"SPACE IN RESPONSE TO HUMANITARIAN CRISES" THEMATIC CALL FOR PROPOSALS

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1. INTRODUCTION

This document presents an overview of the Thematic Call "Space in response to humanitarian crises" issued under the ARTES 4.0 [4S][1]and [BASS][2] Programme lines.

2. BACKGROUND AND RATIONALE

According to UNCHR, at the end of 2020, 82.4 million people worldwide were forcibly displaced as a result of persecution, conflict, violence, human rights violations, or events seriously disturbing public order.[3]

Since then, the World has experienced a new humanitarian crisis. As of April 2022, 4.9 million Ukrainians have fled the country, making it the fastest growing refugee crisis since World War II, and a further 7.1 million have been displaced internally.[4]

The Thematic Call "Space in response to humanitarian crises" targets the development of space-based services that support humanitarian efforts in response to the Ukrainian crisis; As such, ESA is calling for proposals of services that:

• Are relevant and applicable to the ongoing crisis in Ukraine. Service applicability in other contexts is not required but encouraged.

• Make use of space assets or space data such as remote sensing, global navigation satellite systems, satellite connectivity, and/or weather satellites. The integration of other advanced technologies are not required but encouraged.

Within the context this Thematic Call, ESA has initiated discussions with leading humanitarian organisations including the International Organisation for Migration (IOM), the United Nations Children's Fund (UNICEF), the Norwegian Refugee Council (NRC), the Institute of Economics and Peace (IEP), and the United Nations Satellite Centre (UNOSAT) to understand their needs. The discussions have informed the formulation of the thematic areas described in Section 4, and the generation of specific use-cases listed in **Annex A**.

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[1] https://artes.esa.int/safety-and-security-4s
[2] https://business.esa.int/
[3] https://www.unhcr.org/figures-at-a-glance.html
[4] UNHCR, "Ukraine situation: Flash Update #8" - https://data2.unhcr.org/en/documents/details/92011

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These stakeholders have expressed their interest in exploring the benefits of space-based solutions to address the needs and challenges identified in Annex A, and may participate in the evaluation and/or piloting (subject to agreement) of the services established through the Thematic call. The involvement of ESA's stakeholders in specific activities can be discussed after positive evaluation of the Outline Proposal of the Feasibility Study or Demonstration Project.

3. OBJECTIVES OF THE THEMATIC CALL

The objectives of the Call are to:
- Develop and facilitate the adoption space-based solutions to support the humanitarian efforts in response to the Ukrainian crisis
- Promote the development of sustainable integrated downstream services in the humanitarian domain
- Build partnerships with champions, early adopters, and anchor users to foster development and utilisation of downstream solutions complemented by advanced technologies
- Reach out to non-space communities that are active in the humanitarian sector and facilitate networking with space and new-space actors and pursue international collaborations to support global adoption and interoperability
- Provide pre-operational demonstrations to the prospective users and customers of the proposed services show-casing the benefits deriving from the utilization of space technology and data

4. THEMATIC AREAS

In alignment with the objectives of this call, four thematic areas have been identified following the discussions with stakeholders from the humanitarian sector, representing the most relevant priorities in response to humanitarian crises such as that of Ukraine.

The thematic areas are:

1. *Supporting the physical, emotional, psychological, social, or economic well-being of refugees and Internally Displaced Persons (IDPs).*

   Potential services include but not limited to:

   - access to trusted sources (e.g., humanitarian organisations) for critical advice and information (e.g., on safe corridors, conditions in place of origin, available services, and legal assistance)
   - restoration of family and community links
   - access to cash and remittances
   - protection of education provision
   - preservation and/or development of livelihoods in the digital space
   - provision of up-to-date route conditions in a rapidly changing landscape

2. *Supporting organisations to forecast, respond to, and manage humanitarian crises.*

   Potential services include but not limited to:
   - assessment of conditions of critical infrastructure (e.g., hospitals, roads, water supplies, telecommunications networks) in crisis regions
   - provision of secure connectivity to and for field teams
   - tracking of population movements
   - facilitating communications between responders and those in need of assistance
   - mapping of weaponised areas as a proxy for unexploded ordinance
   - dynamic routing services to facilitate access to and from affected areas.

