D2.1 – End-users' requirements report

Deliverable ID	D2.1
Deliverable Title	End-users' requirements report
Work Package	WP2
Dissemination Level	Public
Version	2.0
Date	10-04-2025
Status	Submitted
Lead Editor	EDGE
Main Contributors	NOA, MITIGA, RoA, INGV-OE, SDIS 2B

Project funded in the Horizon Europe Programme HORIZON-EUSPA-2023-SPACE under Grant Agreement 101180172

Document History

Version	Date	Author(s)	Description
0.1	2025-02-28	D. Aifantopoulou, EDGE	Initial draft
0.2	2025-03-07	M. Kaskara, NOA	Internal review
0.3	2025-03-07	K. Strehlow, MITIGA M. Senande, MITIGA	Internal review
0.4	2025-03-10	A. Frisiello, LINKS	Internal review
1.0	2025-03-27	D. Aifantopoulou, EDGE	Final version for submission
2.0	2025-04-10	D. Aifantopoulou, EDGE	Re-submission. Added sections with green: • Section 3 addition to the survey methodology • Section 6 addition to the introduction • Section 10 addition to the next steps

Table of Contents

Acronyms

Acronym	Explanation
CEMS	Copernicus Emergency Management System
EC	European Commission
ECMWF	European Centre for Medium-Range Weather Forecasts
EFAS	European Flood Awareness System
EFFIS	European Forest Fire Information System
EO	Earth Observation
EUMETNET	European Meteorological Network
FIRMS	Fire Information for Resource Management System
GDACS	Global Disaster Alert and Coordination System
GDO	Global Drought Observatory
GDPR	General Data Protection Regulation
GEO	Group on Earth Observations
GFMC	Global Fire Monitoring Centre
GloFAS	Global Flood Awareness System
GWIS	Global Wildfire Information System
HW	Hardware
ICT	Information and communication technology
JRC	Joint Research Centre
MTO	Meteorological
NASA	National Aeronautics and Space Administration
NRT	Near - Real Time
OSOCC	On-Site Operations Coordination Centre
SOS	Sensor Observation Service
SW	Software
UN FAO	Food and Agriculture Organization of the United Nations
WMS-T	Web Map Service Time
WP	Work Package

List of figures

List of tables

1 Scope of the document

This document outlines the operational needs of several stakeholders, spanning from disaster management actioners to the scientific community and insurance entities. The general purpose of this document is to contribute to the specification of the Copernicus based downstream applications that will be developed and validated during the project lifetime aiming at the user's satisfaction and the provision of fit-to-purpose services and products.

The analysis of the End Users Requirements will contribute to optimising the impact expected from the project outcomes and increasing the project significance as well as feed the set-up of the use cases under Task 4.1.

1.1 Applicable documents

Table 1: Applicable documents

ID	Title	Version	Date
[AD. 1]	Grant Agreement incl. Description of Action	1.0	23/09/2024
[AD. 2]	Consortium Agreement	1.0	01/10/2024

1.2 Reference documents

Table 2: Reference documents

ID	Title	Version	Date
[RD.1]	D1.4 GDPR, Gender Balance and Ethical Issues Management	1.0	12/03/2025
[RD.2]	D1.5 Data Management Plan	1.0	31/03/2025

2 Introduction

The increasing frequency and intensity of extreme weather events, driven by climate change, pose significant threats to societies, economies, and ecosystems worldwide. In Europe, natural disasters have escalated, causing substantial human and economic losses. Despite advancements in disaster risk management, limited investment in early warning and detection systems has led to prolonged and costly emergency responses, straining resources. UNICORN addresses these challenges by developing advanced Copernicus emergency applications that leverage Earth Observation technologies and data to monitor and mitigate the impact of extreme events (wildfires, floods) and geohazards (volcanic activity). Through innovative tools for early warning, forecasting, and hazard monitoring, UNICORN aims to enhance societal resilience, improve emergency response, and support effective short-term recovery.

By offering cutting-edge, scalable, and adaptable services tailored to user needs, UNICORN empowers local authorities, policymakers, industries, and citizens to better prepare for and respond to disasters. The project is structured around four use cases across different European regions, hazards, and stakeholders, ensuring robust validation through direct end-user engagement. Pushing technological boundaries, it delivers precise, timely, and actionable insights to enhance forecasting and emergency management at multiple levels. By leveraging Copernicus Emergency services, UNICORN strengthens Europe's ability to mitigate climate change and geohazard impacts, fostering greater sustainability, competitiveness, and long-term resilience.

This document aims to comprehensively undertake an exhaustive evaluation of the requirements and preferences of end users and actively engaged stakeholders. To establish the baseline of services and products for fire, flood and lava flow events, the offers of tools and services provided by existing systems was analysed towards documenting eventual information gaps and/ or non. Moreover, focusing on the systematic mapping of the specific needs of our users (and their network of collaborators and other stakeholders), a questionnaire was designed and implemented, which was also analytically presented to the project partners. 17 respondents provided relevant data through the questionnaire and their analysis and relative findings, which are presented in the present report will guide the further projects design. development and validation tasks across the various use cases.

The deliverable report, this document, information is structured as follows:

- Chapter 1, this chapter, provides an overview of the UNICORN project and states its primary purposes. It also provides the structure of this report.
- Chapter 2 provides methodology for collecting the end user requirements.
- Chapter 3 presents existing platforms and systems in the same scientific area as UNICORN.
- Chapter 4 outlines how existing experiences in users' requirements collection assisted the design and implementation of the UNICORN relative approach.
- Chapter 5 outlines the questionnaire that has been developed.
- Chapter 6, 7 and 8 analyse the findings from the user-centric requirements elicitation, outlining the needs and preferences of stakeholders.
- Chapter 9 concludes the report and mentions the next steps.

3 Methodological Approach

Focusing on user requirements early in a project is essential for developing innovative solutions that are usable and targeted. By centring the development process around the needs and objectives of end users, projects are more likely to deliver impactful outcomes that allow users to achieve their goals efficiently. The primary purpose of collecting and defining user requirements is to establish a shared understanding among all stakeholders, aligning them with the end-user's perspective. This alignment ensures that the project's technical and functional decisions are grounded in real-world needs.

In UNICORN, user requirements form the foundation for the development of Earth Observation-based services and guide the technical and functional design, shaping solutions that address real user needs while considering implementation priorities. Each decision made throughout the project is analysed in the context of user requirements, fostering close collaboration between technical partners, domain experts, and end users. This collaborative effort is crucial for ensuring that the developed technologies respond effectively to user demands and industry trends.

UNICORN employs a co-production or co-creation approach, where end users are not passive recipients but active participants in the development process (Task 4.1). Co-production refers to the provision of services through long-term, collaborative relationships between service providers and users. In this model, both parties make substantial contributions, ensuring that the services developed are relevant and tailored to the users' specific contexts. This collaborative approach enhances the project's capacity to respond dynamically to user needs and adapt solutions in real-time. It also strengthens the sense of ownership among end users, who play a key role in shaping the final product. The involvement of users from the outset ensures that the services created not only meet immediate needs but are also flexible enough to evolve alongside changing user priorities.

Comprehensive understanding of end-user needs, collection and refinement of user requirements is based on existing knowledge and international experiences as well as on project specific information feed from potential users. The methodological framework (Figure 1) is based on several key steps, which ensure that the process is inclusive and focused on the needs and addresses vulnerabilities of current systems. The approach promotes deep engagement with end users and allows the project to produce EO-based solutions that are not only technically sound but also aligned with the practical realities faced by those who will use them.

UNICORN project follows a structured, multi-step approach for establishing end-user requirements and translate them into actionable functionalities for the EO services (Figure 1).

It is important to highlight that the survey methodology was designed to be adaptable and scalable, capable of reaching a wide spectrum of users at local, regional, European, and global levels, as outlined in the proposal. In this initial phase, we focused on collecting input from communities directly linked to the use cases, ensuring relevance and depth. However, the survey tool and methodology remain applicable beyond this core group and can be reused and extended to engage additional stakeholders in future phases.

Figure 1: Methodology for Assessing Users' needs and requirements

Step 1: Literature Review of existing services

The process begins with a comprehensive review of existing literature and EO-based applications at various scales (global, national, and local). This initial step helps gain an understanding of current technologies and applications relevant to the project's focus, identifying gaps and opportunities. This literature review is analysed in Section 6 of this deliverable.

Step 2: Analysis of Surveys and Studies from EU-funded Projects

Next, the methodology incorporates the analysis of surveys and studies conducted by other EU-funded projects. This analysis serves as a foundation for gathering initial insights and understanding end-users' needs. It helps ensure that the services developed by UNICORN are aligned with real-world requirements. By leveraging the wealth of knowledge generated by previous initiatives, UNICORN aims to build a solid foundation for its applications and services. This step involves a thorough examination of the insights and findings from several relevant projects, each contributing valuable data and lessons learned.

The overarching goal of UNICORN was to start from the foundational requirements established by these projects and refine and update them based on the specific services that will be developed throughout the project lifecycle. By gathering and prioritizing the already identified requirements from these initiatives, UNICORN can ensure that its applications are relevant, user-centric, and aligned with the needs of stakeholders involved in disaster management. This analysis will not only facilitate a better understanding of existing gaps but also help tailor the development process to address the specific demands and expectations of end users, ultimately enhancing the efficacy of the solutions provided.

Step 3: Development of Questionnaire

The primary purpose of developing the list of questions is to facilitate targeted engagement with end users and elicit valuable information that can guide the development of the UNICORN's applications. The outcomes of this step will be instrumental in shaping tailored solutions that align with users' needs and expectations. Based on the insights from steps 1 and 2, a set of questions are developed to gather detailed input from end users through a questionnaire (analytic information may be found in section 5 of the present document), which was offered as an on-line survey in four languages (EN, FR, GR, IT) and allowed the systematic mapping of requirements in terms of information content and service functionality.

Step 4: Collection of end user requirements and analysis

A specific workshop was organised to explain the content of the intended information and the context of usage. Towards ensuring that as many relevant participants as possible are engaged and that their feedback is collected in a structured manner, the questionnaire (step 3) was offered as a survey, which was circulated among the UNICORN end users and technical partners of the involved use cases:

- Flood forecasting integrating Copernicus data and weather forecast fusion
- Copernicus-based wildfire early detection, mapping and nowcasting
- High-resolution fire danger forecast
- Lava flow emergency management tool based on Copernicus data merged with numerical modelling

The UNICORN partners were responsible to assess who are the most important stakeholders to send it through.

The analysis of the collected information focused on the priorities set by the respondents and their profile. More details from this step are available under Chapters 6, 7, 8 and 9 of this Deliverable.

This multi-step methodology ensures a comprehensive understanding of end-user requirements, facilitating the development of EO-based services that are well-aligned with real-world needs and challenges.

4 Existing services and products offered in the international scene

This section presents the comprehensive results of the review conducted on existing services. Each service mentioned below underwent thorough investigation to provide details entailing the purpose, functions, coverage, and the types of hazards it addresses. These descriptions are based on freely accessible information, such as the web pages and relevant sites, as well as on the experiences of the UNICORN project partners who represent and/or develop some of the analysed services.

The analysis of existing services for the three natural hazards, fires, floods and lava flow involves their thorough review and aims at drawing the panel of current practices in terms of technologies' deployment and information offer.

UNICORN partners (technological partners and users) already use existing products and services and the analytic presentation and discussion during the users' workshop contributed to refining the proposed products' specification and better addressing context of usage (disaster management phase, ICT infrastructure needs, etc.).

The systems are distinguished (based on the covered area extent) to Global, European and Local. In Figure 2, existing systems for each one of the above hazards is presented.

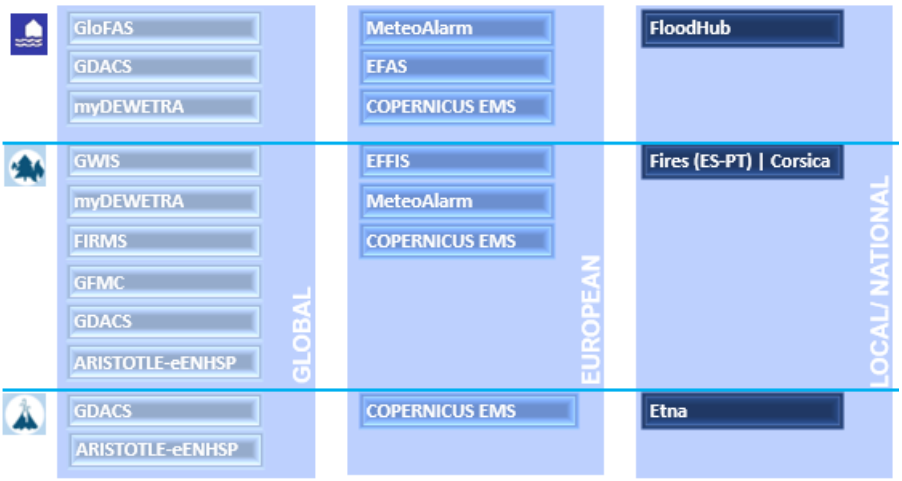


Figure 2: Existing Systems & Products with relevance to Disasters' Management

As most systems and Platforms offer products and services for several hazards, the results of the analysis are presented based on their distinction (i.e. Global European, Local).

4.1 Global Systems/ Platforms

- Global Flood Awareness System (GloFAS) provides forecast data through a Web Map Service Time (WMS-T) for geospatial products, that provides access in a GIS environment. GloFAS data is publicly available (registration required). GloFAS provides global flood forecasting and early warning capabilities, leveraging hydrological models and real-time data from various sources. This system enhances the ability of emergency responders to prepare for and react to flooding events, significantly improving situational awareness and response strategies.

  Purpose: Support preparatory measures for flood events worldwide (particularly in trans-national river basins).

Developer: JRC / European Commission and the European Centre for Medium-Range Weather Forecasts (ECMWF)

Hazard covered: Floods

Level of access: Account creation

Link: https://www.globalfloods.eu/

The following Figure (Figure 3) is a synoptic, yet comprehensive illustration of products (information) offered to the Users that can be used to address the users' operational needs in the preparedness and event management phases of the disaster management cycle

GloFAS				
PRODUCTS	FORECAST Nr (of days)	PERIOD NR (of days)	INFORMATION	SPATIAL RESOLUTION
INITIAL CONDITIONS	0 1 3		Precipitation Snow cover Snow melt Soil moisture temperature	0.05°
MEDIUM RANGE METEO	10	30	Precipitation	0.05°
MEDIUM RANGE HYDRO	4-10	30	Flood	Reporting points River network Catchment outlets
SHORT RANGE HYDRO	1-3	30	Flood	River network
EXTENDED RANGE HYDRO	11-30	30	Flood	River network
SEASONAL RANGE HYDRO	120	120	Flood	Reporting points River network Catchment outlets
EVALUATION		30	Maximum lead time (in days)	Stations
		30	Modified Kling-Gupta Efficiency (KGE)	
		120	Maximum lead time (in weeks)	
RISK MAPPING (GFM)		NRT	Observed Flood Extent MAX Flood Extent	20m
version 4	2023			

Figure 3: GloFAS Information for Flood management

- Global Disaster Alert and Coordination System (GDACS), delivers real-time alerts and impact assessments for natural disasters, aiding international coordination efforts during the first days of emergencies. It ensures that decision-makers receive timely information necessary for effective response actions. GDACS information is openly accessible through the GDACS platform interfaces. Data and estimated impact can be directly integrated into other web portals or websites through RSS feeds or other standard formats. GDACS services build on the collective knowledge of disaster managers worldwide and the joint capacity of all relevant disaster information systems (e.g. GloFAS, EFFIS, GDO).

  Purpose: Addresses Governments' and disaster response organizations' needs through improving alerts/warnings, real-time information exchange and cooperation.

  Developer: United Nations, European Commission, several disaster managers

  Hazard covered: Multi – hazard approach

Level of access: Subscription based and/or open access (depending upon target group).

