

Presented at the FIG Working Week 2025,
6-10 April 2025 in Brisbane, Australia



A global non-profit
technology
organization
helping
governments map
their urban
landscapes





PLACE is a non-profit mapping organization founded on the belief that high quality mapping is essential data infrastructure for the digital age.

Our MISSION is to map the urban world in ultra-high resolution and make these maps open, reliable and accessible and place them in a perpetual legal trust in the public interest.



IN TODAY'S DIGITAL WORLD, MAPS POWER MUCH OF THE MODERN ECONOMY, UNDERPIN GOVERNMENT SERVICES AND ARE CRUCIAL TO ACTION ON CLIMATE CHANGE



Analysis, routing, programs and outreach for **emergency services** including fire, police and ambulance



Visualize and better understand **impacts of migration**, and how they influence policy and relief services



Set baselines, track and measure changes in our landscapes and understand **impacts on biodiversity**



Create baselines, measure and respond to **natural disasters** and other **environmental issues**



Provide location and place data that underpin **E-commerce** and business services



Track and measure **the impacts of Covid-19** and other health emergencies



Understand where and how much to build and retrofit to withstand the **impacts of natural disasters**



Map and identify **insecure property rights** and help formalize documentation at scale. Plan and expand access to **financial services and banking**

THE PROBLEM

Over the next 30 years, 2.5 billion people and up to 1 billion more vehicles will be added to urban centers. Three-quarters of the infrastructure that will exist in cities by 2050 has yet to be built. 80% of global GDP is produced in cities, 75% of energy-related emissions come from cities and 70% of city dwellers lack reliable access to at least one core service, like housing, water or electricity.

Africa is changing drastically driven by rapid urban growth and expansion. Africa will be the world's most populous region by 2030 with a population expected to nearly double from 1.3 billion in 2020 to 2.5 billion by 2050. By 2100, 13 of the world's 20 biggest urban areas will be in Africa. The 15 fastest growing cities are all in Africa. And yet much of the developing world including Africa has not been mapped in over 60 years.

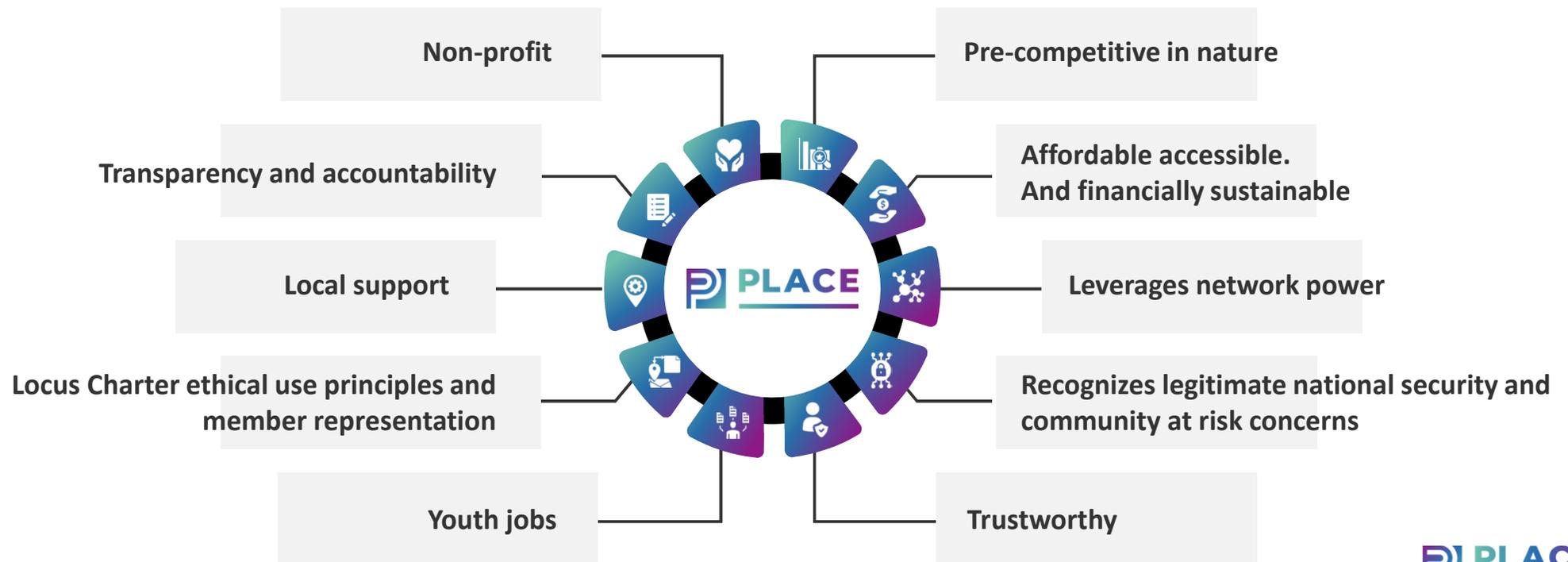
In Island Nations over 1 billion people now live in low-lying territories globally. These areas are increasingly vulnerable to sea-level rise caused by climate change. This results in polluted freshwater aquifers, salinity in agricultural areas, flooding and rapid reduction in habitable land.