3. *Supporting communities hosting displaced people to adapt and respond to the challenges associated with migrant flows.*

Potential services include but not limited to:

- assistance in refugee registration efforts
- mapping of displaced populations
- prediction of migrant flows
- optimisation of local resources and services under stress
- optimisation of imported resources and aid through digital supply chain

4. *Supporting post-conflict recovery efforts*

Potential services include but not limited to:

- assessment of conditions of critical infrastructure and household dwellings
- recovery of key resources that have been damaged and/or neglected (e.g. agricultural land; power grid; water sources)
- restoration of safe areas (e.g., clearing of landmines and unexploded ordinance)
- recovery of contaminated areas (e.g., where shelling has occurred on heavily industrialised areas)
- restoration of environmental governance

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5. SPACE ASSETS

Satellite Earth Observation (SatEO)

SatEO (including weather data) provides imagery enabling services such as mapping, risk detection, and situational awareness. SatEO allows remote monitoring of people, objects, and surrounding environments. Both SAR and optical data can be used to monitor and plan infrastructure and the services associated to it (e.g. hospitals, power plants, airports).

Global Navigation Satellite Systems (SatNav)

SatNav provides accurate Positioning, Navigation, and Timing (PNT) enabling services such as tracking and tracing of vehicles, people, and resources. GNSS also allows navigation of autonomous or remotely piloted vehicles.

Satellite Communications (SatCom)

SatCom enable secure connection in places without terrestrial connectivity. Satellite connectivity can operate as main or back-up system for land-based communications systems and enable machine-to-machine communication in remote areas.

To achieve the objectives and address the above use cases, the proposed services can also integrate digital technologies such as Augmented/Virtual Reality, Artificial Intelligence/ Machine Learning, Hybrid 5G space/terrestrial communication networks.

6. SCOPE OF THE CALL

The proposals under this Call shall address needs of the Humanitarian sector by providing innovative user-driven services that leverage on space data.

This Thematic Call covers two types of activities: Feasibility Studies, and Demonstration Projects.

In both, Feasibility Studies and Demonstration Projects, the Bidder must either (1) address the use cases of one or more of the stakeholders already involved by ESA (listed above and included in Annex A) or (2) address other/additional use cases and requirements related to the Call that are provided by other customers/ users directly approached by the Bidder.

1. **Feasibility Studies** provide the preparatory framework to identify, analyse and define new potentially sustainable services. Feasibility Studies should last for 6 months and must include a proof of concept.

   The applications and/or services covered by the proposed Feasibility Studies must:

   - Be customer/user driven and present a strong sustainability potential
   - Propose a service demonstrating the benefits of the utilisation of integrated space assets
   - Include a viability analysis
   - Aim to evolve the targeted applications and services to marketability and operational roll-out, potentially through a Demonstration Project after successful completion of the feasibility study
   - Address at least one of the thematic areas described in section 4 or other(s) defined by the Bidder
   - Validate a Proof of concept of the service or critical components. This may include the development of a mock-up to be validated with potential users, and/or de-risking key components/modules to validate the technical feasibility of the service
   - It is recommended to involve representatives from the user community, especially in the Proof of Concept. Letters of interest from potential users are not required but encouraged.

   Full details on the Scope of work, study logic, and deliverable items for Feasibility Studies can be found in the [FS Management Requirements Document](#)[5].

2. **Demonstration Projects** cover the development, implementation, and demonstration of services up to pre-operational services.

   The applications and/or services covered by the proposed Demonstration Projects must:

   - Be customer/user driven (including user involvement and active participation in the project).
   - Propose a service demonstrating the benefits from the utilisation of space assets with clear potential to become sustainable.