Link: https://www.gdacs.org/default.aspx

GDACS					
PRODUCTS	FORECAST Nr (of days)	PERIOD NR (of days)	INFORMATION	HAZARDS	SPATIAL RESOLUTION
Disaster Alerts **SERVICE/ platform**		Real-time access to web-based **disaster information systems (risk assessment)** and related coordination tools	Disaster information (risk assessment) Impact (Estimated casualties, Exposed population)	Floods (GloFAS)	varying
				Forest Filres (EFFIS)	
				Drought (GDO)	
GDACS Disaster Alerts		following sudden-onset disasters	automatic estimates and risk analysis	Volcanoes	
Virtual OSOCC (restricted access)		First phase of the disaster	real-time information exchange and cooperation among all actors	Earthquakes	
Maps and satellite imagery		mapping activities during emergencies	GDACS Satellite Mapping and Coordination System (SMCS)	Cyclones	

Figure 4: GDACS Information for Disaster management

- myDEWETRA Platform. Designed for weather-related hazards, myDEWETRA integrates data from various sources, facilitating informed decision-making for emergency responders and enabling more efficient resource allocation. Subject of an Agreement among the Italian Department of Civil Protection and the World Meteorological Organization it is available to every country under request

  Purpose: Monitoring, forecasting and early warning.

  Developer: CIMA Foundation (on behalf of the Italian Civil Protection)

  Hazard covered: Multi – hazard approach

  Level of access: User Authentication

  Link: https://www.mydewetra.world/

myDEWETRA					
PRODUCTS	FORECAST Nr (of days)	PERIOD NR (of days)	INFORMATION	HAZARDS	SPATIAL RESOLUTION
myDEWETRA. world **SERVICE/ platform**			Analysis and projection of hazard-related events Calculated impact-oriented scenarios Available Global datasets Static & dynamic datasets added by DPC and CIMA Datasets from users myDEWETRA Warnings Bulletins	**Floods** **Wild Fires** Landslides	multiple space and time scales

Figure 5: myDEWETRA Platform Outlook

- ARISTOTLE-eENHSP. This system (project 2016-2020/ NOV 2020 - OCT 2024) integrates multiple data sources to support decision-making in disaster management, emphasizing the importance of situational awareness and aiming to establish a truly permanent pan-European Natural Hazards Scientific Partnership. Flexible multi-hazard scalable early-warning service. It serves as a valuable tool for responders needing quick access to relevant data through comprehensive reporting of the available information gathered by

24/7 operational centres (24/7 availability), and analysis by a panel of experts readily available upon request through e.g. teleconferencing.

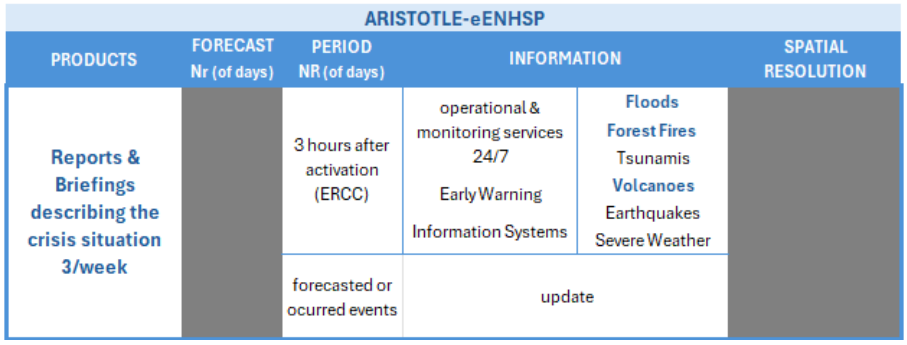
Purpose: Strengthen awareness, monitoring and analysis of hazards within the Emergency Response Coordination Centre for disaster risk reduction.

Developer: European Plate Observing System (EPOS)

Hazard covered: Multi – hazard approach

Level of access: User Authentication/ User Account

Link: http://aristotle.ingv.it/tiki-index.php



ARISTOTLE-eENHSP					
PRODUCTS	FORECAST Nr (of days)	PERIOD NR (of days)	INFORMATION		SPATIAL RESOLUTION
Reports & Briefings describing the crisis situation 3/week		3 hours after activation (ERCC)	operational & monitoring services 24/7 Early Warning Information Systems	Floods Forest Fires Tsunamis Volcanoes Earthquakes Severe Weather	
		forecasted or ocurred events	update		

Figure 6: ARISTOTLE-eENHSP Service Outlook

- Global Wildfire Information System (GWIS). It offers a comprehensive platform for monitoring global wildfire activity, utilizing satellite data to track fire occurrence and severity. This information is critical for firefighting efforts and for informing stakeholders about wildfire risks.

  Purpose: Global mapping of active fires and event regimes to support operational fire management.

  Developer: Joint initiative by Group on Earth Observations (GEO) and Copernicus

  Hazard covered: Wildfires

  Level of access: Open Access

  Link: https://gwis.jrc.ec.europa.eu/

GWIS				
PRODUCTS	FORECAST	PERIOD	INFORMATION	SPATIAL RESOLUTION
APPLICATION: CURRENT SITUATION VIEWER (WMS)				
Fire Danger Forecast	1-9 days		Two indicators;On the basis of the Canadian Fire Weather Index (FWI).Percentiles of occurrence of the values, and the anomaly, computed as a standard deviation from the 40-year historical mean values 3 deterministic models i.e. ECMWF (~8 km/ 1-9 days), MeteoFrance (~10 km/ 3days) and NASA Geos-5 (~28 km/ 6 days)	
Lightning occurrence	several days ahead		average lightning activity (ECMWF)	
Active fire detections	NRT		NASA MODIS and VIIRS sensors	1Km and 375m
Burnt areas	2 months		MODIS (MCD64A1) GlobFire Methodology	1km
	NRT		MODIS and VIIRS	375m
Fire Emissions			COPERNICUS Atmosphere Monitoring Service (CAMS) Global Fire Assimilation System (GFAS) operated by the European Centre for Medium-Range Weather Forecast (ECMWF)	
Global Fuel Map		Static Layer		
APPLICATION: CURRENT STATISTICS PORTAL				
Current statistics of burnt areas and number of fires		10 Years	compared to the average of the last 10 years. Statistics of the current year can be compared to a single year or a period in the past	
Seasonal cumulative trend in burnt areas and number of fires			compared to the average of the last 10 years	
Number of thermal anomalies; VIIRS sensor			compared to the average of the last 10 years	
Number of thermal anomalies; MODIS sensor			compared to the average of the last 10 years	
APPLICATION: COYNTRY PROFILE				
Historical overview of fire regimes at country and sub-country level		2002-2019	Maps of yearly/monthly burnt areas, burnt area frequency and burnt area seasonality. Additionally, it provides multi-year and single-year charts of Number of fires derived from GlobFire, Fire regimes (seasonality), etc.	
APPLICATION: LONG TERM FIRE WEATHER FORECAST				
Historical overview of fire regimes at country and sub-country level		Monthly/ Seasonal	forecast of temperature and rainfall anomalies that are expected to prevail over the world	
APPLICATION: DATA & SERVICES				
Access to the data used in the GWIS applications			forecast of temperature and rainfall anomalies that are expected to prevail over the world	

Figure 7: GWIS Information for Fire management

- Fire Information for Resource Management System (FIRMS). provides near-real-time active fire data derived from satellite observations, assisting in the management of fire resources and strategic planning during wildfire events.

  Purpose: Global information on active fire/hotspots, and related products to identify the location, extent, and intensity of wildfire activity.

  Developer: University of Maryland, with funds from NASA and the United Nations Food and Agriculture Organization (UN FAO)

  Hazard covered: Wildfires

  Level of access: Open Access

Link: https://firms.modaps.eosdis.nasa.gov/

FIRMS					
PRODUCTS	FORECAST Nr (of days)	PERIOD NR (of days)	INFORMATION	TEMPORAL RESOLUTION	SPATIAL RESOLUTION
Fires' Hotspots		Daily/ sub Daily 1 Days ago 3 Days ago 7 Days ago	Fire & Thermal Anomalies(FTA) ; active fire detections and thermal anomalies, such as volcanoes, and gas flares persistent hot spots	FTA MODIS: 1/ day FTA Landsat OLI: 1/ 8 days FTA VIIRS: 3-4/ day	FTA MODIS: 1Km FTA Landsat OLI: 30m FTA VIIRS: 375m
Orbit Tracks & Overpass Time		Daily	ORBIT TRACKS & OVERPASS TIMES of FIRMS satellites	Daily	
MODIS Burnt Area		30 (monthly)		2-3 month latency	1Km
Gridded Fire Hotspots		Daily	GROUPED Hotspots	Daily	1.4 x 1.4 degree
Fire Alerts		near real-time or as daily or weekly summaries	MODIS, VIIRS S-NPP, VIIRS NOAA-20, VIIRS NOAA-21		
Smoke & Aerosols			OMPS Aerosol Index	Daily	2 km
		Daily	OMPS Aerosol Index (PyroCumuloNimbus)	Daily	
Human Built-up and Settlement Extent layer		static layer (2010)	"Not HBASE", "HBASE" and "Road"		30m
World Database on Protected Areas (WDPA)		monthly updates (2023)	marine and terrestrial protected areas		varying (Protected Planet website)
...etc.					

Figure 8: FIRMS Information for Fire management

- Global Fire Monitoring Centre (GFMC). Focuses on wildfire management globally, providing essential information and tools for risk assessment and emergency response. Its resources support both local and international fire management efforts.

  Purpose: Forests monitoring and management; illegal deforestation and fires, unsustainable activities, land and resources defence, sustainable commodities sourcing, and research at the forefront of conservation.

  Developer: World Resources Institute |The Host Institution: Fire Ecology Research Group, Max Planck Institute for Chemistry and Freiburg University, Germany

  Hazard covered: Wildfires

  Level of access: Open access, subscription required (MyGFW account)

  Link: https://www.globalforestwatch.org/

GFMC				
PRODUCTS	"NOW" CAST	PERIOD	INFORMATION	SPATIAL RESOLUTION
Deforestation alerts	monthly and weekly		Global Land Analysis & Discovery (GLAD)	10 m
Fire alerts	past 24 hours, 48 hours, 72 hours, or 7 days		*up to 3 months time span*	375 m
Tree Cover Gain		20 years (2000-2020)	cumulative	30 m
Integrated Deforestation alerts	near-real-time		Integrated alerts from three alerting systems; GLAD Alerts, GLAD-S2 Alerts, RADD Alerts	10 m
Places to watch	monthly basis		high-priority GLAD alerts	10.000 m

Figure 9: GFMC Information for Fire management

4.2 European Systems/Platforms

- MeteoAlarm. This European initiative provides real-time alerts about severe weather events, supporting national and regional emergency management operations. By enhancing communication of potential hazards, MeteoAlarm plays a pivotal role in disaster preparedness across Europe.

  Purpose: Provides relevant awareness information related to the several natural hazards.

  Developer: EUMETNET

  Hazard covered: Multi hazard

  Level of access: Open access

  Linkhttps://www.meteoalarm.org/en/live/

MeteoAlarm			
PRODUCTS	FORECAST Nr (of days)	INFORMATION	SPATIAL RESOLUTION
WETAHER ANOMALIES FORECSAT	1-6	Awareness level for Wind, Snow or Ice, Thunderstorm, Fog High Temperature, Low Temperature, Coastal Event, **Forest Fire**, Avalanches, Rain, **Flooding**, Rain Flood	PREFECTURE LEVEL (meteo Alarm members)

Figure 10: MeteoAlarm Information

- European Flood Awareness System (EFAS). Early flood warning services through the analysis of meteorological forecasts and hydrological modelling. Its capability to deliver timely alerts is crucial for risk reduction and emergency preparedness across Europe. Real-time data and services are accessible to EFAS partners only, on the EFAS web interface and can be downloaded via an SOS and WMS-T service and from a data archive (foreseen development). Archived data is available publicly. EFAS Pre-Tasking may also be accommodated through the Rapid Mapping module of the Copernicus Emergency Management Service (CEMS).

Purpose: Hydrological monitoring and seasonal and sub-seasonal forecasting on a continental setup to support preparatory measures before major flood events strike, particularly in the large trans-national river basins and throughout Europe in general.

Developer: European Commission and the European Centre for Medium-Range Weather Forecasts (ECMWF)

Hazard covered: Floods, Flash floods

Level of access: Registered Users

Link: https://www.efas.eu/en

EFAS			
PRODUCTS	FORECAST	INFORMATION	SPATIAL RESOLUTION
Medium Range Meteo	10 days	ECMWF HRES-IFS	9 KM (18/ 26.06.23)
	5 days	ICON-EU	6.5 KM
	7 days	ICON	13 KM
Extended Range	6 weeks	ECMWF	36 km
Seasonal Outlook	8 weeks	ECMWF	36 km
Flash Flood Medium Range	5 days	COSMO	7 km
Flash Flood	4 hours	OPERA	2 Km

Figure 11: EFAS Information for Flood Management

- European Forest Fire Information System (EFFIS). Aiming to improve fire management in Europe through data sharing and tools that monitor forest fire risks. The system enhances coordination among member states and informs stakeholders of fire threats (CEMS).

  Purpose: support the services in charge of the protection of forests against fires in the EU and neighbour countries through providing information on active wildfires, fire danger and hazards connected to wildfires.

  Developer: European Commission and the European Centre for Medium-Range Weather Forecasts (ECMWF)

  Hazard covered: Forest Fires

  Level of access: Open Access

  Link: https://effis.jrc.ec.europa.eu/

EFFIS				
PRODUCTS	FORECAST	PERIOD	INFORMATION	SPATIAL RESOLUTION
APPLICATION: CURRENT SITUATION VIEWER (WMS)				
Fire Danger Forecast	1-6days		Meteorological Fire Danger Maps ECMWF (~8 km/ 1-9 days), MeteoFrance (~10 km/ 3days)	
Active fire detections	NRT		Hot spots & Fire perimeters	1Km & 375m
APPLICATION: CURRENT STATISTICS PORTAL				
Current statistics of burnt areas and number of fires		14 years	compared to the average of the last 14 years. Statistics of the current year can be compared to a single year or a period in the past	
Seasonal cumulative trend in burnt areas and number of fires			compared to the average of the last 14 years	
Number of thermal anomalies; VIIRS sensor		10 years	compared to the average of the last 10 years	
Number of thermal anomalies; MODIS sensor			compared to the average of the last 10 years	
APPLICATION: FIRENEWS				
Firenews published in the internet			geo-located data in all the EU and other languages, allowing the user to filter the news on the basis of geographical scope, keywords, etc.	
APPLICATION: LONG TERM FIRE WEATHER FORECAST				
Historical overview of fire regimes at country and sub-country level		Monthly/ Seasonal	forecast of temperature and rainfall anomalies that are expected to prevail over European and Mediterranean areas	
APPLICATION: WILDFIRE RISK VIEWER				
Wildfire Risk index for the pan-European Scale			two main groups of components by considering the fire danger (or hazard) and the vulnerability on three categories: people, ecological, and economic values exposed in vulnerable area	
APPLICATION: DATA REQUEST FORM				
Request for data that are not directly available via the EFFIS web services				
APPLICATION: DATA & SERVICES				
Country totals (burnt areas & number of fires) per year, as published in the Forest Fires in Europe, North Africa and Middle East reports				

Figure 12: EFFIS Information for Fire management

- Copernicus Emergency Management System (CEMS). A service in support of European emergency response. Supported disaster types range from natural hazards such as floods, fires, storms, tsunamis, volcanic eruptions, landslides, and earthquakes to industrial accidents and humanitarian crises. Distinguished in two service modules the:

  Rapid Mapping (CEMS-RM); delivers geospatial information (in different vector and raster formats) amid or immediately after catastrophic events or humanitarian crises. It is available 24/7/365.