Expanding numbers of satellites provide more mapping data, but can be expensive, hard to use and access due to restrictive licensing. Further large platforms such as Snap, Google, Bing, Niantic Labs, etc., are now the largest global mapping agencies but their maps are used for commercial purposes and are not freely available to Governments.

Former Nigerian President Olusegun Obasanjo recently warned, *“All over Africa, we are... sitting on a keg of gunpowder... There’s virtually no exception (country) in Africa where the youth are not angry. They are unemployed... unempowered and they see nothing other than hopelessness.”*

Economies and development globally are being driven by Machine Learning and Artificial Intelligence (AI) of which spatial data is critical, but emerging economies are currently not able to these tools without the base data.

THE ENVIRONMENT IS RIPE FOR A NEUTRAL 3RD PARTY TO PROVIDE A SOLUTION WHICH IS NOT MOTIVATED BY PROFIT, CAN BE TRUSTED BY EVERYONE AND SOLVES FOR MARKET INEFFICIENCIES AND COMPETITIVE IMPERATIVES



OUR ORGANIZATION



HOW IT WORKS

2 PLAN

PLACE provides personnel to train and develop capacity. Government provides in-kind assistance, including permits, clearances, ground control points, local transport, lodging, and staff and facilities for training and processing. PLACE conducts imagery audit for Government

1 MOU

PLACE partners with Government agencies responsible for mapping



3 SCALE

PLACE collects or funds companies to collect all imagery. We aim to collect aerial and ground imagery every 24 months, depending on equipment and resource availability. PLACE Hub processes and checks all data. Also, existing Government imagery can be put into PLACE Trust at no extra cost (stranded asset)



TRUST 4

All data produced by PLACE is owned by Government. PLACE receives a license from Government to a copy of the data and puts it in the PLACE Trust for use by the PLACE Community

Organizations join the PLACE Community* by agreeing to community principles of ethical use

PLACE raises funding from our community through support contributions and data licensing fees