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[5] https://business.esa.int/sites/business/files/AO10494_Feasibility%20Studies-Management%20Requirements.pdf

- Address at least one amongst the thematic areas described in section 4, covering one or more of the mentioned applications or other(s) defined by the Bidder.
- Provide a measurable socio-economic impact.
- Involve potential users which shall take part in the pilot. Letters of interest must be provided with the full proposal. The Bidder should not rely on ESA to get a letter of interest from humanitarian stakeholders.

Full details on the Scope of work, study logic, and deliverable items for Demonstration Projects can be found in the [DP Management Requirements Document](6).

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[6] https://business.esa.int/sites/business/files/AO10494_Demo%20Projects-Management%20Requirements.pdf

7. PROCUREMENT APPROACH

The proposals submitted in to the call will be implemented under ESA 4S or BASS Programme Lines.

First, the Bidder shall prepare an Outline Proposal following the template provided by ESA, and submit it using the following online form[7]:

Subject to successful evaluation of the Outline Proposal, the Bidder will be invited to submit the Full Proposal.

The Programme Line selection (4S or BASS) will be determined by ESA and the National Delegation following the evaluation of the Outline Proposal. The price of activities will be charged against the contribution of the Prime or Subcontractor's Member State in the programme. A Letter of Authorisation of Funding (AoF) from the relevant National Delegation is therefore required as part of the Full Proposal. The Bidder is however advised to inform the relevant National Delegation(s) when submitting the Outline Proposal. The contact details for the National Delegates can be found in this link[8].

The Agency will only admit proposals from bidding teams composed of an economic operator - being a Prime or Subcontractor - residing in any of those States that have subscribed to 4S or BASS Programme Lines, as specified in the procurement rules of the CALL FOR PROPOSALS FOR DOWNSTREAM APPLICATIONS IN ARTES 4.0 (esa star ref.: 1-10494).

8. PROCESS AND SCHEDULE

The Thematic Call for proposals will open on 25 April 2022 and will close on 31 October 2022. However, due to the emergency of the humanitarian crisis in Ukraine, bidders are encouraged to submit an outline proposal by **20 May 2022,** but outline proposals submitted after this date will still be reviewed**.** ESA prioritise studies and projects that can be implemented in short timeframes.

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[7] https://business.esa.int/form/thematic-call-space-in-response-
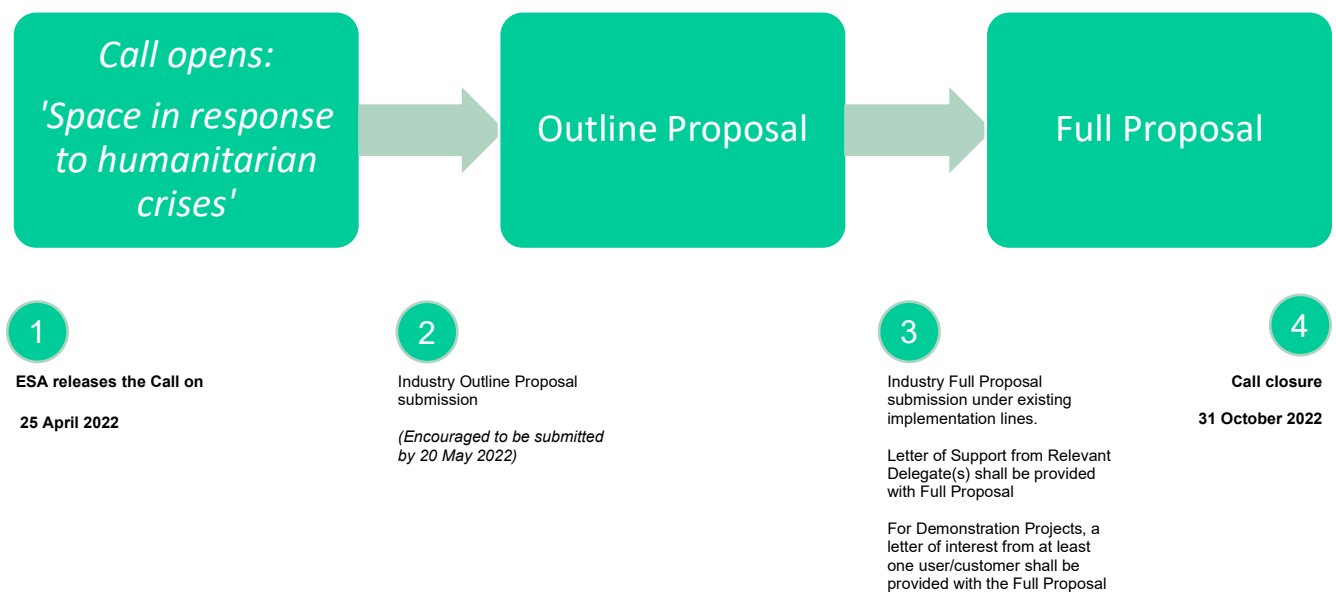[8] https://artes.esa.int/national-delegations