  Risk & Recovery mapping (CEMS-RRM); delivers geospatial information (in different vector and raster formats) in support of disaster risk reduction, preparedness and prevention, recovery and reconstruction, to assist disaster managers.

  Purpose: Provide case-specific information serving the Authorized users' needs.

  Developer: European Commission Joint Research Centre

  Hazard covered: Several (natural hazards or human -made emergencies)

  Level of access: Service Request from Authorized users. Data are open access (with a few exceptions), direct file download through the web interface (shapefile, kmz, georeferenced TIFF, JPG, PDF).

Link: https://mapping.emergency.copernicus.eu/

4.3 Local Platforms

- FLOODHUB (Greece/National Observatory of Athens). A platform designed to support the establishment of flood risk management plans, prevention and preparedness:

  FLOODHUB NEAR-REAL-TIME FLOOD MONITORING AND EARLY WARNING SYSTEM; delivers geospatial information (extent and depth) within the Mandra river basin (Attica, Greece)

  FLOODS OBSERVATORY; Flood mapping major flood events in Greece & South-Eastern Europe.

  FLOODS DIACHRONIC MAPPING; diachronic mapping of flooded areas in selected river basins of special interest, following the processing of Sentinel images.

  Developer: BEYOND Centre of Excellence, National Observatory of Athens

  Hazard covered: Flood

  Level of access: Data is open access.

  Link: http://beyond-eocenter.eu/index.php/web-services/floodhub

- FIRES (Corsica/LINKS FOUNDATION). Geospatial products related to fire events management have been developed.

PRODUCTS/ SERVICES	TIMELINE[1] Nr (of hours/days/ weeks)	INFORMATION			GEOGRAPHIC COVERAGE	TEMPORAL RESOLUTION	SPATIAL RESOLUTION/ SCLAE
		Source	Content	Format			
Burned area delineation map (prototype service)	On demand	Sentinel-2 L2A	Binary map covering the burned area	Raster	Worldwide	Satellite-dependent	Sentinel-2 resolutions
Hostpot disambiguation (model)	On demand	Multiple: Sentinel-3 SLSTR, Land Cover, MODIS, VIIRS	Hotspot label	Raster	Worldwide	Satellite-dependent	As high as 20m (EFFIS)
Active fire and smoke (prototype service)	On demand	Sentinel-2 L2A	Pixel-level classification (nothing, fire, smoke)	Raster	Worldwide	Satellite-dependent	Sentinel-2 resolutions
Burned area severity map (prototype service)	On demand	Sentinel-2 L2A	Indexed map (0-4)	Raster	Worldwide	Satellite-dependent	Sentinel-2 resolutions
Land Fuel map (model)	On demand	Sentinel-2 L2A cloud-free mosaics	Pixel-level multiclass fuel map	Raster	Worldwide	Satellite-dependent	10m (Sentinel-2)

Figure 13: Fire management – Local Knowledge

- Osservatorio Etneo (Italy/Instituto Nazionale di Geofisica e Vulcanologia). Geospatial products related to lava flow events.

  3D Lava flow mapping at Etna volcano from Pleiades-derived DEM difference; DEM 2015 and 2016 of the Etna larger area, 2m spatial resolution

  Earthquakes Data Base

  Etna Eruptions Data Base

Developer: Instituto Nazionale di Geofisica e Vulcanologia

Hazard covered: Lava Flow

Level of access: Data is open access.

Link: https://geodb.ct.ingv.it/#/context/DEM/2059

5 Analysis of Surveys and Studies from EU-funded Projects

UNICORN utilized existing knowledge from the following projects:

- From the MedEWsa project[1], UNICORN used a comprehensive overview of findings from a review and analysis of Decision Support Systems available within Early Warning Systems. The objective of this report was to inform the co-design of the Decision Support and Dissemination System, which serves the needs of various audiences and facilitates the effective deployment of first responders. UNICORN got knowledge from that report regarding questionnaire structure.
- Overwatch project[2] focuses on creating scenarios and use cases for managing wildfires and floods and identifying end-users' requirements. UNICORN used the relevant functional and non-functional requirements identified by OVERWATCH to be used to the questionnaire.
- SAFERS project[3] produced a comprehensive list of end-user requirements, identifying a common set of technical and functional requirements for "Intelligent services from Earth Observation and in-field data." UNICORN used technical requirements identified to shape the questionnaire.
- INGENIOUS project provided user requirements[4] related to selected project products, including drones, communication systems, and operational picture platforms. These insights were critical in understanding the technological needs of end users in various disaster scenarios and have been used by UNICORN to draft the questionnaire
- SHELTER project[5] identified user requirements and needs structured into several categories, such as general, data, analysis, visualization, crowd communication, models, equipment, and reporting. UNICORN used the detailed understanding developed by SHELTER of what users expect from disaster management tools.
- iREACT project engaged in end-user requirement collection activities through online surveys and workshops, gathering insights on user expectations and preferences for disaster response technologies as well as conducted a literature review of the main systems and services provided by the EU for Emergency Management and Early Warning[6]. UNICORN has used this literature review as an initial list of the existing services to be further analysed under Section 6, such as EFAS, EFFIS etc.

[1] https://www.medewsa.eu/outcomes/
[2] https://overwatchproject.eu/en/outcomes/
[3] https://safers-project.eu/index.php/resources/documentation.html?layout=columns&start=6
[4] https://ingenious-first-responders.eu/downloads/INGENIOUS_D1.3_EndUserRequirements_v2.0.pdf
[5] https://shelter-project.com/documents/deliverables/
[6] https://cordis.europa.eu/project/id/700256/results

6 The Questionnaire

The developed Questionnaire consists of three sections, aiming to retrieve information on (a) the users' profile, (b) the information needs and (c) the service functionality that would better address their operational workflows. In "Annex 2 – The Questionnaire Interface", of the present deliverable the user interface for the provision of input is displayed.

The Questionnaire required more closed-ended questions, rather than open ones. This decision was intentional and based on EDGE's extensive experience in user needs assessment. This approach was essential to ensure clarity, consistency, and comparability of responses across a diverse set of stakeholders, user groups, and languages.

6.1 Users' Profile Section

This group of questions was designed to assess the current facilities and disaster management responsibilities and experiences of the interested end-users.

PRF-1. Please select one or more options that best describe your area of professional activity in which natural hazards play a role?

- Disaster Management[7]
- First response
- Civil protection
- Policy making
- Civil society, community, and volunteer organisations, citizens
- Scientific community
- Industry (e.g. Construction, Energy, Infrastructure, logistics, Insurance)
- Other. Please specify

PRF-2. What is your position in your organisation?

- Decision Making
- Project Management
- Activities coordination
- Data Analysis
- Other. Please specify

PRF-3. What is the level of the available ICT infrastructure of the organisation you are working for?

- Excellent (i.e. integrated system, fully equipped with geospatial data management tools (SW), necessary storage, workstations, and communication assets (HW, necessary bandwidth for data/information exchange, etc.)

[7] Disaster management is how we deal with the human, material, economic or environmental impacts of said disaster, it is the process of how we "prepare for, respond to and learn from the effects of major failures", Elliott D. Disaster and Crisis Management. In The Handbook of Security 2014 (pp. 813-836). Palgrave Macmillan UK

- Adequate (i.e. basic equipment for geospatial data management tools (SW), storage capacities, workstations and communication assets (HW, limited bandwidth for data/information exchange, etc.)
- Inadequate (i.e. sporadic data management tools and HW)

PRF-4. What is the ICT background of the team that serves the scope as described in the previous question?

- Excellent (i.e. ~75% of the team with solid background and experience in the available tools and infrastructures)
- Adequate (i.e. ~50% of the team with solid background and experience in the available tools and infrastructures)
- Inadequate (i.e. ~25% of the team with solid background and experience in the available tools and infrastructures)

PRF-5. Please select one or more options focusing to your organization's interest in improving the efficiency for:

- Disaster Preparedness (forecasts, prevention, mitigation)
- Disaster Management (detection and response)
- Post Disaster Recovery (restoration and adaptation towards resilience)

PRF-6. Please select one or more systems/services you are aware of and/ or you have used in the frame of the activities of your organization:

- Global Flood Awareness System (GloFAS)
- European Flood Awareness System (EFAS)
- Global Wildfire Information System (GWIS)
- European Forest Fire Information System (EFFIS)
- Fire Information for Resource Management System (FIRMS)
- Global Disaster Alert and Coordination System (GDACS)
- ARISTOTLE-eENHSP
- myDEWETRA Platform
- MeteoAlarm
- Other. Please specify

6.2 Information Content Requirements Section

In this section of the Questionnaire the users were asked to provide their requirements and specify the products that could assist them to better address their obligations in the context of their operations. The following products were proposed aiming to provide ready-to-use information before and during a catastrophic event. For each one of them, the users should also specify the scale and periodicity that better fit to their needs.

- Meteorological data: Basic weather measurements and forecasts (temperature, precipitation, wind, etc.).

  Scale alternatives proposed: Local, Regional, National, Other (to be specified)

Temporal Resolution alternatives proposed: 2-5hours, Daily, Weekly, Monthly, Seasonal, Other (to be specified)

- Danger-Specific Indexes: Indicators measuring the level of danger for specific hazards (e.g., fire danger index, flood index)

  Scale alternatives proposed: Local, Regional, National, Other (to be specified)

  Temporal Resolution alternatives proposed: 2-5hours, Daily, Weekly, Monthly, Seasonal, Other (to be specified)

- Early Warning and Near Real-Time Alerts: Warnings for worsening conditions and Alerts triggered by (pre-defined) critical thresholds. Please specify time lap before the event (Number of days, e.g. 1, 0,5, 3, etc.).

  Scale alternatives proposed: Local, Regional, National, Other (to be specified)

  Temporal Resolution alternatives proposed: 2-5hours, Daily, Weekly, Monthly, Seasonal, Other (to be specified)

- Actionable Forecasts: Integrated forecasts combining diverse data sources (e.g., earth observation, in-situ measurements, etc.). Please specify time lap before the event (Number of days, e.g. 1, 0,5, 3, etc.).

  Scale alternatives proposed: Local, Regional, National, Other (to be specified)

  Temporal Resolution alternatives proposed: 2-5hours, Daily, Weekly, Monthly, Seasonal, Other (to be specified)

- Situation Awareness: Event extent and severity mapping and assessment of potential impact on population, critical infrastructures, and the environment.

  Scale alternatives proposed: Local, Regional, National, Other (to be specified)

  Temporal Resolution alternatives proposed: 2-5hours, Daily, Weekly, Other (to be specified)

- Evacuation and Response Recommendations: Location-specific guidance for emergency response actions, based on risk assessments

  Scale alternatives proposed: Local

  Temporal Resolution alternatives proposed: 2-5hours, Daily, Weekly, Other (to be specified)

- Simulation Results: Scenarios' based event evolution forecasts (e.g., fire/smoke, flood spread) for hazard prediction and response planning

  Scale alternatives proposed: Local, Regional, National, Other (to be specified)

  Temporal Resolution alternatives proposed: 2-5hours, Daily, Weekly, Monthly, Seasonal, Other (to be specified)

- Financial Risk Triggers: Risk metrics to activate financial instruments, such as catastrophe bonds, based on specific hazard conditions

  Scale alternatives proposed: Local, Regional, National, Other (to be specified)

  Temporal Resolution alternatives proposed: 2-5hours, Daily, Weekly, Monthly, Seasonal, Other (to be specified)

- Other (to be specified).

  Scale alternatives proposed: Local, Regional, National, Other (to be specified)

  Temporal Resolution alternatives proposed: 2-5hours, Daily, Weekly, Monthly, Seasonal, Other (to be specified)

The proposed products are meant to assist the users within the various disaster management phases as illustrated in the following table (Table 3).

Table 3: Proposed products utility within the disaster management cycle

Information/ Product	Preparedness	Response	Recovery Reconstruction
Meteorological data			
Danger-Specific Indexes			
Early Warning and Near Real-Time Alerts			
Actionable Forecasts			
Situation Awareness			
Evacuation and Response Recommendations			
Simulation Results			
Financial Risk Triggers			

6.3 System/ Services Provision Requirements Section

This section includes operational requirements of the service that the respondents were asked to prioritize.

Access Modalities

The access to the services/ products will be enabled through a web portal. Does this solution properly address your needs? If not to be specified.

Access the service: as a continuous, operational service or on an on-demand basis when needed

System/ Service Characteristics

Below you will find some requirements: please rate them following the MoSCoW prioritisation: Must-have (M) means a mandatory requirement. Should-have (S) represents a requirement of high priority but not critical. Could-have (C) represents an optional requirement of lower priority. Won't-have (W) serves to clarify the project's scope without being implemented in the current timeframe.

1. Documentation; Principles of the methodological approach
2. High availability (24/7 during emergencies) with low risk of failure or downtime
3. Optimized handling of unexpected events or errors and quick recovery from failures or disruptions
4. Accessibility to users with disabilities, including those who rely on assistive technologies such as screen readers

5. Compatibility with various devices, operating systems, and web browsers
6. Enable integration of results and information of other services and external data
7. Compliance with relevant legal and regulatory requirements, such as data privacy laws and industry standards
8. Transparency, regarding data sharing legal issues in the context of intellectual property and GDPR.
9. Interoperability with other systems and technologies commonly used, such as remote sensing tools and geospatial software, etc.
10. Data and results storage in one place
11. Stability and set-up for long term use
12. Optimized response times, large data volumes handling, and support real-time data processing
13. Performance monitoring and logging features to track services' performance and identify potential issues in real-time and notify the user for irregularities
14. Notify the user when the services' outputs are unavailable, to implement its own backup plan
15. Easily scalable service to accommodate a growing amount of data and/or users and/ or products while maintaining performance and responsiveness
16. Robust security controls, e.g., secure data/ information management and access control mechanisms, to protect sensitive data from unauthorized access, disclosure, or modification
17. User-friendly and easy to navigate interface, with straightforward content and online help features
18. Background information (i.e. topographic features, assets' location, population distribution, etc.), scale will comply with the requested spatial resolution level
19. Digital reports production and data download in various formats (.csv, .pdf, etc.)
20. Other (to be specified)

6.4 Definitions and Implementation timeline

The Questionnaire, in the English version (EU survey link), was firstly communicated to the project partners the 11th of November 2024. Moreover, during the project physical Kick-off meeting (25.11.24), in the users' workshop, the content of the intended information and the context of usage was presented and explained:

- Meteorological data: Forecasts (feed with meteorological modelling data/ spatially explicit) and Nowcasts (continuous feed with meteorological stations measurements, point information). This information may be valuable before the event (preparedness phase), to adequately plan mitigation measures as well as during the event to properly guide civil protection initiatives and first response activities.
- Danger-Specific Indexes (within a predefined period): Flood specific indexes could, for example, relate to river network and refer to the probability of ensemble streamflow (river network within a catchment area) predictions [%] exceeding a 20-year return period discharge level. A Fire Danger Index could be based on MTO and/ or EO data. Before the event, this information helps in focusing on the most threatened areas.

- Early Warning and Near Real-Time Alerts: Based on analysis of MTO data and/ or danger indexes information, historical data, and pre-defined criticality thresholds, this product will be most valuable to assess the severity of the forthcoming event.
- Actionable Forecasts: Risk mapping and assessment of threatened area vulnerabilities (densely populated neighbourhoods, critical assets, access difficulties, etc.) through integrating forecasts with area specific characteristics (EO and other open data integration). Before the event, this information may contribute to optimize the disaster management plan.
- Situation Awareness: After the initiation of the event integration of satellite and meteorological data coupled with real time modelling and crowdsource data to assess the event status and properly adjust rescue and event handling priorities.
- Evacuation and Response Recommendations: Location-specific guidance to adequately design and efficiently implement emergency response actions (safe shelters /hospitals prioritization, food distribution points, roads accessibility evaluation, etc.), based on – hazard intensity scenario - risk assessments provided by the "Actionable Forecasts" product.
- Simulation Results: Scenario-based event evolution forecasts (e.g., fire/smoke, flood spread) for hazard evolution prediction and response planning refinement
- Impact Tracking and Mapping; NRT modelling ("Simulation Results") and/ or EO based information retrieval to assess extent and severity of the impact and alerts for (predefined) threatened assets (e.g., flooded, burnt, or lava-covered assets)
- Financial Risk Triggers: Risk metrics to activate financial instruments, such as catastrophe bonds, based on specific hazard conditions.

