# Satellite Technology for Humanitarian Decision Making



## **USER INSIGHTS AND LANDSCAPE RESEARCH**



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## Background

This document was originally developed by Caribou Space as a private-domain deliverable for the UK Humanitarian Innovation Hub, a pilot initiative of the Foreign Commonwealth & Development Office (FCDO). The document was produced as part of a project focusing on the use of satellite technologies in humanitarian decision-making and in follow-up to the <u>Beyond Borders</u> research, published in 2022.

The Beyond Borders research identified a dozen barriers that may be delaying or preventing the use of satellite-enabled data in humanitarian decision making. This document is a deeper analysis of three of those barriers, arranged as a set of eleven key insights:

- Low awareness of potential use cases or resistance to or mistrust of these tools.
- Low technical expertise, restricting the use of satellite technology.
- Concerns relating to the ethics of using satellite data and privacy and security implications of its use and storage.

### Methodology

These insights were distilled from a combination of two sources: 'user' level interviews and desk research into the current landscape of initiatives.

#### **User Interviews**

User interviews were carried out with around 15-20 humanitarians who have decision-making responsibilities and who may or may not already be using satellite data to support those decisions. In some cases we interviewed Geographic Information System (GIS) experts working within humanitarian organisations that could present the perspective of 'users', given their responsibilities for supporting colleagues to adopt geospatial information.

The following topic areas were explored during interviews:

- Interviewees' roles, objectives and decision-making responsibilities.
- Awareness of, and familiarity with, satellite technology and its potential use cases in the humanitarian sector.
- Awareness of resources that could support the uptake of satellite technology.
- Concerns or questions relating to the use of satellite technologies.
- Factors that could make interviewees more (or less) likely to use satellite technologies to make decisions.

#### **Existing Initiatives**

The user interviews were complemented with desk research into existing initiatives that have been established to address the three barriers mentioned above. The aim of this research was to understand the nature of the support or service being offered, to analyse the diversity of similar offerings and to identify any potential limitations or gaps in the offering.

Some of the initiatives selected were specific to humanitarian contexts, whilst others had a broader thematic focus. Similarly, while some initiatives were specific to the use of satellite-derived information, others focussed on other technologies and data sources.

## The research conducted was not intended to be exhaustive and initiatives mentioned in this document are used as indicative examples only.

### Acknowledgements

We would like to thank representatives from the following organisations who made themselves available for interviews: • Amnesty

- BRCiS (Building Resilient Communities in Somalia)
- British Red Cross
- Digital Earth Africa
- Humanitarian OpenStreetMap
- International Committee of the Red Cross (ICRC)
- International Federation of the Red Cross and Red Crescent Societies (IFRC)
- International Organisation for Migration (IOM)
- Map Kibera
- Norwegian Refugee Council (NRC)
- Solidarités International
- The World Bank
- UNICEF
- United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA)
- Voluntary Service Overseas (VSO)



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### INSIGHT 1: AWARENESS OF POSSIBLE USES IS GENERALLY GOOD, BUT STRONGEST IN CLIMATE AREA

#### **PROBLEM STATEMENT**

Levels of awareness of the potential uses for satellite data have increased significantly over the past five years with most humanitarians being open to use satellite imagery for operational purposes. However, while awareness of climate-related use cases is high, the case for using satellite data in other areas is less well understood.

#### **USER INTERVIEWS**

Based on the user interviews, it seems that humanitarians overall are becoming more aware of the potential use cases of satellite imagery, and increasingly open to use satellite imagery for operation purposes. Some users pointed to the increased awareness around climate change compared to other potential use cases.

"Interest and the awareness of climate data is there. Earth observation is the only player in the game for a large range of climate variables. In other use cases, the awareness and use cases are much less clear"

"Reception around the use of satellite data for sudden onsets has increased dramatically – that is, within the humanitarian community that is largely dominated by Westerners."

#### **EXISTING INITIATIVES**

There are various initiatives that are trying to raise awareness of other use cases beyond climate through knowledge hubs, catalogues and other repositories e.g., Caribou Space's Space for Development is a knowledge hub where users can find internal resources, such as the Beyond Borders Report, and similar repositories including Eurisy's Space Service Hub and Esri's Humanitarian GIS Hub.