8.1. Timeline and Procedure

The Thematic Call for proposals is open from 25 April 2022, where the industry can respond by submission of outline proposals.

The timeline is illustrated below:

Call opens: 'Space in response to humanitarian crises'	→	Outline Proposal	→	Full Proposal

1	**2**	**3**	**4**
ESA releases the Call on **25 April 2022**	Industry Outline Proposal submission *(Encouraged to be submitted by 20 May 2022)*	Industry Full Proposal submission under existing implementation lines. Letter of Support from Relevant Delegate(s) shall be provided with Full Proposal For Demonstration Projects, a letter of interest from at least one user/customer shall be provided with the Full Proposal	**Call closure** **31 October 2022**

The Call is planned to be implemented according to the following approach:

- **Step 1** - Call opens on 25 April 2022.

- **Step 2 -** Interested Bidders are requested to submit their outline proposal(s) using the Outline Proposal template[9].

  The Outline Proposal should provide the initial idea of what the Bidder would like to propose, elaborated on the basis of the thematic areas use cases (either those proposed in Annex A, or others selected by the Bidder).

  The completed Outline Proposal shall be uploaded using the online web form[10].

  The name of the Outline Proposal file must be *OP_SiRtHC_ProjectName* (the words SiRtHC shall not be removed).

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[9] https://business.esa.int/sites/business/files/Outline%20Proposal%20Template.docx
[10] https://business.esa.int/form/thematic-call-space-in-response-

It is strongly recommended that Bidders inform relevant ESA National Delegations about their plans at an early stage.

Following an assessment of the Outline Proposal, ESA will provide feedback to the Prime, aiming to provide a reply within 14 working days following the submission of the outline proposal.

ESA feedback may request further clarifications prior to proceeding to Full Proposal preparations. To this end, individual bilaterals between ESA and Bidders may be organised prior to Step 3.

ESA might also consult, when necessary, with the relevant National Delegation(s) for orientation and will provide key information (e.g. title, cost, price, subcontractor) to the relevant National Delegation(s).

Subject to a positive evaluation of the outline proposal and the Bidder having informed the National Delegation(s), the Bidder will be notified by ESA and invited to submit a full proposal.

- **Step 3 -** The Bidder will submit the full proposal, based on a template provided by ESA. The Full Proposal builds on the content from the Outline Proposal adding some new sections, and providing (where required) more detail. The Full Proposal must be accompanied with the Authorisation of Funding (AoF) from the relevant National Delegation(s), and in the case of Demonstration Projects it must also contain the letter(s) of interest from potential users/customers. Following a positive assessment by ESA the proposed activity will be approved for implementation.

8.2. Evaluation Criteria

The evaluation process is non-competitive. Each proposal will be assessed individually on its own merits, according to the evaluation criteria applicable for CALL FOR PROPOSALS FOR DOWNSTREAM APPLICATIONS IN ARTES 4.0[11] (esa star ref.: 1-10494).

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[11] https://esastar-publication.sso.esa.int/ESATenderActions/details/6900

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8.3. General Conditions

The submissions and all correspondence relating to it shall be in English.