The Users contacted their network of collaborators, and after translating the questionnaire in IT, FR and GR, the full feedback was collected the 03.02.2025. The survey included comprehensive data protection policies and sought participant consent. GDPR issues of the questionnaire are analysed to the [RD.1] and how data will be handled to [RD.2].

7 Users' Profile Analysis

Seventeen (17) respondents, in total, have completed the Questionnaire. Analytic data on the country of origin of the users' entities may be found at the "Annex 1 – List of Questionnaire Respondents" of the present deliverable. 41% of the respondents are responsible for the activities' coordination, 24% are involved with decision making and 18% are data analysts (Figure 14).

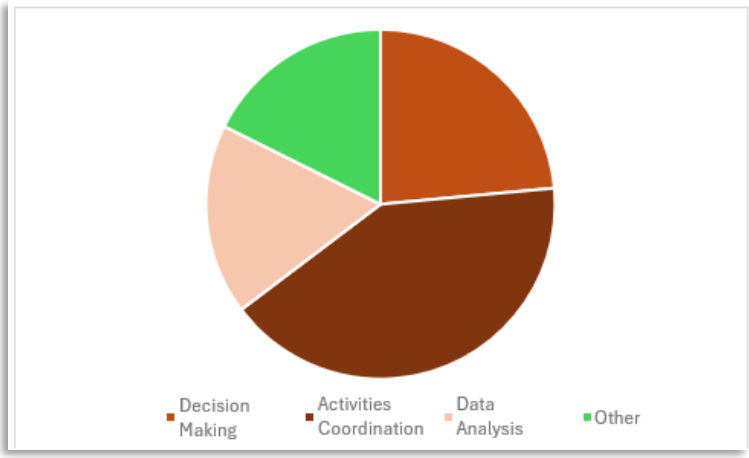


Figure 14: Questionnaire Respondents' Responsibilities/ Duties

3 Users' entities (18%) assume more than three operational roles in the context of a natural hazard event, while 7 (41%) assume one operational responsibility only. Analytic data per user and responsibility are illustrated at the following table (Table 4).

Table 4: Involved Users and Identified Responsibilities

User Seq. Nr.	User	Responsibilities						
		Disaster Management	First Response	Civil protection	Policy making	Civil Society	Scientific Community	Industry
1	DRPC-S			√				
2	CRGA&V-S		√			√		
3	C-NIKOL-S	√	√	√	√	√		
4	EKAB	√	√					
5	OEDD		√					
6	ALLI							√
7	DFCI	√		√	√			
8	MUN-V			√				
9	MUN-VVV	√	√	√	√	√		
10	FIRE FIGHT	√	√			√		
11	MUN-PIR	√		√				
12	FR-COR	√	√	√				
13	RISC	√				√	√	√
14	INGV-OE						√	
15	INGV						√	
16	REG-AT	√		√		√		

17	MIT						√	
TOTALS		9	7	8	3	6	4	2

Most users dispose of appropriate resources, to handle their responsibilities, except for specific administrations (communal or municipality level). According to the provided input, 88% and 82% of the users rank their ICT infrastructure and respective skills of their team as adequate or excellent, respectively. Analytic findings may be found in the following table (Table 5).

Table 5: Available Resources Ranking

User Seq Nr.	User	ICT Infrastructure			Team Background (ICT)		
		Excellent	Adequate	Inadequate	Excellent	Adequate	Inadequate
1	DRPC-S		√			√	
2	CRGA&V-S		√			√	
3	C-NIKOL-S			√			√
4	EKAB	√			√		
5	OEDD		√		√		
6	ALLI		√		√		
7	DFCI		√		√		
8	MUN-V		√		√		
9	MUN-VVV	√			√		
10	FIRE FIGHT	√				√	
11	MUN-PIR			√			√
12	FR-COR		√				√
13	RISC	√			√		
14	INGV-OE	√			√		
15	INGV	√			√		
16	REG-AT		√			√	
17	MIT		√			√	
TOTALS		6	9	2	9	5	3
		88%		12%	82%		16%

9 users' entities (53%) wish to improve their operational efficiency in the areas of Disaster Preparedness (forecasts, prevention, mitigation) and/ or Disaster Management (detection and response) only. These users are mainly responsible for Disaster Management and First Response activities, but the scientific community also desires improved forecasting information that could optimize the efficiency of preparedness plans. Overall, the improvement of the preparedness capacities reaches the highest interest (40% of the responses). In the following table (Table 6) the analytic input per user and interest for improved capabilities is being displayed.

Table 6: Users' interest in improved capabilities

User Seq Nr.	User	Disaster Phase		
		Post Disaster Recovery	Disaster Preparedness	Disaster Management
1	DRPC-S	√		
2	CRGA&V-S	√	√	√
3	C-NIKOL-S	√	√	√
4	EKAB			√
5	OEDD		√	√
6	ALLI	√	√	√
7	DFCI		√	√
8	MUN-V		√	√
9	MUN-VVV	√	√	√
10	FIRE FIGHT		√	√
11	MUN-PIR	√	√	√
12	FR-COR		√	√
13	RISC	√	√	√
14	INGV-OE		√	
15	INGV		√	
16	REG-AT	√	√	√
17	MIT		√	√
TOTALS		8	15	14
		22%	40%	38%

European Forest Fire Information System (EFFIS) and MeteoAlarm reach the highest preference (53% of the total number of questionnaires) among the users. It is worth mentioning that 63% of the users that profit from MeteoAlarm services and products are administration bodies (local to regional level) while industry and scientific community users do not have experience in their usage. EFFIS addresses a larger variety of users, with 30% of them acting in the First Response area. 65% of the users considers relevant Disaster Management information data and information from at least two existing platforms and systems to serve their operational needs (Table 7).

Table 7: Users' Expertise in using offered services/products with disaster management relevance

User Seq Nr.	User	Existing Systems									
		GloFAS	EFAS	GWIS	EFFIS	FIRMS	GDACS	ARISTOTLE	myDEWETRA	MeteoAlarm	Other
1	DRPC-S									√	
2	CRGA&V-S						√			√	
3	C-NIKOL-S									√	√
4	EKAB				√						
5	OEDD	√									√
6	ALLI				√						
7	DFCI				√						
8	MUN-V				√					√	
9	MUN-VVV						√			√	
10	FIRE FIGHT		√		√		√				
11	MUN-PIR						√			√	√
12	FR-COR			√	√	√					
13	RISC	√	√	√	√	√	√			√	
14	INGV-OE							√			
15	INGV										√
16	REG-AT		√		√	√				√	
17	MIT			√	√	√					
TOTALS		2	3	3	9	4	5	1	0	8	4

8 UNICORN Requirements; Information Content

As for each natural hazard specific actions in terms of preparedness and response are necessary, the analysis of the requirement is implemented distinctively, on a hazard basis. The users' interest and the panel of experts that provided input through the questionnaire, were linked with a specific hazard based on the project use cases.

- Flood (GR): Flood forecasting integrating Copernicus data and weather forecast fusion
- Fire (ES, FR, PT)
  - Copernicus-based wildfire early detection, mapping and nowcasting
  - High-resolution fire danger forecast
- Lava flow (IT): Lava flow emergency management tool based on Copernicus data merged with numerical modelling

8.1 Fire Hazards

The individual preferences per proposed product and user specification are processed to produce a meaningful synthesis of preferences on products and products' characteristics, which is illustrated in the Figure 15.

The respondents' panel (five (5) in total) belongs to entities of the industry, scientific community and first response sectors. In average, eight (8) products per user were requested. Overall, 68% of the products are required on a local (large) scale while the daily frequency of the information provision was requested for 50% of products.

More specifically, a product-specific analysis (Figure 16), highlights the need for 2-5 hours temporal frequency for the products that assist the users in efficiently adjusting their disaster management strategies based on the event evolution, since the specific to the situation awareness and simulation results score is higher than 50%. On a product

FIRES										
SCALE				TEMPORAL RESOLUTION						
				Every 2-5 hours	Daily	Weekly	Monthly	Seasonal	Other	
2.1.1	MTO DATA	5								
	LOCAL SCALE	3								
	REGIONAL SCALE	1	5	2	3	0	0	0	0	
	NATIONAL	1		40%	60%	0%	0%	0%	0%	
2.1.2	Danger-Specific Indexes	5								
	LOCAL SCALE	2								
	REGIONAL SCALE	2	5	0	4	0	0	1	0	
	NATIONAL	1		0%	80%	0%	0%	20%	0%	
2.1.3	Early Warning & Near Real-Time Alerts	4								
	LOCAL SCALE	2								
	REGIONAL SCALE	2	4	1	2	1	0	0	0	
	NATIONAL	0		25%	50%	25%	0%	0%	0%	
2.1.4.1	Actionable Forecasts	5								
	LOCAL SCALE	2								
	REGIONAL SCALE	3	5	0	4	0	1	0	0	
	NATIONAL	0		0%	80%	0%	20%	0%	0%	
2.1.4.2	Situation Awareness	4								
	LOCAL SCALE	3								
	REGIONAL SCALE	1	4	2	1	1	0	0	0	
	NATIONAL	0		50%	25%	25%	0%	0%	0%	
2.1.5	Evacuation Recommendations	3								
	LOCAL SCALE	3								
	REGIONAL SCALE	0	3	1	2	0	0	0	0	
	NATIONAL	0		33%	67%	0%	0%	0%	0%	
2.1.6	Impact Tracking and Mapping	4								
	LOCAL SCALE	3								
	REGIONAL SCALE	1	4	1	3	0	0	0	0	
	NATIONAL	0		25%	75%	0%	0%	0%	0%	
2.1.7	Simulation Results	5								
	LOCAL SCALE	5								
	REGIONAL SCALE	0	5	3	1	0	0	0	1	
	NATIONAL	0		60%	20%	0%	0%	0%	20%	
2.1.8	Financial Risk Triggers	4								
	LOCAL SCALE	3								
	REGIONAL SCALE	1	4	0	0	0	0	3	1	
	NATIONAL	0		0%	0%	0%	0%	75%	25%	
OTHER	Probabilistic 1-year freq/ severity model	1								
	LOCAL SCALE	1								
2.1.9	REGIONAL SCALE	0	1						1	
	NATIONAL	0		0%	0%	0%	0%	0%	100%	
	OVERALL SCORES	40								
	LOCAL SCALE	68%		25%	50%	5%	3%	10%	8%	
	REGIONAL SCALE	28%								
	NATIONAL	5%								

Figure 15: Fire management – Info Requirements

basis, the cumulative score on daily and 2-5 hours products' availability is more than 75% for all the products (apart from the financial risk triggers).

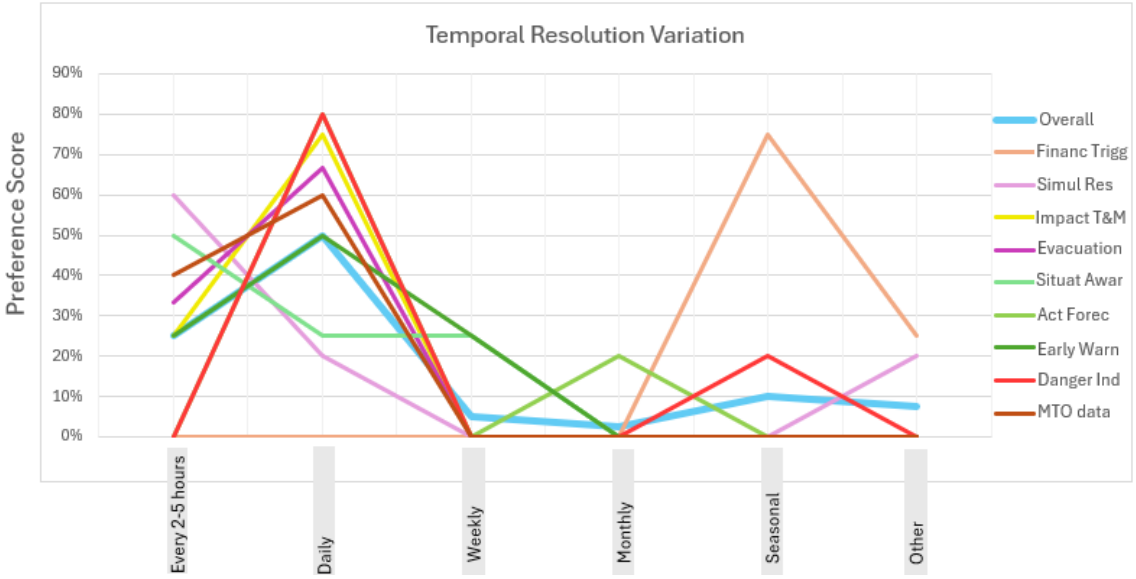


Figure 16: Fire Management – Products' Temporal Resolution preferences

The preference score of the users to local scale products is beyond 60% (Figure 17) for the relative to meteorological conditions, situation awareness, impact tracking and mapping, simulation results, evacuation recommendations, and financial risk triggers, suggesting the need for detailed knowledge of the emergency evolution during the event.

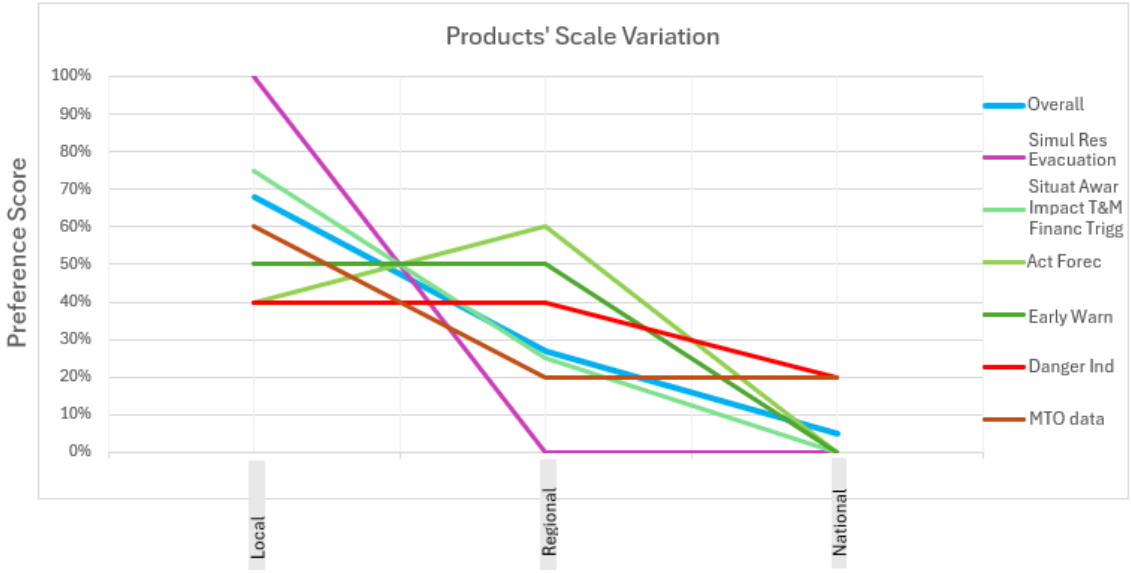


Figure 17: Fire Management –Products' Scale preferences

5 parameters (temperature, humidity, wind speed and direction, and precipitation), are mainly requested for establishing the meteorological conditions framework and efficiently address fire events management. According to the previous analysis the information should be provided in local scale (60% preference score) and with 2-5 hours or daily availability (100% preference score).