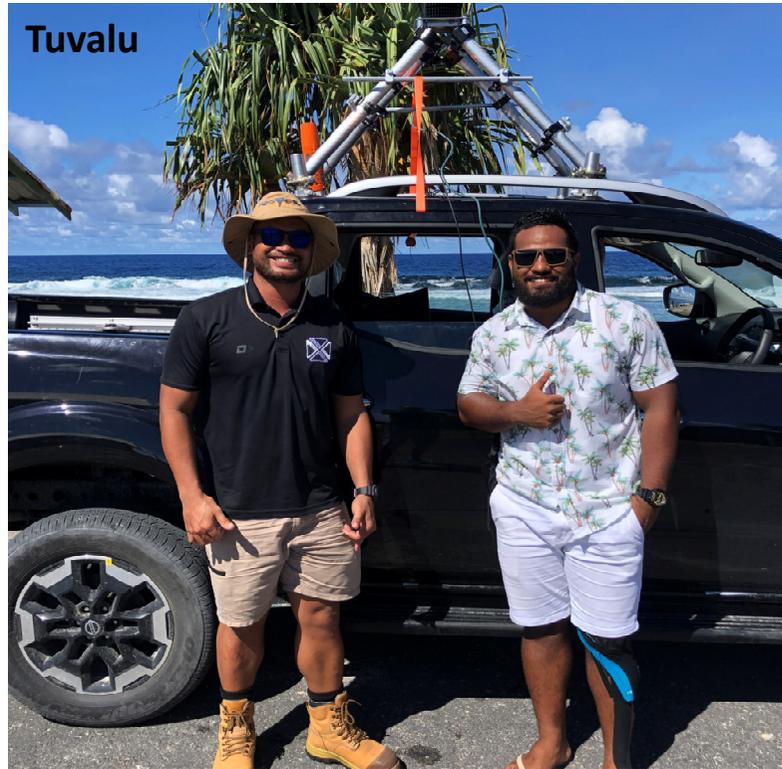
* PLACE conducts a thorough know your customer (KYC) process for each organization applying to become a member of the PLACE Community. Data access is provided through a secure API. Members can be removed for violating terms and conditions