The tender should not contain any Classified Information, whether in the Outline Proposal or in the Full Proposal. However, if the Bidder considers necessary to include Classified Information in the proposal, the Bidder shall inform beforehand the Security Officer.

To avoid any confusion with Classified security markings, the unclassified protective marking used by the Bidder in the proposal shall not contain the terms: "Restricted", "Confidential", or "Secret".

Bidders are informed that Classified Information can be shared with ESA only in compliance with the Project Security Instruction (PSI) duly established by the Agency beforehand and subject to the approval by the ESA Member States.

The Agency will treat commercially sensitive or proprietary information confidentially and solely for the purpose of the assessment of the response.

Expenses incurred in the preparation and dispatch of the response to the announcement will not be reimbursed. This includes any expenses connected with a potential dialogue phase.

The announcement does not bind the Agency in any way to place a contract. The Agency reserves the right to issue amendments to the announcement.

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9. ANNEX A: USE CASES

For the purpose of this activity, the Agency has established contacts with several stakeholders who have expressed their interest in being involved in the activity, providing feedback and contribute with inputs towards successful development and implementation of the project(s).

Requirements and use cases have been collected from the following stakeholders:

1. International Organisation for Migration (IOM),
2. Institute of Economics and Peace (IEP),
3. United Nations Children's Fund (UNICEF),
4. Norwegian Refugee Council (NRC),
5. United Nations Satellite Centre (UNOSAT)

9.1. International Organisation for Migration (IOM)

9.1.1. About IOM

The International Organization for Migration (IOM) is a United Nations agency that provides services and advice concerning migration to governments and migrants, including internally displaced persons and migrant workers.

In 2004, IOM developed the Displacement Tracking Matrix (DTM). The Displacement Tracking Matrix (DTM) gathers and analyses data to disseminate critical multi layered information on the mobility, vulnerabilities, and needs of displaced and mobile populations that enables decision makers and responders to provide these populations with better context specific assistance.

9.1.2. Areas of interest

Population verification: To conduct shelter and population counts of displacement sites/camps as a way of providing population estimates for specific areas. These datasets are used to be triangulated against the DTM on the ground assessments.

Definition of sampling frameworks: To identify urban areas (meso) and building footprints (micro) to better identity the on the ground assessment locations for the field enumerators.

Clear definition of assessment areas will enable for more accurate assessments and enable the field teams to better respect the sampling framework.

Flood water mapping: To identify areas of standing water after severe flooding events, to identify households and IDP sites which have been impacted by flooding. By overlapping displacement locations with flood affected areas, then this will help target those affected for detailed household assessments to better humanitarian aid.

9.2. Institute of Economics and Peace (IEP)

9.2.1. About IEP

The Institute for Economics & Peace (IEP) is an independent, non-partisan, non-profit think tank dedicated to developing metrics to analyse peace and to quantify its economic value. It does this by developing global and national indices, calculating the economic cost of violence, analysing country level risk, and understanding Positive Peace.

IEP is best known for the Global Peace Index (GPI), an annual ranking of 163 countries on their levels of internal and external peacefulness. The GPI is considered the world's leading measure of international peacefulness. It has raised significant awareness about the drivers and indicators of peace and has become a valued resource used by academics, intergovernmental organisations, and governments around the world. It is now referenced in over 2,000 books. Other annual publications include the Global Terrorism Index and the Ecological Threat Report.

IEP was founded in 2008 and has offices in New York City, Mexico City, Brussels, Harare, and is headquartered in Sydney.

9.2.2. Areas of interest

Positive Peace

The Positive Peace Index (PPI) was constructed after IEP has analysed over 24,700 different data series, indices and attitudinal surveys in conjunction with current thinking about the drivers of violent conflict, resilience and peacefulness. The result is an eight-part taxonomy of the factors associated with peaceful societies. The eight domains, or Pillars of Positive Peace,

were derived from the data series that had the strongest correlation with internal peacefulness as measured by the GPI. Each of the eight PPI Pillars is measured by three indicators. These represent the best available globally-comparable data with the strongest statistically significant relationship to levels of peace within a country.