#### **REMAINING GAPS**

Existing initiatives either only provide information on their own initiatives (e.g., Esri's Humanitarian GIS Hub), or only include a limited number of use cases (e.g., Eurisy). Additionally, there seems to be limited options for community engagement through forums or one-to-one chats. This can restrict community empowerment, limiting their ability to actively participate in and contribute to satellite technology initiatives. Moreover, knowledge hubs operate in isolation and are not integrated within the broader ecosystem of similar initiatives, which can limit their growth potential and influence. In fact, the lack of a sustainable financial model of some initiatives often results in them becoming obsolete over time failing to incorporate new data, trends and courses.

#### IMPACT AND POTENTIAL CONSEQUENCES

The immense progress that has been made with the use of satellite data amongst humanitarians is not spread across all use cases, despite the existence of online repositories of use cases and knowledge hubs covering various thematic areas. Without an awareness of the various potential use cases of satellite-enabled data, field responders and other decision-makers in the humanitarian sector are missing out on key applications of satellite data, such as for infrastructure mapping in conflict zones.

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## INSIGHT 2: THE BUSINESS CASE TO USE EO IS NOT ALWAYS CLEAR

#### **PROBLEM STATEMENT**

Data itself, and the acquisition of skills to use, process and interpret data and analytical insights requires an investment of time and money, which are both in short supply . When faced with a decision to try new things, humanitarians take comfort and gain confidence from success stories and evidence of impact.

#### **USER INTERVIEWS**

Users noted that financial and time pressures in humanitarian organisations are significant barriers to using satellite-derived tools and decision support information. Users also stressed the importance of humanitarians understanding the potential value of these tools to their work, and having access to success stories that will support the 'business case' to invest resources into these approaches.

"I think it really depends from country to country, as well as how innovative your line manager is... I have worked with several organisations in Kenya that are really pro innovation and trying out new things, but others do not want to take the risk as they are working with vulnerable people".

"Humanitarian coordination teams often do not have the time to be aware of what's there in terms of the latest technologies"

#### **EXISTING INITIATIVES**

There are various initiatives that aim to justify the cost and time invested in satellite data by showing success stories and evidence of impact. For example, the Anticipation Hub includes a page on success stories, where users can find brochures, fact sheets and news items showcasing how acting early can save lives. Similarly, Google Earth Outreach includes enables users to "Get Inspired" by organizations who have used Google mapping tools for good and the impact it had on the society.



### **REMAINING GAPS**

Though it is true that there are many use cases and success stories, the true impact of the project is rarely measured. For those that claim impact, there is a lack of clear evidence showcasing this. Additionally, an area that is often neglected, particularly in humanitarian projects is cost effectiveness, despite cost being a key barrier for humanitarians to adopt satellite technologies. Many initiatives lack an M&E mechanism that ensures that the accountability for affected people is effectively fulfilled (e.g. UNHCR Emergency Handbook and MapAction).

### IMPACT AND POTENTIAL CONSEQUENCES

Without M&E mechanisms integrated in projects, the business case to use EO will remain unclear. Large humanitarian organisations may afford to take risks and adopt new technologies and new data gathered from satellites, but small companies are left behind. Without clear evidence of impact and cost effectiveness, it will not be worth it for many stakeholders, particularly those without a champion of EO technologies as an internal champion.

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## INSIGHT 3: UNREALISTIC EXPECTATIONS OF WHAT CAN BE DONE WITH SATELLITE IMAGERY

#### **PROBLEM STATEMENT**

Increased awareness of the value of satellite enabled data to humanitarians sometimes comes with a rise in the expectations of what data can do. Users need to understand the limitations, and the uncertainties that are inherent in the analytical insights that we extract from satellite imagery.

#### **USER INTERVIEWS**

Interviewees pointed to the mismatch between the expectations and the realities of satellite data. Satellites cannot capture everything always. GIS specialists noted that they often get asked for insights that are virtually impossible for satellites to capture, or that their counterparts fail to acknowledge the realities of probabilistic modelling and statistics..

"Some people see the technology as a holy grail. They need to understand that satellite data is just one piece of the puzzle. Even in an organisation that has a huge appetite to use technology it's still misunderstood." "We need to get people to realise that if there is a 70% chance of something happening, that means there is a 30% chance of it not happening. Balancing this communication is challenging."