of membership. We ask members to sign on to the Locus Charter.

Building Capacity

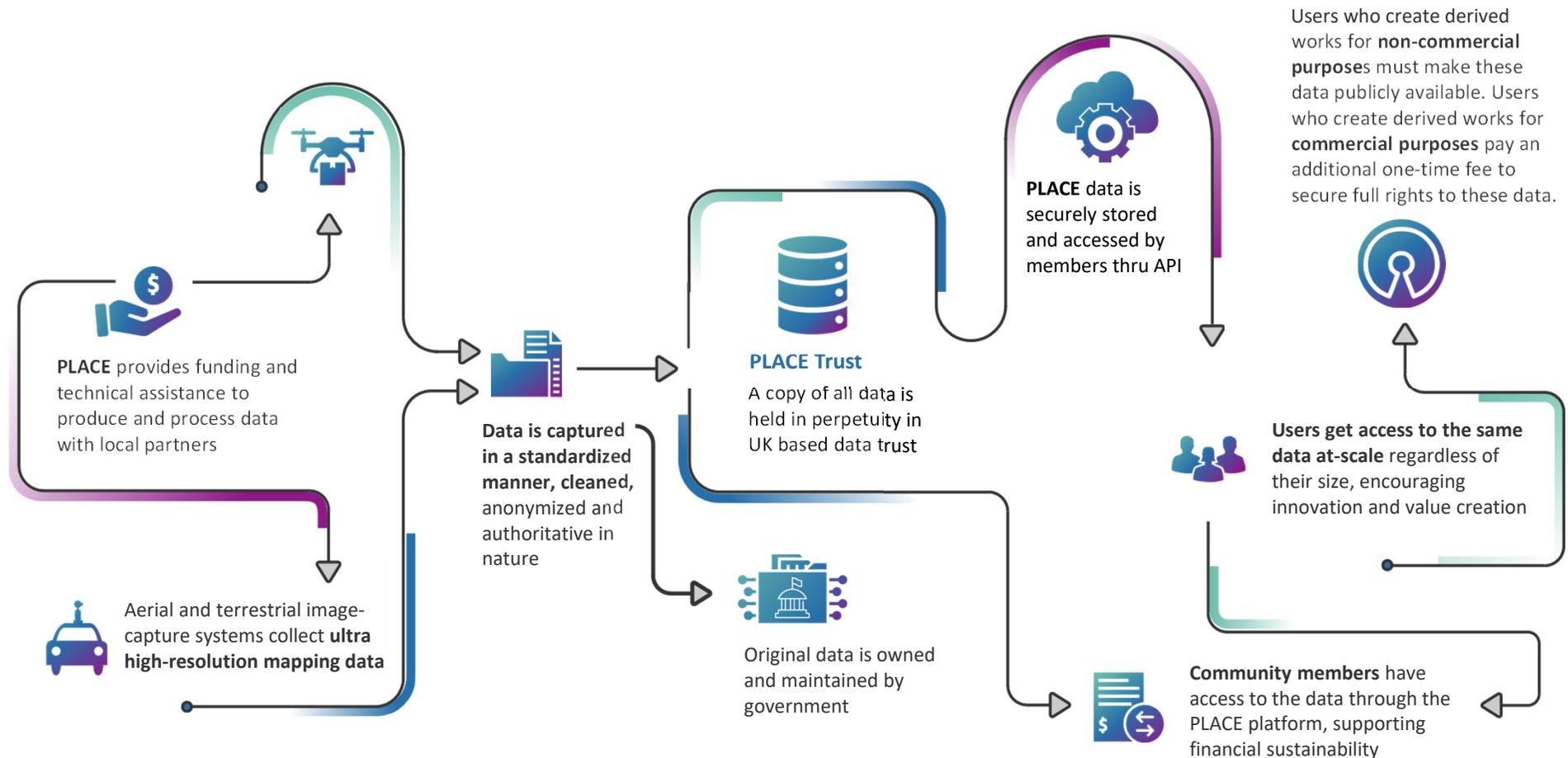
PLACE works with local companies, government officials and universities providing hands on experience and training to all who are interested in learning.