The eight key factors of Positive Peace are as follows:

Well-functioning Government – A well-functioning government delivers high-quality public and civil services, engenders trust and participation, demonstrates political stability, and upholds the rule of law.

Sound Business Environment – The strength of economic conditions as well as the formal institutions that support the operation of the private sector. Business competitiveness and economic productivity are both associated with the most peaceful countries and are key to a robust business environment.

Equitable Distribution of Resources – Peaceful countries tend to ensure equity in access to resources such as education, health and, to a lesser extent, equity in income distribution.

Acceptance of the Rights of Others – Peaceful nations enforce formal laws that guarantee basic human rights and freedoms and the informal social and cultural norms that relate to behaviours of citizens.

Good Relations with Neighbours – Harmonious relations with other countries or between ethnic, religious, and cultural groups within a country are vital for peace. Countries with positive internal and external relations are more peaceful and tend to be more politically stable, have better functioning governments, are regionally integrated and have lower levels of organised internal conflict.

Free Flow of Information – Free and independent media disseminates information in a way that leads to greater knowledge and helps individuals, business and civil society make better decisions. This leads to better outcomes and more rational responses in times of crisis.

High Levels of Human Capital – A skilled human capital base reflects the extent to which societies educate citizens and promote the development of knowledge, thereby improving economic productivity, care for the young, political participation and social capital.

Low Levels of Corruption - In societies with high levels of corruption, resources are inefficiently allocated, often leading to a lack of funding for essential services, which in turn can lead to dissatisfaction and civil unrest. Low corruption can enhance confidence and trust in institutions as well as improve the efficiency of business and the competitiveness of the country.

It is essential to note that Positive Peace is a systemic framework. The Positive Peace framework can be understood along systems-thinking lines: while implementing one pillar may bring about benefits, societal change and progress is accelerated when all eight pillars are simultaneously activated. Furthermore, pillars are highly intertwined and interdependent. For example, when levels of corruption are lowered, a sound business environment can be strengthened and/or information may flow more freely; and the inverse of this could also be true.

Results Associated with Positive Peace Implementation

Due to its systemic nature, improvements in Positive Peace not only strengthen peace, but are also associated with many other desirable outcomes for society, such as higher GDP growth, better measures of wellbeing, higher levels of resilience and more harmonious societies.

As is explained in the 2022 Positive Peace Report, when a country increases investments into the eight pillars, they become more peaceful but also are more resilient, are associated with robust and thriving economies, have better performance on ecological measures, have higher levels of wellbeing and happiness, stronger measures of social cohesion, and greater satisfaction with living standards and more. As a result, Positive Peace can be described as creating an optimal environment for human potential to flourish.

What we've discovered at IEP is that social systems with higher degrees of resilience are capable of offering more effective protection to their citizens against adverse shocks, whether political, environmental or economic. High-resilience societies are also more likely to take advantage of positive disruptions or opportunities arising from the creation of new economic paradigms and technological innovation. Frequently, after experiencing shocks, societies high in Positive Peace evolve systemically to be stronger and more capable of recovering from future shocks.

Below are some examples of the correlations that exist with higher levels of Positive Peace[12]:

To learn more, please see our full 2022 Positive Peace Report and the Ecological Threat Report on www.visionofhumanity.org

Example: How to apply the Positive Peace Framework to your project

Through the ESA Humanitarian project, the Positive Peace Framework will guide the selection process to ensure that projects are effective and efficient when building resilient societies within and outside of Ukraine. By engaging with each of the pillars, societal transformation can be supported in the long-term and unintended consequences can be minimalised.

It's with these goals in mind that we ask each applicant to reflect on their project idea and list which Positive Peace pillar their project will support and to explain how.

