COMMON SPACE

**Brief: An Independent, Community-Based Satellite Mission**

**INTRODUCTION**

Our goal is to deliver high-resolution optical imagery where it's needed most – driven by impact, not profit. In an age of increasing misinformation, polycrises, and a lack of government leadership, we need every tool at our disposal to reduce suffering and save lives. Satellites are more sophisticated and affordable than ever, and now is the right time for an independent satellite mission that serves people's needs, not geopolitical interests. We know that open, high-resolution satellite imagery, when tasked over areas of high need at the right times, can positively impact the most vulnerable. However, too often these images are never taken, let alone requested, because of antiquated business models, complete deference to defense agendas, and an inability of the public sector to rally and collectively address these common issues. We envision a mission that delivers open, high-resolution satellite imagery to those working on the frontlines of change: community organizers, educators, local governments, human rights advocates, journalists, neighborhood leaders. A satellite governed and owned by the people will empower action in the places and moments that matter most—from tracking environmental damage to strengthening civic participation to rebuilding after disasters.

**The Unrealized Societal Impact**

Every day, more than a thousand Earth observation satellites orbit our planet. But most of this data is controlled by governments or sold to the highest bidder. A community-based mission could change that, making space technology more accessible, equitable, and responsive to local priorities. What would it mean for a billion slum dwellers to have open maps of their communities? What would it mean for the two billion people living in conflict affected areas if there was open imagery over their homes instead of a few governments watching conflicts play out? What would it mean for the nearly hundred million people affected by disasters every year – would they have more peace of mind if they knew their homes were still standing? Or could they have helped to avoid the tragedy altogether?

We already have inspiring examples to evidence this impact. In 2015, the Associated Press led an investigation into illegal fishing and human trafficking in Southeast Asia. After the AP convinced the leadership at Maxar to task their satellites, a high-resolution image captured two fishing trawlers likely involved in the illegal transshipment of slave-caught fish. This image, coupled with on-ground accounts, led to the liberation of 2,000 slaves and brought

perpetrators to justice.[1] While this is an incredible example of the value of data in the hands of local decision-makers, such successes are rare due to limited access to high-resolution satellites and tasking, outside of government or defense priorities.

Imagine if we could access the data from the thousands of satellites imaging us every day? Access to timely, high-resolution satellite data could address so many community needs – many of which could be supported with the same mission capabilities.

| **Impact** | **Geographies to Image** | **Number of People Covered** |
|---|---|---|
| Resilient cities | Urban footprints (4.06 million sq km current estimate)[2][3] | 4 billion city dwellers including 1 billion slum dwellers |
| Safety from conflict | Refugee and IDP camps (~15,000 sq km)[4]<br>Displacement paths | 2 billion people who live in countries affected by fragility, conflict or violence, including 108 million people forcibly displaced |
| Prosecuting human rights abusers | Suspected mass graves<br>Detention centers and prisons<br>Conflict-affected villages<br>Election monitoring<br>Protests | In 2024, approximately 62% of the world's 195 countries received a failing grade ('F') for their human rights practices, indicating widespread violations affecting over 4 billion people in these countries.[5] |
| Protecting Indigenous lands | Indigenous lands (~38 million sq km worldwide), especially borders and hotspots like overlaps with terrestrial protected areas, across 90 countries. | 476 million Indigenous Peoples |
| Early warning from the worst hazards | Grow disaster-related capacity from tipping and cueing for early warning to support more response and recovery activities. | 93.1 million people affected by natural disasters worldwide last year, and 86,473 people died |
| Charting a future for the islands | Small island developing states (land mass is 24,111 sq km)[6] plus spot tasking in Exclusive Economic Zones | 65 million small island residents |
| Ending human trafficking | Brick kilns (hundreds of thousands estimated)<br>Ships without AIS on<br>Specific tasking for cases | 27.6 million people being trafficked for labor |

[1] Associated Press. https://www.ap.org/media-center/press-releases/2016/ap-wins-pulitzer-prize-for-seafood-from-slaves-investigation/
[2] https://www.worldbank.org/en/topic/urbandevelopment/overview
[3] https://ourworldindata.org/grapher/urban-land-area
[4] Assumes 50 sq km per refugee camp (to account for largest like Dadaab) and 300 total camps worldwide for a total coverage area of approximately 15,000 sq km.
[5] https://www.uri.edu/news/2024/11/uri-based-report-sheds-light-on-human-rights-abuses-worldwide
[6] https://www.un.org/ohrlls/sites/www.un.org.ohrlls/files/sids_in_numbers_oceans_2020.pdf

| | | |
|---|---|---|
| Nutritious food for all | 2.5 billion ha of smallholder farms equates to 25 million sq km | 500 million smallholder farmers |
| Poverty alleviation | All the sites listed above, especially conflict-affected communities, cities, farmlands | 700 million people living in extreme poverty in low-income countries. Another 3.5 billion live in poverty in middle- and high-income countries. |

One high-resolution satellite could collect between 300,000 and 680,000 square kilometers of imagery daily[7], or roughly 100 to 250 million square kilometers per year.[8] That collection capacity could readily meet the needs of many stakeholders covering cities, small islands, indigenous lands, refugee camps, slavery sites, and more - all representing high impact causes where open data can help protect our planet, reduce suffering, and save lives.