This may include:

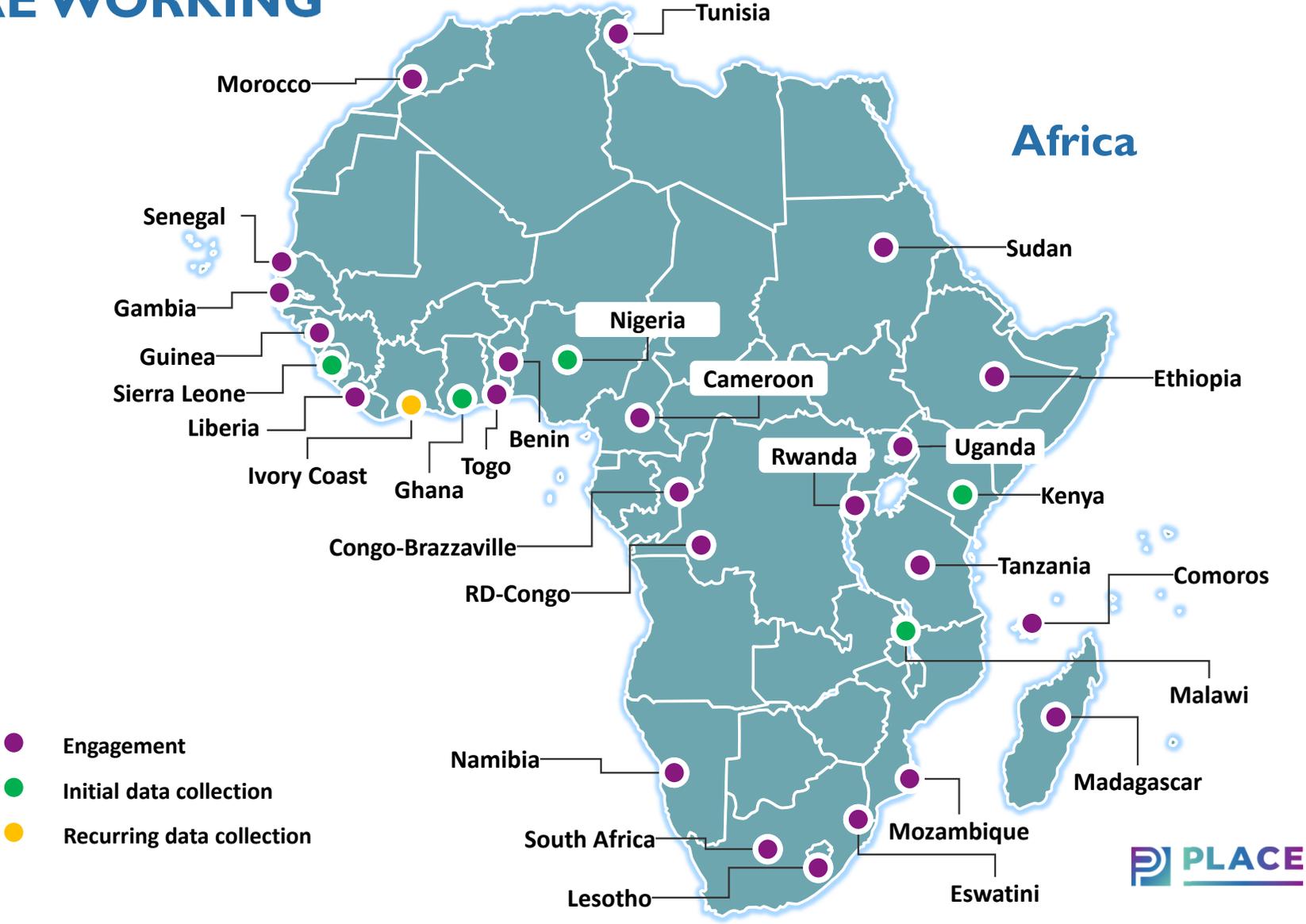
- Flying drones
- Setting up street camera and capturing images
- Teaching how to process the data and visualize
- Assisting in the acquisition of equipment