#### **EXISTING INITIATIVES**

It is difficult to manage the expectations of satellite imagery through initiatives. Some initiatives provide guidelines on how to assess the accuracy of the analysis e.g. ArcGIS offers a workflow on how to assess the accuracy of orthomosaics and elevation models, which could then help users better understand the probability of e.g., a disaster occuring. There are several initiatives aiming to increase data literacy amongst users, e.g. the Global Partnership for Sustainable Development Data provides resources and organises events that aim to increase the digital literacy. Caribou Space have conducted and published impact evaluations and cost-effectiveness analysis of funded demonstration projects using satellite-derived decision support tools.



#### **REMAINING GAPS**

We rarely see the challenges or failures that were experienced in the application of satellite data for humanitarian organisations. The focus is often on aiming to increase its uptake and showcase its value, and less energy is put to understanding its limitations and how to understand the accuracy of predictive models. There is a thin line between these two areas, but the focus on the former in initiatives has exacerbated the unrealistic expectations that users have.

#### IMPACT AND POTENTIAL CONSEQUENCES

Unrealistic expectations are rarely met, and when they are not met people lose trust in the technology. If humanitarians expect satellite data to do things it cannot this may deter them from using it in the future. Moreover, not understanding the probability of a satellite-enabled analysis being wrong can be dangerous, and in the case of humanitarian events fatal. Users need to understand the limitations, and that satellites cannot predict with 100% accuracy.





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### INSIGHT 4: CAUTION OVER THE APPLICATION OF NEW APPROACHES AND THE ADOPTION OF NEW TOOLS

#### **PROBLEM STATEMENT**

Satellite data can be processed using different methodologies and users may not know which technical methods to trust. The possibility of misinterpretation also makes it harder for a user to trust insights.

#### **USER INTERVIEWS**

On one hand, GIS experts recognise that they can be biased when interpreting data in order to deliver imagery that aligns with what decision makers are hoping to see. Experts also recognise the risk of misinterpreting data based on the particular difficulty of triangulating satellite imagery with ancillary data sources. Some users said that they do not always trust the analysis and interpretations and they are concerned at the possible repercussions of poor decisions.

*"I don't have all the information - there are so many gaps in satellite imagery. This makes the potential for failure much higher. This is largely because the humanitarian sector is so dynamic.* 

"They're too willing to trust it...it's kind of an unquestioning approach that's not really nuanced if you don't take a very structured and accountable analytical framework to use the data and to integrate it into how you're making decisions."

#### **EXISTING INITIATIVES**

Some organisations have standards and practices by which their employees need to comply, e.g. NASA's ESDIs Standards Coordination Office (ESCO) opines on data quality, data formats and data usability. Similarly, ACAPS has an "our Approach" section in which it explains what decisions are made, who makes them and what information is needed to make them. For example, ACAPS states that it verifies all primary and secondary sources of information. Success stories and first hand support and guidance can also give humanitarian practitioners more confidence to experiment with new approaches



#### **REMAINING GAPS**

When looking into standards and practices there are often written in legal jargon that other users find it hard to understand. Additionally, there is no way of ensuring whether the initiative has complied with its standards and approach. It seems that beyond having a general principles tab, there is little that initiatives do to assure users that they can trust the data - this is largely left to one-to-one cases and building trust over time.

#### IMPACT AND POTENTIAL CONSEQUENCES

If humanitarians cannot trust the data then it becomes devalued. Satellite data does not exist in a vacuum; the aim is for it to support decision-makers and be used to improve insights. Building trust is difficult if misinterpretation exists. Particularly in the humanitarian world, misinterpretation is incredibly dangerous as the wrong decision can lead to a loss in lives.

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## INSIGHT 5: TOOLS ARE TOO THEORETICAL FOR USE IN REAL-LIFE HUMANITARIAN CONTEXTS

#### **PROBLEM STATEMENT**

While academic studies have shown the potential for satellite data to inform decision-making, some of the concepts fail to be operationalised. Tools that are fully integrated into decision-making processes, workflows and operating systems are much harder to come by because that integration and operationalisation is often difficult.

#### **USER INTERVIEWS**

Users need tools that are 'plug-and-play', in a format and language that is readily integrated into their existing processes. Practical, hands-on training is also considered to be more effective. Long communication chains may exist between those developing a tool in an HQ and those that make decisions based on the information at a village level - and the mechanism for offering feedback on whether and how information was used rarely exists.