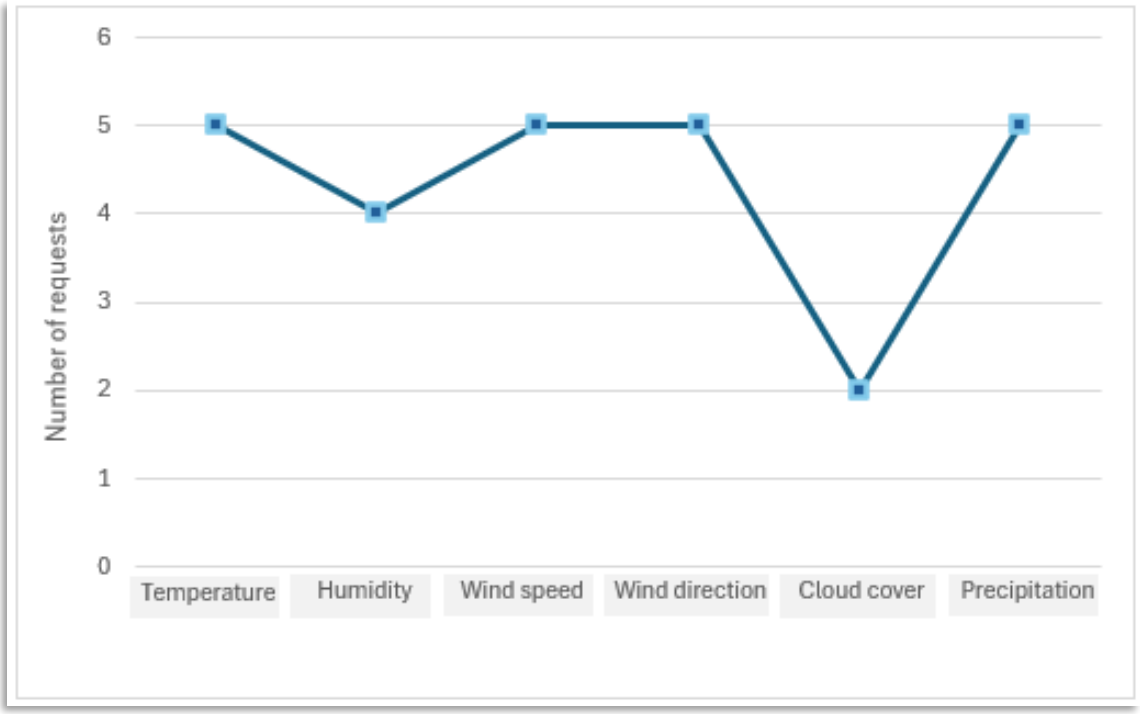


Figure 18: Fire Management – Meteorological information request

The time lap between the proposed forecasts and warnings and the advent of the event is of the order of three (3) to two (2) days respectively. According to the previous analysis the information could be provided either in local scale (40% - 50% preference scores) or smaller scale, whilst their availability should comply with 2-5 hours or daily frequence (80% preference score).

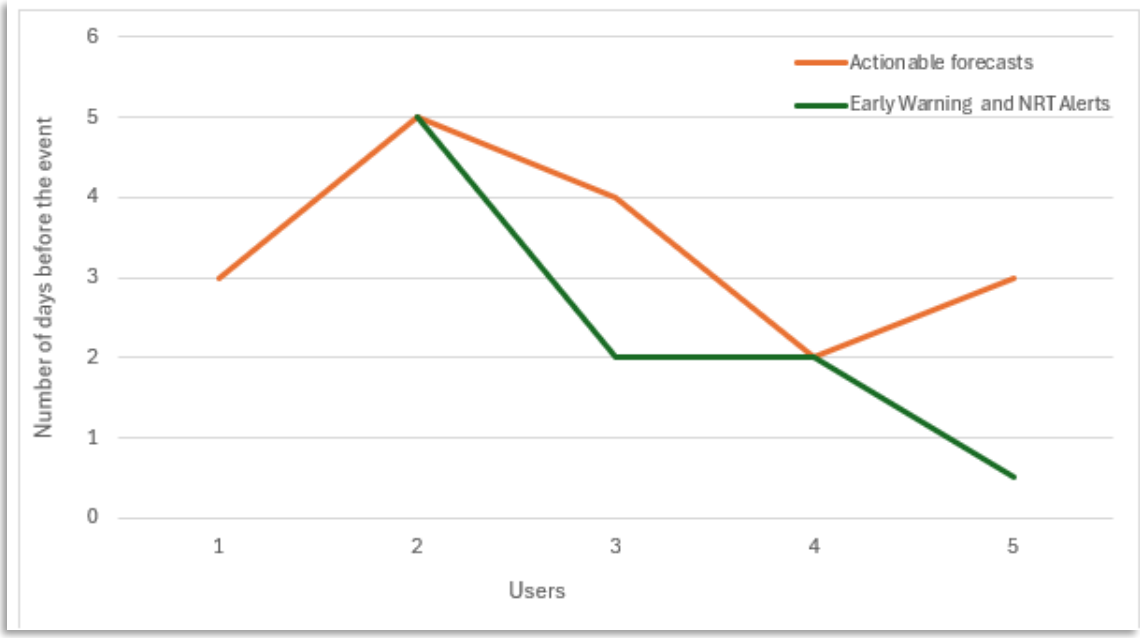


Figure 19: Fire Management – Forecast time lap request

8.2 Flood Hazards

The individual preferences per proposed product and user specification are processed to produce a meaningful synthesis of preferences on products and products' characteristics, which is illustrated in the Figure 20 below.

FLOOD										
SCALE				TEMPORAL RESOLUTION						
				Every 2-5 hours	Daily	Weekly	Monthly	Seasonal	Other	
2.1.1	MTO DATA	5								
	LOCAL SCALE	3	5	2	1	2	0	0	0	
	REGIONAL SCALE	2		40%	20%	40%	0%	0%	0%	
	NATIONAL	0								
2.1.2	Danger-Specific Indexes	4								
	LOCAL SCALE	3	4	0	0	1	3	0	0	
	REGIONAL SCALE	1		0%	0%	25%	75%	0%	0%	
	NATIONAL	0								
2.1.3	Early Warning and Near Real-Time Alerts	5								
	LOCAL SCALE	3	5	2	1	2	0	0	0	
	REGIONAL SCALE	2		40%	20%	40%	0%	0%	0%	
	NATIONAL	0								
2.1.4.1	Actionable Forecasts	5								
	LOCAL SCALE	3	5	2	1	2	0	0	0	
	REGIONAL SCALE	2		40%	20%	40%	0%	0%	0%	
	NATIONAL	0								
2.1.4.2	Situation Awareness	5								
	LOCAL SCALE	4	5	2	2	1	0	0	0	
	REGIONAL SCALE	1		40%	40%	20%	0%	0%	0%	
	NATIONAL	0								
2.1.5	Evacuation Recommendations	4								
	LOCAL SCALE	4	4	3	0	1	0	0	0	
	REGIONAL SCALE	0		75%	0%	25%	0%	0%	0%	
	NATIONAL	0								
2.1.6	Impact Tracking and Mapping	5								
	LOCAL SCALE	2	5	2	3	0	0	0	0	
	REGIONAL SCALE	3		40%	60%	0%	0%	0%	0%	
	NATIONAL	0								
2.1.7	Simulation Results	4								
	LOCAL SCALE	2	4	2	1	1	0	0	0	
	REGIONAL SCALE	2		50%	25%	25%	0%	0%	0%	
	NATIONAL	0								
2.1.8	Financial Risk Triggers	4								
	LOCAL SCALE	0	4	0	0	0	0	4	0	
	REGIONAL SCALE	4		0%	0%	0%	0%	100%	0%	
	NATIONAL	0								
	OVERALL SCORES									
	LOCAL SCALE	59%		37%	22%	24%	7%	10%	0%	
	REGIONAL SCALE	41%								
	NATIONAL	0%								

Figure 20: Flood Management – Info Requirements

The respondents' panel (seven (7), in total) belongs to entities of the local authorities and first response sectors. In average, six (6) products per user were requested. Overall, 60% of the products are required on a large (local) scale while the 2-5 hours or daily frequency of the information provision was requested for 59% of products.

More specifically, a product-specific analysis (Figure 21), highlights the need for high temporal resolution (2-5 hours or daily) for all products (except for the financial triggers and the danger specific indexes) that assist the users in efficiently implementing preparedness plans and adjusting their disaster management strategies based on

the event evolution. On a product basis, the cumulative score on daily and 2-5 hours products' availability is more than 75% for most of them (except for the MTO data, the danger specific indexes, and the financial risk triggers).

The preference of the users to local scale products is beyond 60% for the information relative to meteorological conditions, danger specific indexes, early warning and near real time alerts, actionable forecasts, situation awareness, and evacuation recommendations, suggesting the need for detailed forecast and assessment of the spatial extent and evolution of the event (Figure 22).

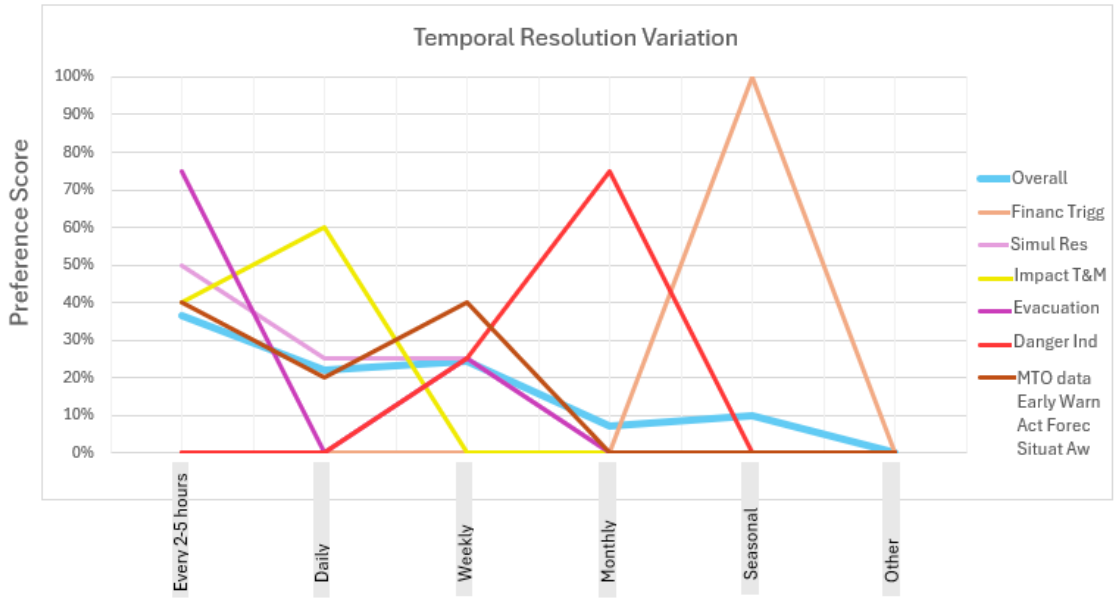


Figure 21: Flood Management – Products Temporal Resolution preferences

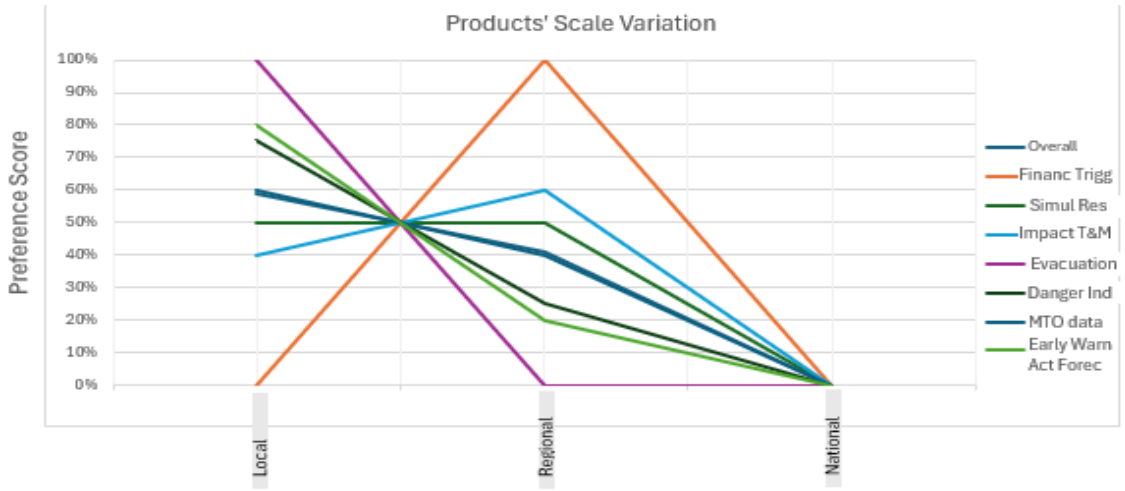


Figure 22: Flood Management – Products' Scale preferences

Five (5) parameters (temperature, humidity, wind speed and direction, and precipitation), are mainly requested for establishing a framework of meteorological conditions relevant to the flood management. For specific users, five (5) more parameters could complete the relative information and contribute to an efficient management of flood

events (Figure 23). According to the previous analysis the information should be provided in local scale (60% preference score) and with 2-5 hours or daily availability (60% preference score).

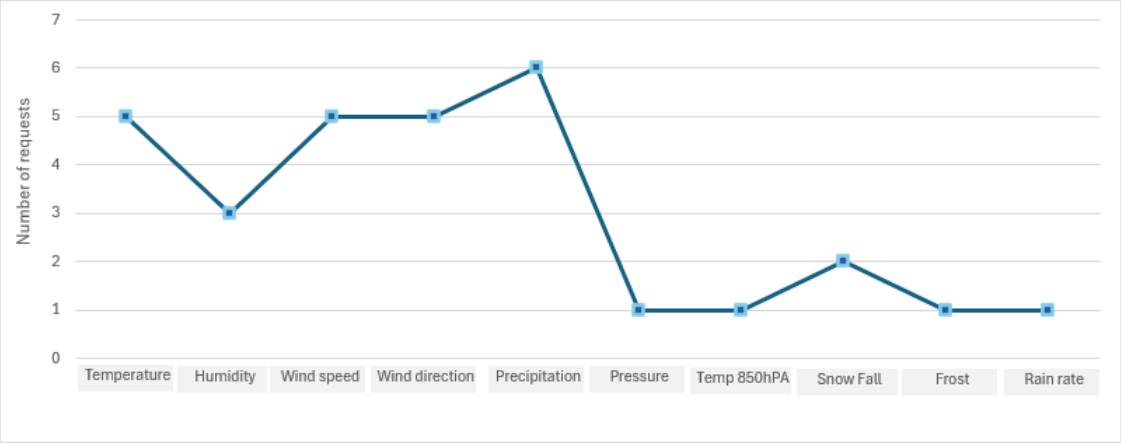


Figure 23: Flood Management – Meteorological information request

The time lap between the proposed forecasts and warnings and the advent of the event is of the order of two (2) days. According to the previous analysis the information should be provided in local scale (60% preference scores) with 2-5 hours or daily availability frequence (60% preference score).