SELF-SUSTAINING ECOSYSTEM



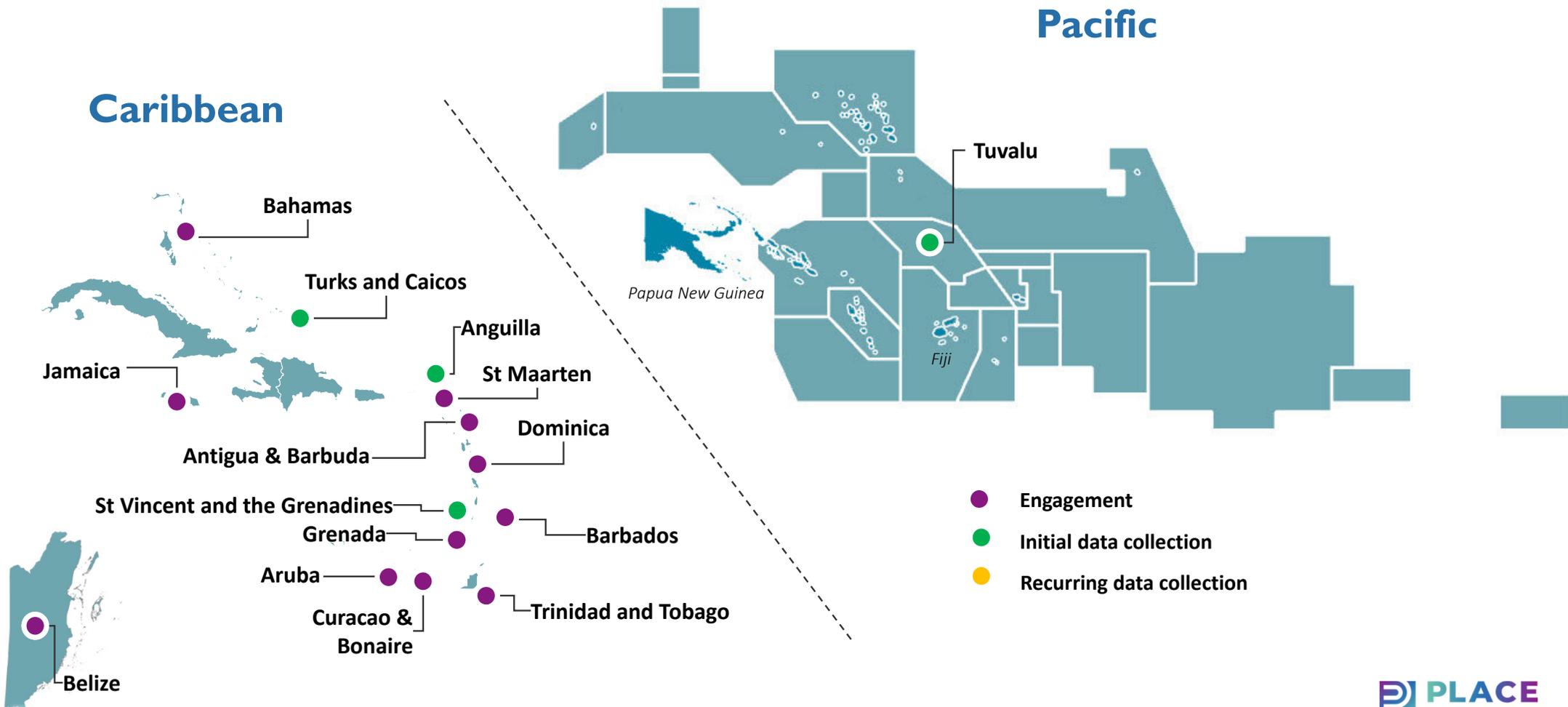
WHERE WE ARE WORKING



Updated as of: 12 June 2025



WHERE WE ARE WORKING



Updated as of: 12 June 2025

WE ONLY COLLECT IMAGERY

Zomba, Malawi, December 2023 with the Survey Department and City Council

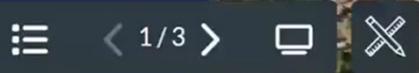


PLACE Aerial: High positional accuracy, RGB, average 5 cm GSD, nadir imagery (flying at 1000 ft)

PLACE Ground: De-identified (faces and number plates blurred), RGB, 360- degree street imagery, 4K (driving at 30kph+)