"... we took a boat for hours to get to that village and they just got a new cell phone tower and they don't even have a good connection. And there are no other technology that you know, your whatsapp calls are not gonna work, your phone calls are not gonna work." "There's so many really good research studies into specific situations to do with satellite imagery. Some of the methodology is super groundbreaking. But because it's a one-off study that's been delivered to a journal, it doesn't get opeationalized."

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#### **EXISTING INITIATIVES**

There are various initiatives that aim to provide humanitarian practitioners with data, methodologies, training data, algorithms and imagery for use in day-to-day decision-making and programming. There is also a huge number of training courses, webinars, scenario-based exercises, tutorials and toolkits available online and through in-person delivery.



#### **REMAINING GAPS**

Tools and training courses are not always fully accessible to humanitarians working in remote locations or those with poor infrastructure, or in non-English speaking environments. They may also be too generic or broad for many humanitarians to really value the experience. Finding the time and the funding to follow a dedicated training course on GIS can be difficult for those working in budget constrained humanitarian organisations. Funding has been directed towards many new tools and cutting edge research that have not yet been taken up to deliver value to affected communities.

#### IMPACT AND POTENTIAL CONSEQUENCES

Despite many proven concepts coming out of research institutions and demonstration pilots, many of these tools may fail to deliver the operational outcomes that they were designed to deliver. It is possible that funding will continue to be invested into duplicative or under-utilised initiatives or resources at a time when all budgets are constrained and there is a need for practical and cost-effective solutions.



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## INSIGHT 6: HUMANITARIANS DO NOT HAVE EQUITABLE ACCESS TO TECHNICAL SUPPORT

#### **PROBLEM STATEMENT**

In order to take advantage of the huge volumes of open data and tools for the benefit of humanitarian activities, many practitioners require advice from a technical specialist. Technical expertise tends to be concentrated in global HQ teams and a small number of regional hubs, but is limited in many countries, especially post-conflict contexts.

#### **USER INTERVIEWS**

With a wealth of resources that are open-access and publicly available, many humanitarians struggle to know where to turn, what to trust and how to use the available information without guidance from a technical expert. In the absence of a single industry standard data source, this kind of expertise is valuable . Many of the larger humanitarian organisations now have central GIS/ IM teams but more work is needed to improve communication between and to facilitate access to these teams to all who need it.

"There are some big operations where we have a GIS officer or people who better understand distribution. There are some small offices where they cannot afford a GIS specialist." "Throwing in observation data without any clear, coherent framework or knowledge of how to use it responsibly...you end up with a lot of bad numbers and the usage of data that could be easily politicised or, misinterpreted."

#### **EXISTING INITIATIVES**

A number of humanitarian organisations, particularly INGOs have established GIS teams or in-house Information Management units. There has been an increase in the recruitment of humanitarians with more technical skill sets and expertise in GIS, remote sensing and data science, with these people either embedded in operational teams or providing support from a central function. Smaller organisations may not yet have in-house expertise and so are more reliant on publicly available resources.



#### **REMAINING GAPS**

In the absence of dedicated technical advice and support, many humanitarian practitioners struggle to know where to find the tools that are most useful for their job. The customisation of satellite-enabled data and tools needs to be carried out by someone who understands the needs of the decision maker and adapt the tools to suit those needs. Despite an increase in highly skilled technical data analytics and geographers in the humanitarian sector, some countries and some organisations still lack sufficient expertise for their requirements either because of a lack of suitably qualified graduates or because of a loss of talent during times of national crisis.

#### IMPACT AND POTENTIAL CONSEQUENCES

The analytical process that enables someone to extract some data and understand the policy or programming implications can be complicated and may lead humanitarians to retain tried-and tested methods rather than explore new opportunities, unless they can access technical support easily.



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### INSIGHT 7: PROVISION OF DATA AND TRAINING IS NOT ALWAYS FIT-FOR-PURPOSE

#### **PROBLEM STATEMENT**

Some of the products and information dashboards that are made available are too generic or are not necessarily responsive to the identified user needs of humanitarian practitioners.

#### **USER INTERVIEWS**

In the aftermath of an event, obtaining data of sufficiently high resolution or covering a suitably large scale is not always possible due to technical reasons (e.g. cloud cover) or cost constraints for accessing commercial data. Other monitoring dashboards to support early action or slower-onset crises may not contain the full complement of indicators that an organisation is interested in, leading organisations to aggregate their own data from various sources.