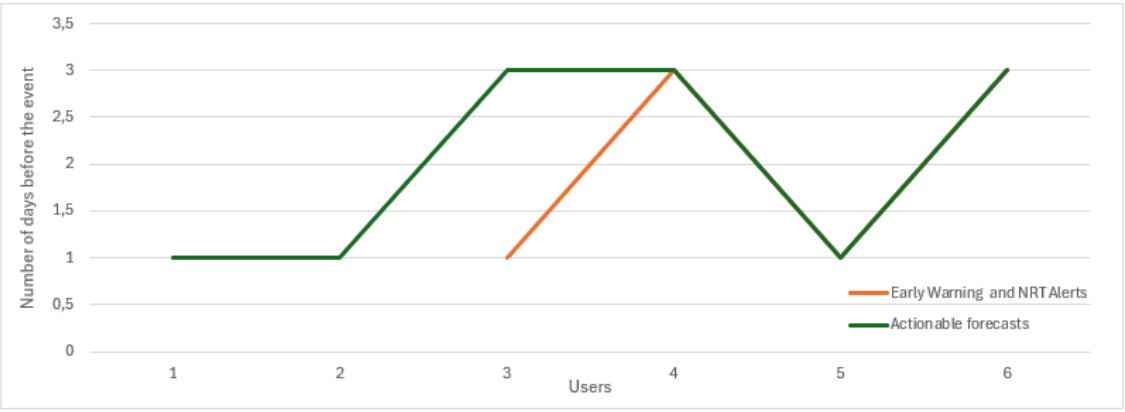


Figure 24: Flood Management – Forecast time lap request

8.3 Lava Flow Hazards

The individual preferences per proposed product and user specification are processed to produce a meaningful synthesis of preferences on products and products' characteristics, which is illustrated in Figure 25.

LAVA FLOW										
SCALE				TEMPORAL RESOLUTION						
				Every 2-5 hours	Daily	Weekly	Monthly	Seasonal	Other
2.1.1	MTO DATA	3							
	LOCAL SCALE	2							
	REGIONAL SCALE	1	3	0	3	0	0	0	0
	NATIONAL	0		0%	100%	0%	0%	0%	0%
2.1.2	Danger-Specific Indexes	4							
	LOCAL SCALE	3							
	REGIONAL SCALE	1	4	0	0	0	3	1	0
	NATIONAL	0		0%	0%	0%	75%	25%	0%
2.1.3	Early Warning and Near Real-Time Alerts	5							
	LOCAL SCALE	4							
	REGIONAL SCALE	1	5	3	2	0	0	0	0
	NATIONAL	0		60%	40%	0%	0%	0%	0%
2.1.4.1	Actionable Forecasts	5							
	LOCAL SCALE	4							
	REGIONAL SCALE	1	5	2	3	0	0	0	0
	NATIONAL	0		40%	60%	0%	0%	0%	0%
2.1.4.2	Situation Awareness	5							
	LOCAL SCALE	4							
	REGIONAL SCALE	1	5	1	4	0	0	0	0
	NATIONAL	0		20%	80%	0%	0%	0%	0%
2.1.5	Evacuation Recommendations	5							
	LOCAL SCALE	5							
	REGIONAL SCALE	0	5	1	3	0	0	0	1
	NATIONAL	0		20%	60%	0%	0%	0%	20%
2.1.6	Impact Tracking and Mapping	5							
	LOCAL SCALE	5							
	REGIONAL SCALE	0	5	2	3	0	0	0	0
	NATIONAL	0		40%	60%	0%	0%	0%	0%
2.1.7	Simulation Results	5							
	LOCAL SCALE	5							
	REGIONAL SCALE	0	5	3	2	0	0	0	0
	NATIONAL	0		60%	40%	0%	0%	0%	0%
2.1.8	Financial Risk Triggers	2							
	LOCAL SCALE	2							
	REGIONAL SCALE	0	2	0	0	0	1	1	0
	NATIONAL	0		0%	0%	0%	50%	50%	0%
2.1.9	OTHER	0							
	LOCAL SCALE	0							
	REGIONAL SCALE	0	0	0	0	0	0	0	0
	NATIONAL	0		0%	0%	0%	0%	0%	0%
2.1.9	OVERALL SCORES								
	LOCAL SCALE	87%		31%	51%	0%	10%	5%	3%
	REGIONAL SCALE	13%							
	NATIONAL	0%							

Figure 25: Lava Flow Management – Info Requirements

The respondents' panel of (five (5), in total) belongs to entities of the local administration, scientific community and first response sectors. In average, eight (8) products per user were requested. Overall, 87% of the products is required at local (large) scale, while the 2-5 hours or daily frequency of the information provision was requested for 82% of products.

More specifically, a product-specific analysis (Figure 26), highlights the need for high temporal resolution with the cumulative preference of 2-5 hours and daily frequency reaching the 100% for almost the whole of the distinct products (apart for the danger specific indexes, evacuation recommendations, and financial triggers).

The preference score for local scale products is very strong, as it is beyond the 60% (Figure 27) for the whole of the proposed information, suggesting the need for detailed forecast and assessment of the spatial extent and evolution of the event.

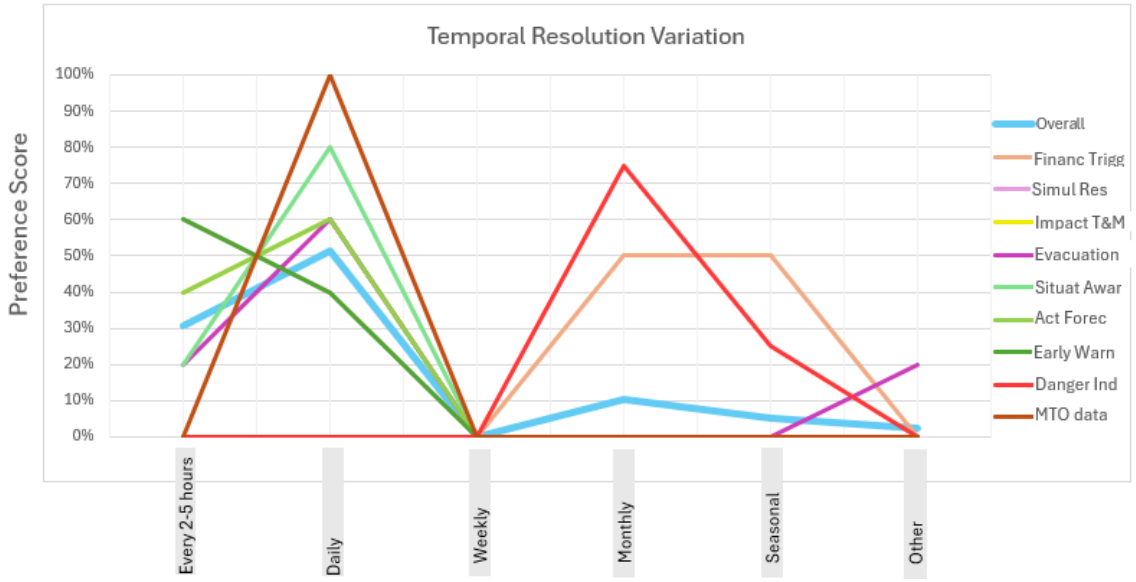


Figure 26: Lava Flow Management – Products Temporal Resolution preferences

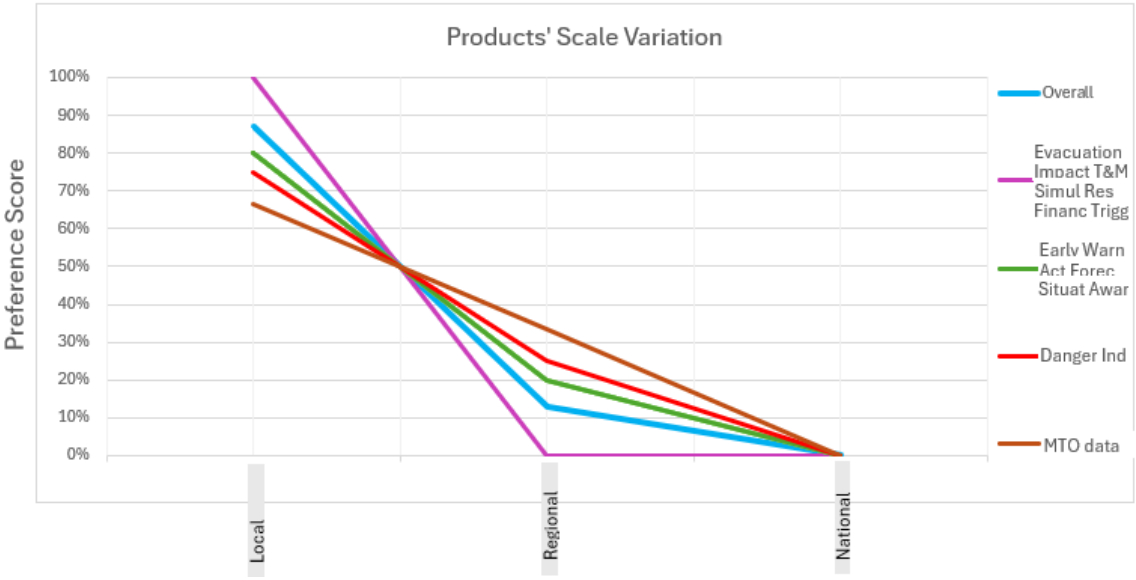


Figure 27: Lava Flow Management – Products Scale preferences

Four (5) parameters (temperature, wind speed and direction, and precipitation), are requested for an efficient management of lava flow events (Figure 28). According to the previous analysis the information should be provided in local scale (67% preference score) and daily (100% preference score).

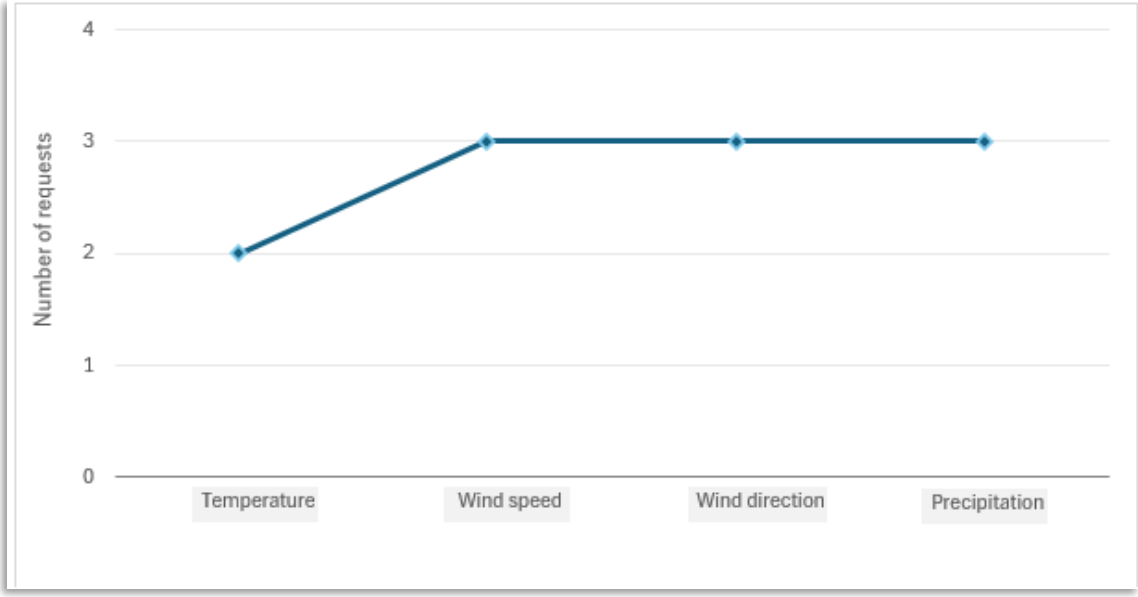


Figure 28: Lava Flow Management – Meteorological information request

The time lap between the proposed warnings and forecasts and the advent of the event is of the order of one (1) or two (2) days respectively. According to the previous analysis the information should be provided in local scale (80% preference scores) with 2-5 hours or daily availability frequence (100% preference score).

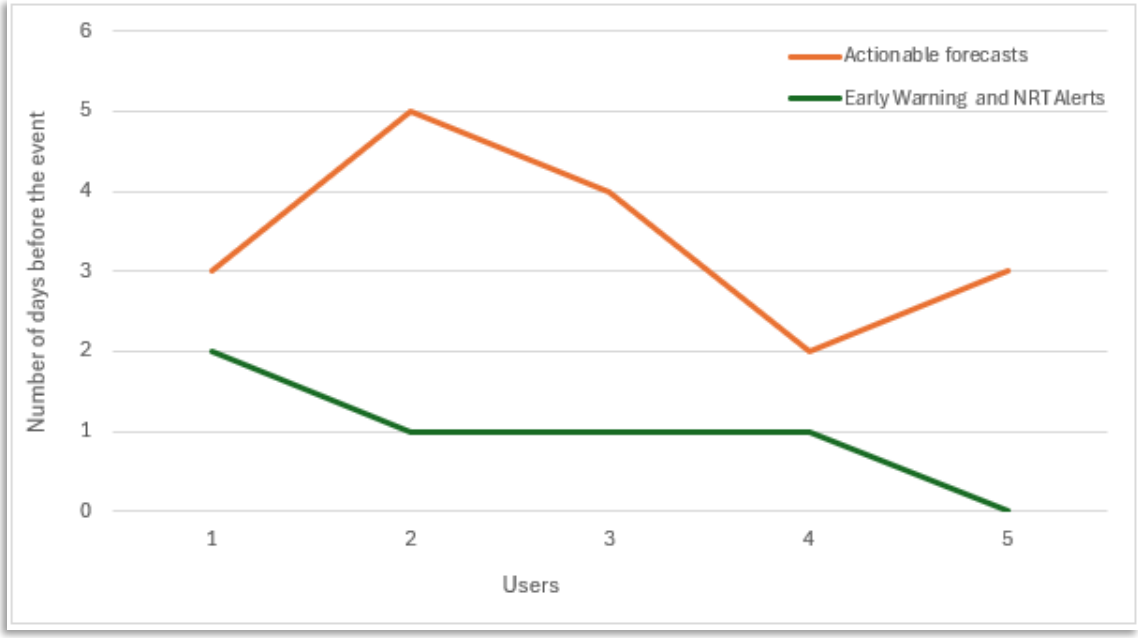


Figure 29: Lava Flow Management – Forecast time lap request

9 UNICORN requirements; System/ Services Provision

To facilitate the users in their everyday work with relevance to catastrophic events management, the alignment of the operational characteristics of the UNICORN services and products with the users' requirements is pivotal. Considering that the operational requirements are mainly linked with the users' responsibilities in the context of a disaster management than with the nature of the disaster, the analysis involved the whole of the responses. The analysis was based on scores (percentages) of the preferences per distinct characteristic/ requirement.

Accessing the services / products through a web portal seems to be an optimal solution as almost all users agree with this solution. As for the mode of operation, the users mainly involved in disaster management (prevention, response, etc.) are interested in a continuous service operation, while those belonging to the citizens / professionals and industry are interested in an "on demand" operational service.

To assess the users' preferences regarding the proposed characteristics of the service provision set up, a preference score (percentage of M (Must-have), S (Should-have), C (Could-have), W (Won't-have) answers) for each one of the characteristics is calculated. Following this, the cumulative score of the "Mandatory" and "High Priority" requirements is used as the basis for drawing the final conclusions, regarding operational requirements of the service.