Malawi, Zomba

December 2023

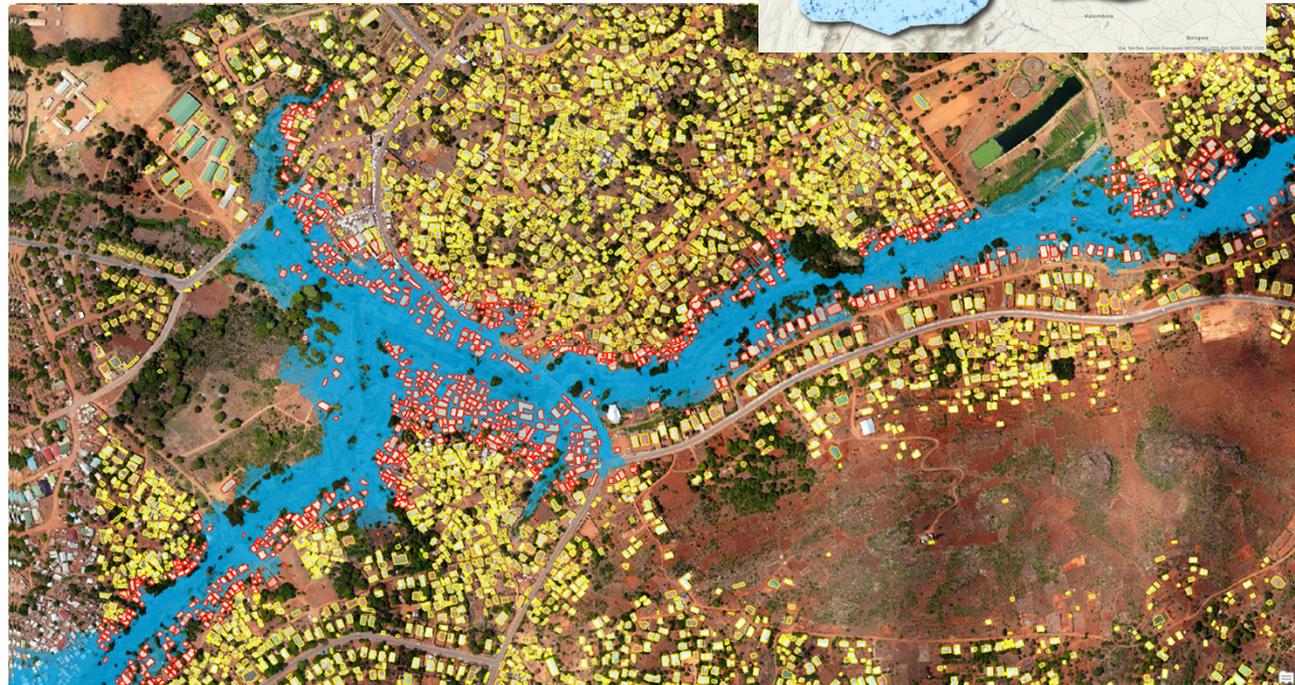
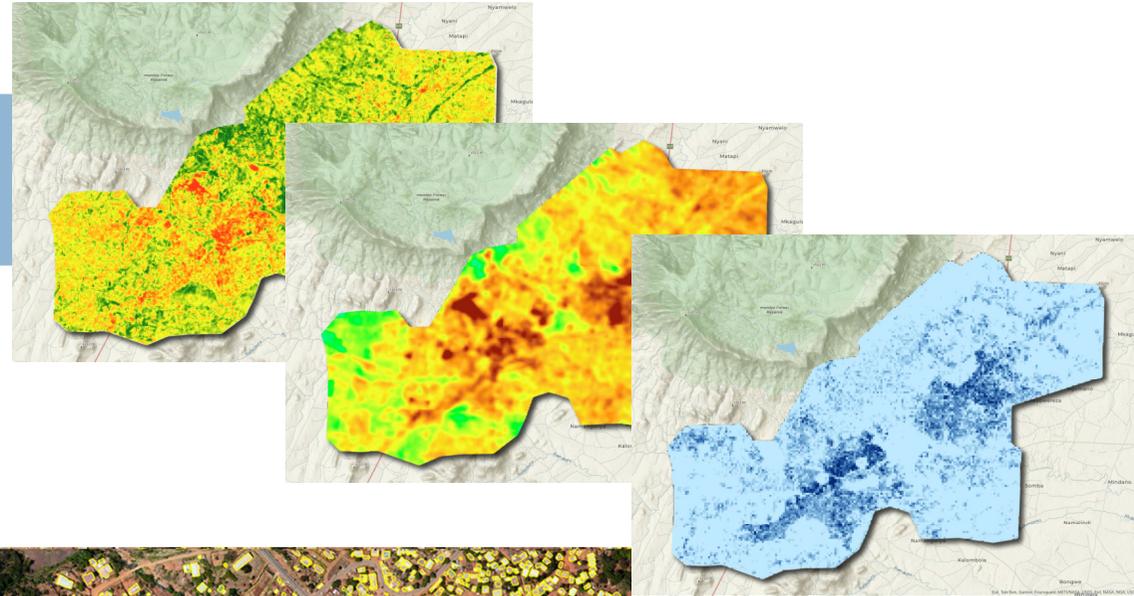


