Rileva e traccia persone, animali o merci in pericolo ☐ Rileva oggetti che potrebbero rappresentare una minaccia ☐ Monitora il traffico ☐ Assiste nel monitoraggio dei veicoli e delle persone ☐ Assiste nelle missioni di ricerca e soccorso ☐ Supervisiona gli obiettivi di evacuazione ☐ Altro
Il motore di risposta agli incendi boschivi viene attivato all'identificazione di una situazione di emergenza correlata a un incendio comunicando l'allarme ai vari stakeholders (primo soccorso, cittadini, autorità ecc.) Selezionare il tipo di messaggio che si desidera ricevere.	[caselle] ☐ E-mail ☐ sms ☐ Messaggistica istantanea ☐ Altro
Analisi dei social media	
Questo modulo si concentrerà sul monitoraggio degli incendi nel moment in cui sono comunicati sui social media (Twitter, in particolare) da come utenti online che notano un incendio o forniscono indicazioni su un potenziale incendio, ad esempio fumo.	
Ritieni che il monitoraggio (in tempo reale) dei post sui social media (Twitter) per rilevare un evento di incendio o un'indicazione di incendio (ad es. fumo) possa essere utile?	[sì/no]
Seleziona a quale tipologia di posizione che può essere individuata dai post saresti più interessato.	[caselle] ☐ Dai tweet ☐ Da post/testi ☐ Da immagini allegate ☐ Altro
Sareste interessati all'identificazione degli utenti e delle comunità di utenti che svolgono un ruolo importante in caso di incendio?	[sì/no]

Riepilogo
Quali caratteristiche della piattaforma TREEADS sono più importanti per te?
Qual è la tua più grande preoccupazione in merito alla piattaforma TREEADS?
Quali raccomandazioni hai per la piattaforma TREEADS?

A Holistic Fire Management Ecosystem for Prevention, Detection and Restoration of Environmental Disasters

The Members of the TREEADS Consortium:

Short Name	Country	Short Name	Country	Short Name	Country
FRN	NO	**INNOV**	CY	**DCNA**	AT
Jotne	NO	**FI**	EL	**IFR**	AT
BAM	DE	**GBD**	BE	**FGK**	AT
Altran	ES	**EFB**	EL	**BFG**	AT
DH	ES	**LAMMC**	LT	**STRESS**	IT
USAL	ES	**OneSeven**	DE	**ACaMIR**	IT
SQD	BE	**VIPO**	NO	**Sorrento**	IT
CARTIF	ES	**WAS**	NO	**PUI**	FR
UdG	ES	**CBS**	DK	**FAFCYLE**	ES
NCSRD	EL	**K3Y**	BG	**DdA**	ES
SIMAVI	RO	**MAGG**	IT	**TUC**	EL
OvGU	DE	**NOA**	EL	**MAICh**	EL
ADR	EL	**MEWF**	RO	**DAAC**	EL
CERTH	EL	**ASFOR**	RO	**NTUST**	TW
8bells	CY	**SMURD**	RO	**DTU**	DK
ACCELI	CY	**JOAFG**	AT		

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