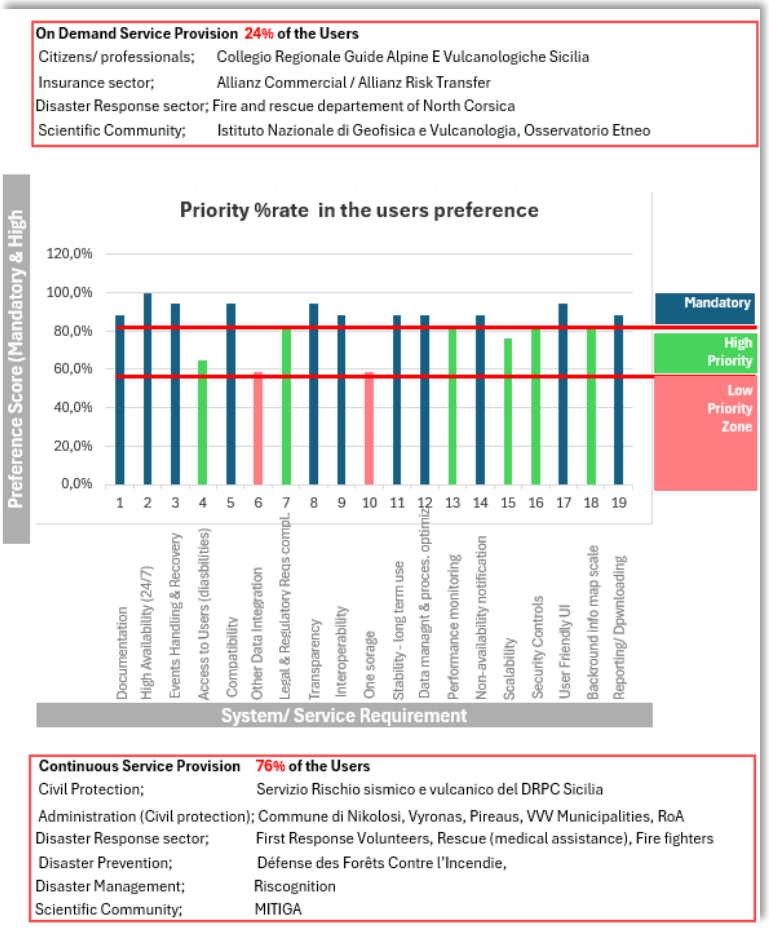


Figure 30: Service Characteristics Preferences' outlook [8]

A further categorization on "Low", and "High" priority and "Mandatory" requirements is being implemented, based on the cumulative scores. In the above figure (Figure 30). Requirements number 2 and 3 are both linked to the service availability and ranked as mandatory requirements. This is in line with the high preference of users for a continuous operation.

Except for the requirements number 6 (capability to integrate results and information of other services and external data) and 10 (central storage service) for which the cumulative score of the 'Must-have' and 'Should-have' characterization is below 60% all other requirements fall in the "High" priority zone.

[8] The sequential numbering of the requirements (x-axis), corresponds to the numbering of the section 5.3 (System/ Service Provision Requirements Section

10 Conclusions

This document outlines the initial overall requirements drawn by the UNICORN users and their network.

With reference to the service / products' specification, and based on the formulated requests, as these are suggested through the information supplied in the questionnaire, the users, seek for obtaining systematic and comprehensive information. This way, they will be able to avoid procedures involving subscription, formulation of event-based requests, data retrieval and integration, and (eventually) data adjustments, etc. that need to implement to access information provided through existing services and platforms and will focus to the efficient handling of the emergency events. A synoptical list of the requests should refer to the following issues:

- Continuous supply of data.
- Large Scale products, serving the disaster management operations planning, before and during an emergency at local scale.
- Daily to sub-daily feed and updates towards adjusting and optimizing their plans.
- Meteorological information referring to temperature, humidity, wind speed and direction, and precipitation is requested for all the event types.
- A time lap of two (2) days before the event could be a baseline for forecasts and early warnings.
- Almost all the products proposed (Figure 31) have been endorsed by the experts that provided input through the questionnaire, as the average number of users requesting the distinct products is close to one.

Products	Nr of Requests	AVG Nr of Users
MTO DATA	13	0,8
Danger-Specific Indexes	13	0,8
Early Warning and Near Real-Time Alerts	14	0,8
Actionable Forecasts	15	0,9
Situation Awareness	14	0,8
Evacuation Recommendations	12	0,7
Impact Tracking and Mapping	14	0,8
Simulation Results	14	0,8
Financial Risk Triggers	10	0,6
OTHER	1	

Figure 31: Average number of interested users per proposed product

Figure 32 summarizes the outcome of the previous analysis in terms of products specification and products' relative prioritization. The priorities 1 to 3 (1: low, 2: medium, 3: high[9]) represent the rate of requests for a certain product within each use case. The priorities set for the spatial and temporal analysis depicts the preference rates that are beyond 60%.

[9] 1: < 10%, 2: 10%≤ x < 12%, 3: ≥ 12%

Product		LAVA FLOW USE CASE			FLOOD USE CASE			FIRE USE CASE		
		First Priority Specification		Products Relative Priority	First Priority Specification		Products Relative Priority	First Priority Specification		Products Relative Priority
		Scale	Temporal Resolution		Scale	Temporal Resolution		Scale	Temporal Resolution	
2.1.1	MTO DATA	LOCAL	Daily	1	LOCAL	Every 2-5 hours/ Daily	3	LOCAL	Every 2-5 hours/ Daily	3
2.1.2	Danger-Specific Indexes	LOCAL	Monthly	2	LOCAL	Weekly/ Monthly	2	LOCAL/ REGIONAL	Daily	3
2.1.3	Early Warning and Near Real-Time Alerts	LOCAL	Every 2-5 hours/ Daily	3	LOCAL	Every 2-5 hours/ Daily	3	LOCAL/ REGIONAL	Every 2-5 hours/ Daily	2
2.1.4.1	Actionable Forecasts	LOCAL	Every 2-5 hours/ Daily	3	LOCAL	Every 2-5 hours/ Daily	3	REGIONAL	Daily	3
2.1.4.2	Situation Awareness	LOCAL	Daily	3	LOCAL	Every 2-5 hours/ Daily	3	LOCAL	Every 2-5 hours/ Daily	2
2.1.5	Evacuation Recommendations	LOCAL	Daily	3	LOCAL	Every 2-5 hours	2	LOCAL	Every 2-5 hours/ Daily	1
2.1.6	Impact Tracking and Mapping	LOCAL	Every 2-5 hours/ Daily	3	REGIONAL	Daily	3	LOCAL	Every 2-5 hours/ Daily	2
2.1.7	Simulation Results	LOCAL	Every 2-5 hours/ Daily	3	LOCAL	Every 2-5 hours/ Daily	2	LOCAL	Every 2-5 hours/ Daily	3
2.1.8	Financial Risk Triggers	LOCAL	Monthly/ Seasonal	1	REGIONAL	Seasonal	2	LOCAL	Monthly/ Seasonal	2
2.1.9	OTHER (Probabilistic 1-year freq/ severity model)							LOCAL	One off/ yearly	1

Figure 32: Overall products' specification per event type

Next steps

"Task 2.1: End-user Needs Collection and Requirements Definition" plays a fundamental role in establishing the user-driven approach of the UNICORN project. Through targeted surveys, this task captured the operational requirements, expectations, and challenges of a wide range of stakeholders—including public authorities, first responders, policymakers, and private sector actors. The data collected through Task 2.1 is not only used to understand high-level needs, but also to map specific conditions, use contexts, and service expectations across different domains.

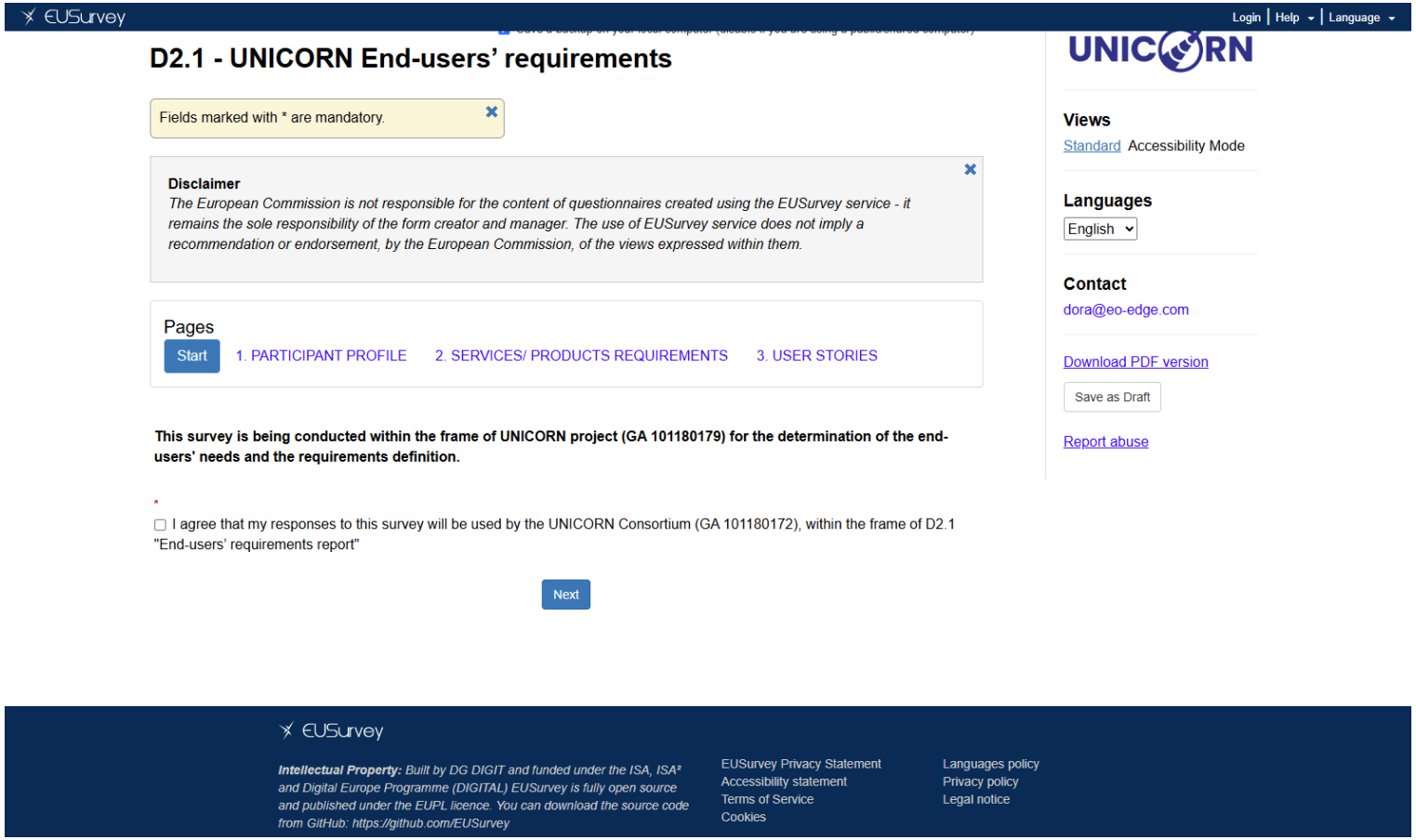
This knowledge directly informs "Task 4.1: Set-up and Use Cases' Definition", which leverages the outputs of Task 2.1 to define and validate the real-world application scenarios that will guide the development and testing of UNICORN services. As stated in the Grant Agreement, "by leveraging the outcomes of Task 2.1, Task 4.1 fosters a collaborative approach, actively engaging with stakeholders associated with the use cases to elicit detailed requirements and expectations for applications to be implemented under Work Package 3." In this way, Task 2.1 ensures that Task 4.1 is grounded in concrete, user-validated needs, while Task 4.1 adds depth by translating those needs into actionable use cases with defined technical and operational parameters.

Together, these tasks ensure a coherent transition from conceptualisation to implementation, maintaining a continuous dialogue with end users and laying the groundwork for tailored, high-impact services to be developed and validated in the subsequent phases of the project.

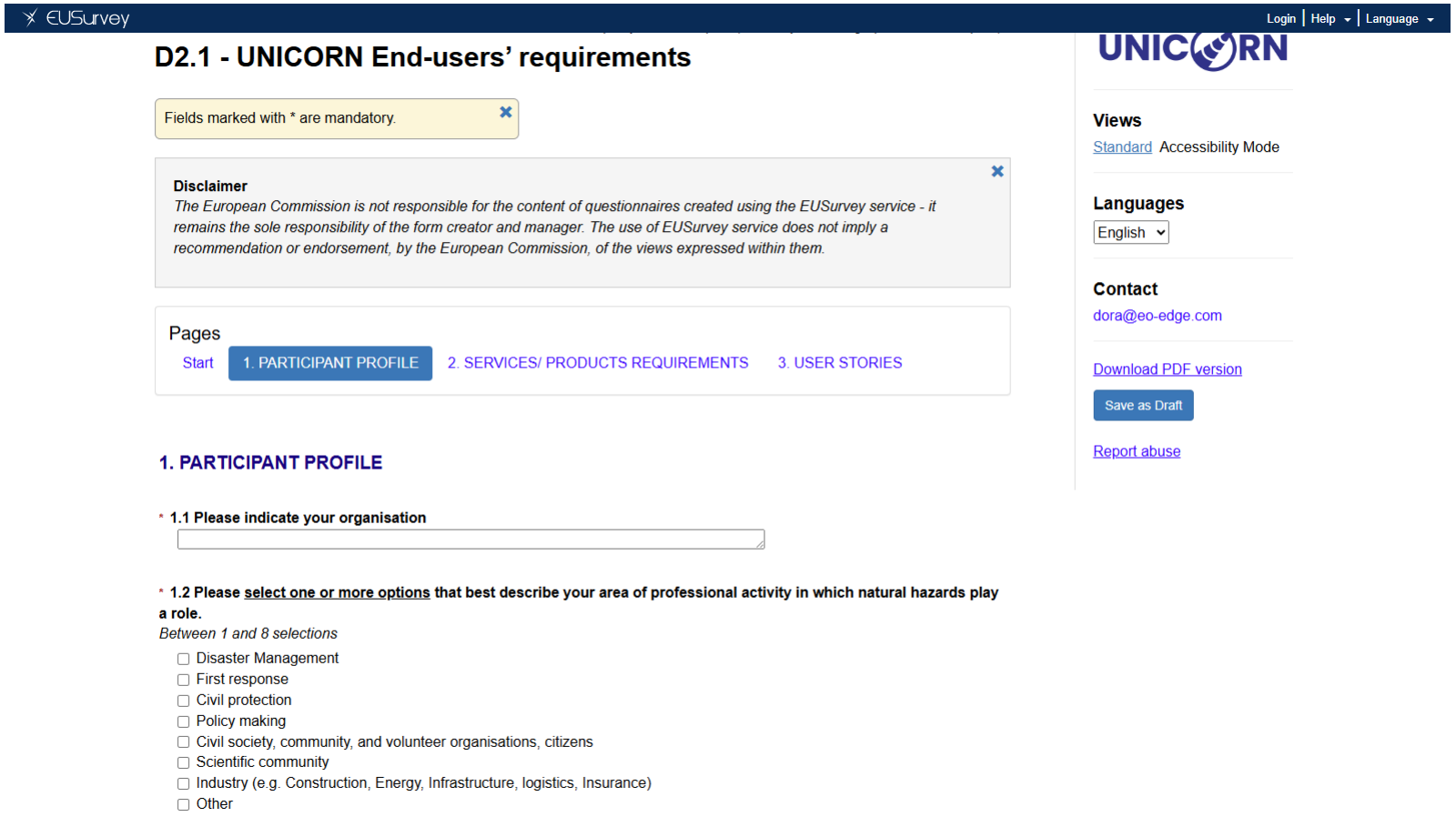
Annex 1 – List of Questionnaire Respondents

Seq. Nr	Respondent Abbrev Name	Full Name of the Entity	Respondent Position/ Duties	Country of Origin
1	DRPC-S	Servizio Rischio sismico e vulcanico del DRPC Sicilia	Activities coordination	IT
2	CRGA&V-S	Collegio Regionale Guide Alpine E Vulcanologiche Sicilia	Guida Vulcanologica	IT
3	C-NIKOL-S	Commune di Nicolosi	Decision Making	IT
4	EKAB	National Center for Emergency Assistance	Decision Making	GR
5	OEDD	Volunteer Forest Firefighters Rescue Team	Rescue Team member	GR
6	ALLI	Allianz Commercial / Allianz Risk Transfer	Underwriting	
7	DFCI	DDT 2B Service Agriculture et Forêt DFCI	Activities coordination	FR
8	MUN-V	Vironas Municipality	Activities coordination	GR
9	MUN-VVV	Vari-Boula-Vouliagmeni Municipality	Activities coordination	GR
10	FIRE FIGHT	Hellenic Fire Service	Commander of the 4TH Athens Division	GR
11	MUN-PIR	Piraeus Municipality	Activities coordination	GR
12	FR-COR	Fire and rescue department of North Corsica	Project Management	FR
13	RISC	Riscognition	Decision Making	DE
14	INGV-OE	Osservatorio Etneo dell' Instituto Nazionale di Geofisica e Vulcanologia	Data Analysis	IT
15	INGV	Instituto Nazionale di Geofisica e Vulcanologia	Data collection and analysis	IT
16	REG-AT	Region of Attica	Activities coordination	GR
17	MIT	MITIGA	Data Analysis	ES

Annex 2 – The Questionnaire Interface[10]



[10] https://ec.europa.eu/eusurvey/runner/D2-1_UNICORN_End-users_requirements



EUSurvey

Login | Help | Language

D2.1 - UNICORN End-users' requirements

Fields marked with * are mandatory.