"When you look at what training is available...if you just look or Google....there's not much if you type in humanitarian and then whatever you're looking for...satellite imagery is more related to other sectors which are a lot more developed and also (for) their workflow and process."

"They are designed with a purpose...and therefore, when a data set is not designed for you or the methodology is not designed for you, it's very hard to use."

#### **EXISTING INITIATIVES**

There are a number of knowledge repositories that provide access to datasets, webinars, blogs and analytical insights geared towards humanitarian practitioners, but they are not always specific to one or more of the humanitarian clusters and their operational needs.



#### **REMAINING GAPS**

Despite an increase in commercial high resolution optical data, high subscription costs, technical challenges and data licensing restrictions prevent all organisations from having access to the imagery that they might need in the aftermath of a sudden onset crisis. Training resources are highly fragmented and there is no one-stop shop for introductory training on the use of geospatial or EO data - many resources appear to be difficult to navigate for someone with limited existing knowledge and/ or technical skills.

### IMPACT AND POTENTIAL CONSEQUENCES

Unless resources can be made relevant for more humanitarian practitioners, there will continue to be a reliance on small technical teams to support a large humanitarian workforce in these technical areas.



## INSIGHT 8: LANGUAGE BARRIERS BETWEEN TECHNICAL AND NON-TECHNICAL STAFF

#### **PROBLEM STATEMENT**

The use of inaccessible technical jargon and acronyms by technical teams can be alienating for other parts of the humanitarian community

#### **USER INTERVIEWS**

The use of overly technical terms about data, processing techniques and imagery can be confusing and overwhelming for humanitarian practitioners and may dissuade practitioners from engaging with GIS teams. Technical teams have a short window of opportunity to demonstrate the added value of their information to non-technical staff and decision makers who are time and resource-constrained. As far as possible technical teams should 'work back' from the key decisions that their counterparts need to make in order to find the most relevant ways to support those decisions with information.

"You could see that glaze that happens sometimes if you're going down a rabbit hole asking them to listen to you, which is fair enough because they haven't got enough time."

*"It's always, two different types of people in the room speaking different languages and it doesn't work."* 

#### **EXISTING INITIATIVES**

Knowledge hubs, communications efforts (e.g. blogs, videos, news stories) and conferences are all effective means to bridge the gap between those in technical satellite applications and services industry and those working on humanitarian issues.



#### **REMAINING GAPS**

There is still a tendency for technical experts to describe products in overly complex language and to promote efforts in the humanitarian sector to a research, technical or scientific community rather than to those working in the humanitarian sector or in governments and international organisations. Presenting at specialist GIS conferences should could be complemented with attendance at more mainstream humanitarian forums in order to reach new audiences.

#### IMPACT AND POTENTIAL CONSEQUENCES

Adjusting the use of language and communications styles could lead to more effective collaboration between technical staff and potential 'end users' of satellite-derived information for humanitarian decision-making



## INSIGHT 9: ETHICAL CONCERNS AROUND THE USE OF IMAGERY IN CERTAIN CONTEXTS

#### **PROBLEM STATEMENT**

In fragile and conflict situations, it may be politically sensitive to use imagery or ancillary data to inform decision making, but there is currently no clear set of operating principles or ethical guidelines to which humanitarian organisations are adhering.

#### **USER INTERVIEWS**

Users raised legitimate concerns that the use of satellite imagery in some contexts could be a delicate issue and that the use of and subsequent ownership of certain types of data can be a source of tension. Issues relating to data privacy were commonly seen to be upstream issues that are commonly dealt with by the satellite operators and data resellers, but most humanitarian organisations have also established their own risk assessments and operating guidelines to ensure the protection of those they aim to support.

"We had data ethic guidelines which we did adhere to... it wasn't 100% necessary, but I think from a reputational perspective, it was kind of a requirement....if you're a humanitarian organisation, you need to adhere to the humanitarian principles and you need those ToRs and procedures in place to ensure that you do".

"We have our own methodology but it's a bit ad- hoc at this point in time, I would say, but we try to protect our interviewees, we try to protect populations of people. If something is very dynamic, we won't put out a satellite image right after it's happened. "

### **EXISTING INITIATIVES**

There are shared humanitarian principles that all organisations adhere to and have at the core of their code of conduct. Organisations have been developed their own guidance for the use of data including principles related to sharing and managing high resolution imagery and ancillary data, particularly in fragile and conflict-affected contexts.