To help illustrate how this could work, please find an example of some pillars that could be activated by designing a project around 'protection of the provision of education':

- High levels of Human Capital: This project will directly contribute to the continued education of children/youth
- Free Flow of Information: This project will contribute to the free flow of information, as it will engage in a communications strategy to ensure that families and individuals know how to access education
- Equitable Distribution of Resources: This project will supply resources and promote education for all children and youth regardless of their ethnicity, gender, religion, economic background, etc.

Each project individually does not need to activate all eight pillars. Our hope is that the comprehensive programme will engage as many pillars as possible to create positive feedback loops and further build resilience, peace, and development in Ukraine.

Following the selection of projects, if funding is available, IEP would be able to host workshops with project participants to build capacity around Positive Peace and systems-thinking, and to

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[12] https://www.visionofhumanity.org/wp-content/uploads/2022/02/PPR-2022-web-1.pdf https://www.visionofhumanity.org/wp-content/uploads/2021/04/PPR-2020web.pdf

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increase understanding of how their work and projects directly contribute to building peace and resilience.

9.3. United Nations Children's Fund (UNICEF)

9.3.1. About UNICEF

UNICEF works in the world's toughest places to reach the most disadvantaged children and adolescents – and to protect the rights of every child, everywhere. Across more than 190 countries and territories, we do whatever it takes to help children survive, thrive and fulfill their potential, from early childhood through adolescence.

The world's largest provider of vaccines, we support child health and nutrition, safe water and sanitation, quality education and skill building, HIV prevention and treatment for mothers and babies, and the protection of children and adolescents from violence and exploitation.

Before, during and after humanitarian emergencies, UNICEF is on the ground, bringing lifesaving help and hope to children and families. Non-political and impartial, we are never neutral when it comes to defending children's rights and safeguarding their lives and futures.

9.3.2. Areas of interest

UNICEF is interested in use cases and projects that support vulnerable children and their families with essential services – including health, education, protection, water and sanitation – as well as life-saving supplies.

9.4. Norwegian Refugee Council (NRC)

9.4.1. About NRC

The Norwegian Refugee Council (NRC) is an independent humanitarian organisation helping people forced to flee. NRC works in crises in more than 30 countries, where the organisation helps save lives and rebuild futures. NRC delivers high-quality aid where needs are greatest. When NRC started relief efforts after World War II, humanitarian needs were critical. They still are – and NRC is still there, protecting people forced to flee and supporting them as they build a new future. Today, NRC works in both new and protracted crises across more than 30

countries, where NRC provides camp management, food assistance, clean water, shelter, legal aid, and education.

9.4.2. Areas of interest

The NRC is involved in the use of geodata and maps for the Ukraine crisis. Use cases include live maps on market assessment, cash assistance and financial services, access and emergency assessment, shelter and infrastructure assessment.

Additionally, NRC is using GNSS data to identify changes in commercial shipments to understand trends in market and supply routes that could influence future programming.

9.5. United Nations Satellite Centre (UNOSAT)

9.5.1. About UNOSAT

UNOSAT is the United Nations Satellite Centre, hosted at the United Nations Institute for Training and Research (UNITAR). UNITAR's mission is to promote evidence-based decision making for peace, security and resilience using geo-spatial information technologies. UNOSAT provides the United Nations funds, programmes and specialised agencies with satellite analysis, training and capacity development, at their request. UNOSAT also supports the UN Member States with satellite imagery analysis over their respective territories and provides them with training and capacity development in the use of geospatial information technologies.

9.5.2. Areas of interest

UNOSAT's interest lie in providing evidence-based decision making for peace, security and resilience using geo-spatial information technologies. Use cases include live maps and analytical reports which allow users to interact with UNOSAT's analysis in an intuitive manner, allowing easy visualisation of the affected areas, and allowing users to focus on what interests them most, giving a better local understanding of the situation. These maps are updated as new data is available over the course of an event/ crisis. UNOSAT has particular interest in how AI (e.g. deep learning-based algorithms) can be applied on SatEO imagery to automatically estimate the level of damages an area has suffered.