Disclaimer

The European Commission is not responsible for the content of questionnaires created using the EUSurvey service - it remains the sole responsibility of the form creator and manager. The use of EUSurvey service does not imply a recommendation or endorsement, by the European Commission, of the views expressed within them.

Pages

Start | 1. PARTICIPANT PROFILE | 2. SERVICES/ PRODUCTS REQUIREMENTS | 3. USER STORIES

1. PARTICIPANT PROFILE

* **1.1 Please indicate your organisation**

* **1.2 Please select one or more options that best describe your area of professional activity in which natural hazards play a role.**

Between 1 and 8 selections

- ☐ Disaster Management
- ☐ First response
- ☐ Civil protection
- ☐ Policy making
- ☐ Civil society, community, and volunteer organisations, citizens
- ☐ Scientific community
- ☐ Industry (e.g. Construction, Energy, Infrastructure, logistics, Insurance)
- ☐ Other

UNICORN

Views

Standard Accessibility Mode

Languages

English

Contact

dora@eo-edge.com

Download PDF version

Save as Draft

Report abuse

* **1.3 What is your position in your organisation?**

* **1.4 What is the level of the available ICT infrastructure of the organisation you are working for?**

* **1.5 What is the ICT background of the team that serves the scope as described in the previous question?**

* **1.6 Please select one or more options focusing to your organization's interest in improving the efficiency for:**
Between 1 and 3 selections

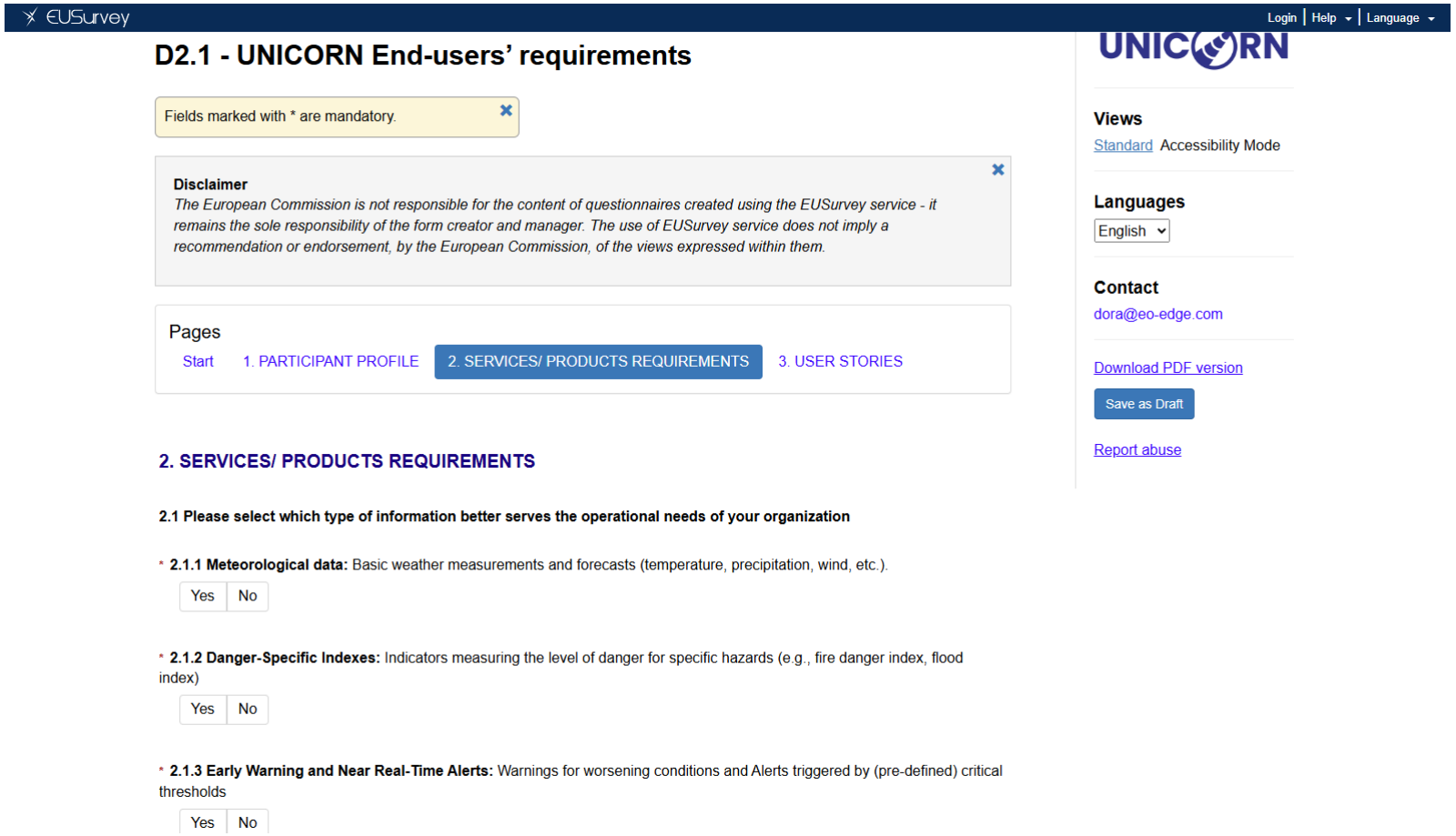
- ☐ Disaster Preparedness (forecasts, prevention, mitigation)
- ☐ Disaster Management (detection and response)
- ☐ Post Disaster Recovery (restoration and adaptation towards resilience)

* **1.7 Please select one or more systems/services you are aware of and/ or you have used in the frame of the activities of your organization:**
Between 1 and 9 selections

- ☐ Global Flood Awareness System (GloFAS)
- ☐ European Flood Awareness System (EFAS)
- ☐ Global Wildfire Information System (GWIS)
- ☐ European Forest Fire Information System (EFFIS)
- ☐ Fire Information for Resource Management System (FIRMS)
- ☐ Global Disaster Alert and Coordination System (GDACS)
- ☐ ARISTOTLE-Eenhsp
- ☐ myDEWETRA Platform
- ☐ MeteoAlarm
- ☐ Other

This field is required.

Previous Next



EUSurvey

Login | Help | Language

D2.1 - UNICORN End-users' requirements

Fields marked with * are mandatory.

Disclaimer

The European Commission is not responsible for the content of questionnaires created using the EUSurvey service - it remains the sole responsibility of the form creator and manager. The use of EUSurvey service does not imply a recommendation or endorsement, by the European Commission, of the views expressed within them.

Pages

Start | 1. PARTICIPANT PROFILE | 2. SERVICES/ PRODUCTS REQUIREMENTS | 3. USER STORIES

2. SERVICES/ PRODUCTS REQUIREMENTS

2.1 Please select which type of information better serves the operational needs of your organization

* **2.1.1 Meteorological data:** Basic weather measurements and forecasts (temperature, precipitation, wind, etc.).

Yes | No

* **2.1.2 Danger-Specific Indexes:** Indicators measuring the level of danger for specific hazards (e.g., fire danger index, flood index)

Yes | No

* **2.1.3 Early Warning and Near Real-Time Alerts:** Warnings for worsening conditions and Alerts triggered by (pre-defined) critical thresholds

Yes | No

UNICORN

Views

Standard Accessibility Mode

Languages

English

Contact

dora@eo-edge.com

Download PDF version

Save as Draft

Report abuse

2.1.4 Risk Assessment to support informed decision-making

* **2.1.4.1 Actionable Forecasts:** Integrated forecasts combining diverse data sources (e.g., earth observation, in-situ measurements, etc.)

Yes | No

* **2.1.4.2 Situation Awareness:** Event extent and severity mapping and assessment of potential impact on population, critical infrastructures, and the environment.

Yes | No

* **2.1.5 Evacuation and Response Recommendations:** Location-specific guidance for emergency response actions, based on risk assessments

Yes | No

* **2.1.6 Impact Tracking and Mapping:** Near Real-time status alerts for (predefined) threatened assets (e.g., flooded, burnt, or lava-covered assets).

Yes | No

* **2.1.7 Simulation Results:** Scenarios' based event evolution forecasts (e.g., fire/smoke, flood spread) for hazard prediction and response planning

Yes | No

* **2.1.8 Financial Risk Triggers:** Risk metrics to activate financial instruments, such as catastrophe bonds, based on specific hazard conditions

Yes | No

* **2.1.9 Other**

Yes | No

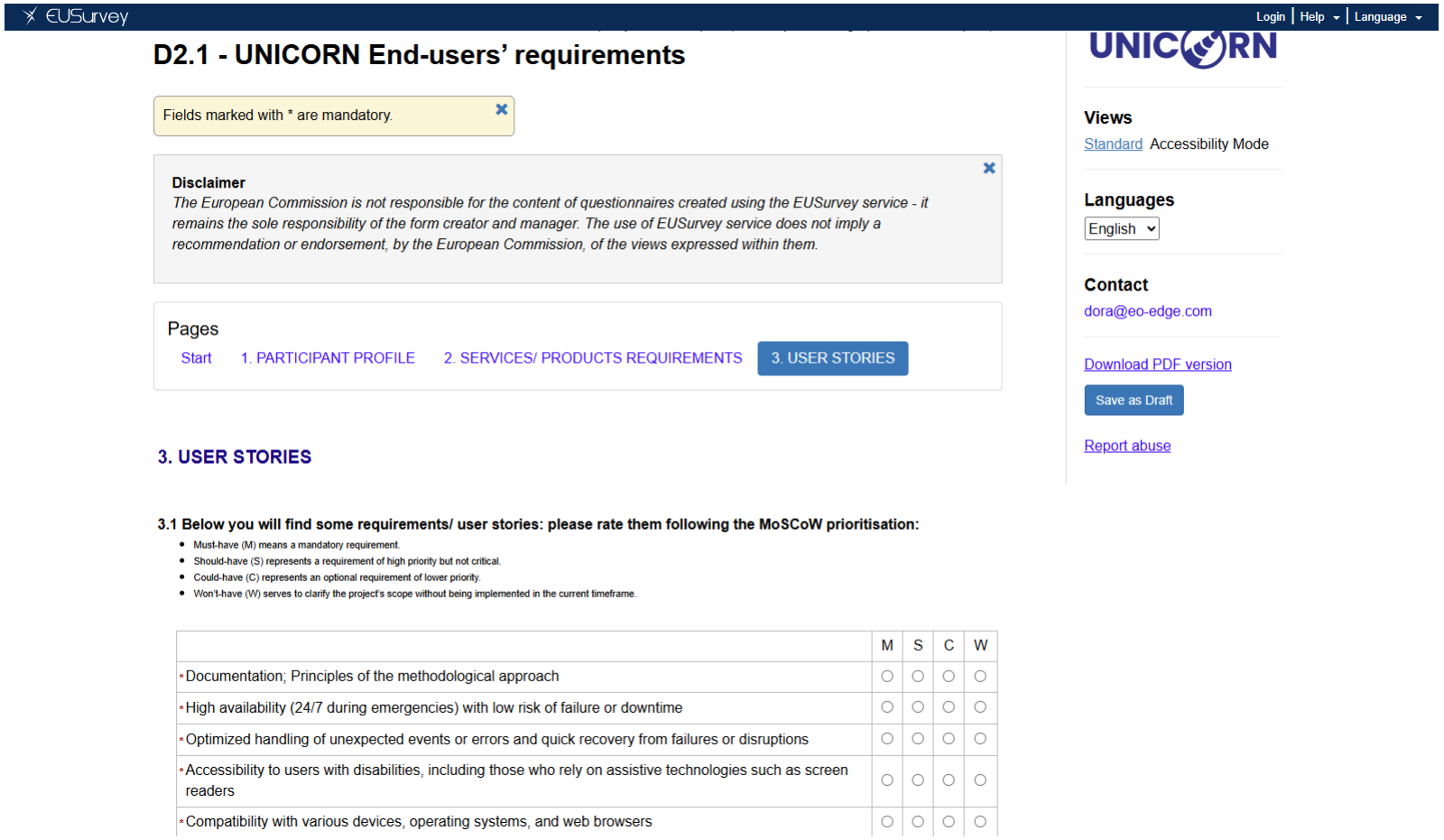
* **2.2 The access to the services/ products will be enabled through a web portal. Does this solution properly address your needs?**

Yes | No

* **2.3 Which format would be more convenient for you to access the service: as a continuous, operational service or on an on-demand basis when needed?**

Continuous, operational service | On-demand basis

Previous | Next



EUSurvey

Login | Help | Language

D2.1 - UNICORN End-users' requirements

Fields marked with * are mandatory.

Disclaimer

The European Commission is not responsible for the content of questionnaires created using the EUSurvey service - it remains the sole responsibility of the form creator and manager. The use of EUSurvey service does not imply a recommendation or endorsement, by the European Commission, of the views expressed within them.

Pages

Start | 1. PARTICIPANT PROFILE | 2. SERVICES/ PRODUCTS REQUIREMENTS | 3. USER STORIES

UNICORN

Views

Standard Accessibility Mode

Languages

English

Contact

dora@eo-edge.com

Download PDF version

Save as Draft

Report abuse

3. USER STORIES

3.1 Below you will find some requirements/ user stories: please rate them following the MoSCoW prioritisation:

- Must-have (M) means a mandatory requirement.
- Should-have (S) represents a requirement of high priority but not critical.
- Could-have (C) represents an optional requirement of lower priority.
- Won't-have (W) serves to clarify the project's scope without being implemented in the current timeframe.

	M	S	C	W
*Documentation; Principles of the methodological approach	○	○	○	○
*High availability (24/7 during emergencies) with low risk of failure or downtime	○	○	○	○
*Optimized handling of unexpected events or errors and quick recovery from failures or disruptions	○	○	○	○
*Accessibility to users with disabilities, including those who rely on assistive technologies such as screen readers	○	○	○	○
*Compatibility with various devices, operating systems, and web browsers	○	○	○	○

*Enable integration of results and information of other services and external data	○	○	○	○
*Compliance with relevant legal and regulatory requirements, such as data privacy laws and industry standards	○	○	○	○
*Transparency, regarding data sharing legal issues in the context of intellectual property and GDPR	○	○	○	○
*Interoperability with other systems and technologies commonly used, such as remote sensing tools and geospatial software, etc.	○	○	○	○
*Data and results storage in one place	○	○	○	○
*Stability and set-up for long term use	○	○	○	○
*Optimized response times, large data volumes handling, and support real-time data processing	○	○	○	○
*Performance monitoring and logging features to track services' performance and identify potential issues in real-time and notify the user for irregularities	○	○	○	○
*Notify the user when the services' outputs are unavailable, to implement its own backup plan	○	○	○	○
*Easily scalable service to accommodate a growing amount of data and/or users and/ or products while maintaining performance and responsiveness	○	○	○	○
*Robust security controls, e.g., secure data/ information management and access control mechanisms, to protect sensitive data from unauthorized access, disclosure, or modification	○	○	○	○
*User-friendly and easy to navigate interface, with straightforward content and online help features	○	○	○	○
*Background information (i.e. topographic features, assets' location, population distribution, etc.), scale will comply with the requested spatial resolution level	○	○	○	○
*Digital reports production and data download in various formats (.csv, .pdf, etc.)	○	○	○	○
Other (Please specify)	○	○	○	○

Previous Submit

End of document