**Why Build an Independent Satellite Mission Now?**

In addition to the growing evidence around the impact of satellite data for societal benefit, there are strong arguments to be made for an independent satellite mission, including (a) economic feasibility through lower costs, technology advancements, and pooling of shared resources, (b) market readiness in terms of increasing demand and ability to leverage a deluge of data.

There are two major considerations in terms of **economic feasibility** - the decreasing costs to launch and build satellites coupled with the increasing investments from philanthropies in digital public infrastructure and satellite data. High-resolution imaging satellites can now be built and launched at a fraction of past costs. Satellite launch costs are also significantly reduced. For example, SpaceX's SmallSat Rideshare Program offers launches starting at $275,000 for payloads up to 50 kg.[9] Satellite manufacturers like Maxar, Planet, and Satellogic are poised to build affordable satellites without major technical sacrifices. Building smaller

[7] A single high-resolution Earth observation satellite's daily imaging capacity depends on factors like revisit rate, sensor type, and orbit configuration. Here are some examples from leading providers:
Maxar's WorldView-3: Approximately 680,000 square kilometers per day at 30 cm resolution.
Planet's SkySat: Around 300,000 square kilometers per day per satellite at ~50 cm resolution.
Airbus's Pleiades Neo: About 500,000 square kilometers per day at 30 cm resolution.
BlackSky's Gen-3: Estimated 1,000,000 square kilometers per day, although at slightly lower resolution (~1 meter).

[8] https://www.eoportal.org/satellite-missions/worldview-3?utm_source=chatgpt.com
https://developers.planet.com/docs/data/skysat/?utm_source=chatgpt.com
https://collections.sentinel-hub.com/skysat/
https://www.orbitalconnect.com/satellite-imaginery
https://earth.esa.int/eogateway/missions/worldview-3

[9] SpaceX: https://www.spacex.com/rideshare/

satellites can save tens of millions of dollars compared to the traditional, larger satellites, and today's average costs for a small satellite can range between $1 and $10 million.[10]

While costs have gone down, spending on satellite data for the greater good has increased. Many donors, like the Norwegians (NICFI), Gates Foundation, NASA, and others have shown a willingness to buy access to commercial satellite data for their grantees and partners. The cost of building and operating a dedicated satellite is comparable to existing expenditures on limited commercial imagery access. Investments like NICFI's $43 million rainforest monitoring program demonstrate a growing appetite for space-based solutions. In fact, NICFI's budget could have covered the cost of building and operating an entire dedicated satellite—yet the mission still relied on licensing expensive commercial imagery. This reveals a deeper structural flaw: the current model of "renting" access from commercial providers is expensive, inefficient, and excludes many frontline users. In addition to the donor community, the public is also willing to invest in these technologies for societal benefit. The Ukrainian government's successful crowdfunding of $55 million for satellite access demonstrates public willingness to fund and support such initiatives as well.[11]

Meanwhile, the user base is already here. Hundreds of thousands of researchers, mappers, nonprofits, and educators regularly engage with Earth observation data under current constrained conditions. Programs like Google Earth Engine, Copernicus, Humanitarian OpenStreetMap Team, and NICFI have shown what's possible when imagery is openly shared—but the persistent lack of high-resolution, taskable data limits the impact.

**WHAT'S NEXT?**

Our team is currently focused on aggregating demand from across humanitarian, journalism, research and community development stakeholders to further evidence the need for an independent mission and identify common requirements. All this information will be released in an open report. With these combined needs in mind, the team will conduct a literature review of all publicly available information on satellite offerings. Products will be mapped against the satellite value chain from launch to payload and ongoing infrastructure (e.g., ground segment, data hosting). This will be important to assess the full financial resources needed. After the technical evaluation, our team will evaluate viable pathways to operationalizing such a mission, including licensing, governance, fundraising, data access, among other considerations.

[10] Reznik et al. https://www.researchgate.net/publication/347276446_Comparison_of_geostationary_and_low-orbit_round_dance_satellite_communication_systems#pf7

[11] Reuters. https://www.reuters.com/world/europe/ukrainian-celebrity-crowdfunds-radar-satellite-armed-forces-2022-08-18 /

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**HOW CAN YOU SUPPORT?**

1. If you identify as a potential user of high-resolution satellite imagery, **take our survey**. We are keen to hear more about your use cases and how you are using satellite data for societal benefit. Your input will guide our requirements for the mission.
2. If you have relevant expertise, **join our group of reviewers** who provide written feedback on the study draft. We are looking for a wide range of experts with backgrounds in humanitarian/public good applications of satellite data, philanthropy, data licensing, data accessibility, regulations, satellite systems, cloud infrastructure, ground segments, journalism, ethics, and fundraising, among others.
3. **Support with funding** to jumpstart our coalition and evidence building. Our efforts are currently pro-bono, and any financial support will accelerate our work. We are also beginning conversations with bold funders who are ready to finance this kind of independent satellite mission.

**ABOUT US**

Rhiannan Price and Bill Greer are the co-founders of Common Space, a nonprofit catalyzing an independent high-resolution satellite mission to support the world's most pressing challenges. We know that open, high resolution satellite imagery, when tasked over areas of high need at the right times, can positively impact the most vulnerable. Our goal is to democratize access to this valuable data by owning our own constellation.

**GET IN TOUCH**

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