### **REMAINING GAPS**

Some global initiatives are working on ethical principles specific to the use of geospatial information, but these do not seem to have infiltrated into humanitarian practice.

### IMPACT AND POTENTIAL CONSEQUENCES

There is some precedent in the digital development sector and society more generally of mobile phone data and personal identifiable information being misused and action being taken somewhat retrospectively to redress past errors. There is an opportunity for ethical considerations to be taken into account at an earlier stage of satellite data usage and to focus efforts and attention on these issues.

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## INSIGHT 10: SATELLITE TOOLS NEED TO BE ADAPTED TO THE FAST PACE AND THE COMPLEXITY OF CRISES

#### **PROBLEM STATEMENT**

Things move quickly during a sudden onset crisis and satellite imagery has an important role to play before ground teams can gather information. When there is more time, such as in peace time or in more protracted crises, there is more time to train people up to be more technically-minded and to use satellite imagery.

### **USER INTERVIEWS**

When a sudden onset crisis or event unfolds, the information needs in the first 24-36 hours are paramount. In a high-profile event with a lot of media attention, first responders can sometimes become overwhelmed with information as many players move to support the response. However sometimes optical imagery is not appropriate to support the scale of crisis, or technical or financial factors prevent organisations from using it. Sudden onset events do not lend themselves to experimenting with new approaches or adopting innovation – this is more likely to be possible during peacetime.

"A lot of funding investment research went into processing optical data, very high resolution, optical data with machine learning Al models. These are great models. I absolutely think it has done a great job...but it's not the most useful in terms of the disaster response of scale."

"The challenge sometimes is maybe on budget. If it's not something you can just wake up and say today, I need an image for this area because you need to budget for that."

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### **EXISTING INITIATIVES**

The international community relies on the International Charter Space and Major Disasters for rapid response provision of satellite data upon activation after a major disaster. A number of other agencies and companies provide rapid response imagery for sudden onset crises



### **REMAINING GAPS**

Despite significant funding and resources being directed towards high resolution optical imagery, radar data is not as heavily utilised for damage estimation immediately after a disaster.

### IMPACT AND POTENTIAL CONSEQUENCES

Sudden onset crisis situations are high pressure, fast-paced situations that have characteristics that both lend them to the use of satellite imagery and make the process of facilitating that usage more difficult.



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## INSIGHT 11: IT'S A CROWDED LANDSCAPE WITH, AT TIMES, A LACK OF COHERENT APPROACH

#### **PROBLEM STATEMENT**

There can be a lack of coordination as humanitarian crises unfold leading to a duplication of efforts and/or fragmentation of resources. High profile events tend to draw in increased support from a wider number of players.

#### **USER INTERVIEWS**

Interviewees complained of a lack of a one stop shop for all the data that they need. They are often having to look at multiple platforms and resources to find what they are looking for, which is time humanitarians particularly don't have. In a high-profile event with a lot of media attention, first responders can sometimes become overwhelmed with information as many players move to support the response.

"Many sources of data either have gaps or they just concentrate on one indicator. But we need to look at rainfall, at vegetation, at the condition of pastures. We need a one stop shop with all these indicators so that we can make sure to get to the right communities"

"Coordination in conflict settings is often set and very political leaving little space for different partners to work together. There's a coordination problem particularly in platforms."

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#### **EXISTING INITIATIVES**

Several initiatives have tried to create a place where humanitarians can gather insights and other resources. For example, EO Africa offers a variety of services including leveraging digital tools, reinforcing capacity and facilitating R&D. Others have aimed to facilitate knowledge exchanges, learning and guidance e.g., the Anticipation Hub allows practitioners in the anticipatory action landscape to innovate, exchange and collaborate through.



#### **REMAINING GAPS**

Due to a lack of collaboration between organisations, as well not being integrated with broader initiatives, various initiatives have become isolated and have not been integrated within the broader ecosystem limiting their potential for influence and impact. This can also result in duplicated efforts. Also, many platforms, tools and initiatives lack a community platform where users can interact, share insights, and collaborate on projects.

#### IMPACT AND POTENTIAL CONSEQUENCES

Humanitarians who are not using satellite-enabled data often don't know where to start. Moreover, if organisations and initiatives continue to operate in isolation or only coordinate with the same partners again and again this will stifle innovation and risk them becoming stagnant.

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