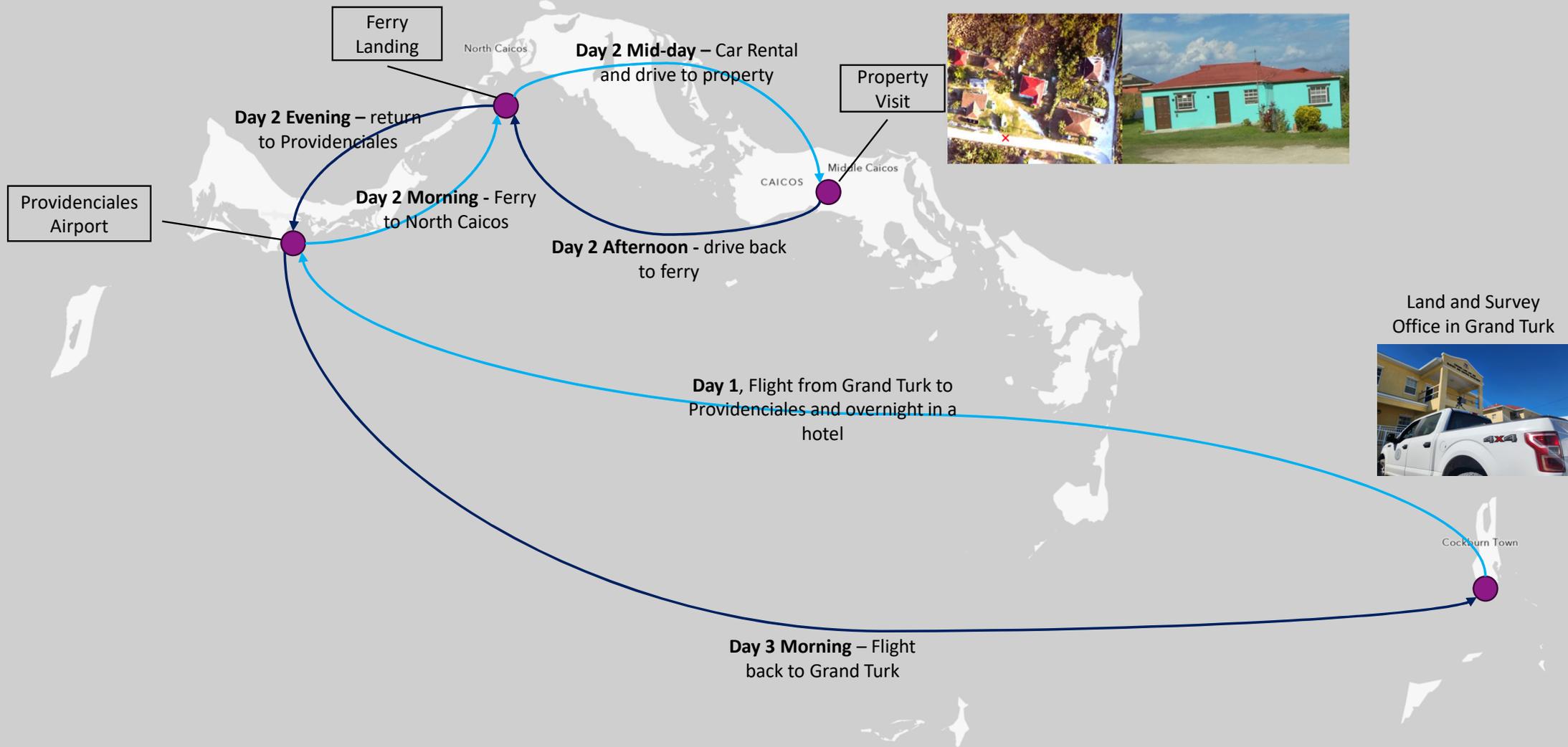
ZOMBA, MALAWI

URBAN RESILIENCE

PLACE data provides the ability to map urban areas in great detail:

- When combined with other data sources that record things like surface temperature (from satellites), it can be used to help develop city **wide Heat Vulnerability Indices (HVIs)** pinpointing [heat islands](#) and at-risk populations.
- Using elevation information provides an ability to **model flooding** and when combined with building counts (a proxy for population numbers), it helps with mapping [the communities](#) most impacted by natural calamities.





Land and Survey Office in Grand Turk



TURKS AND CAICOS

DISASTER PLANNING

"The PLACE Ground data has been heavily used in our **community meetings**. Citizens can show us precisely where flooding is occurring - which keeps us from having to go to the field. This has been particularly important in communities difficult to visit. We are also beginning to use the imagery in **planning board meetings** so we can quickly view the properties in question and make informed decisions."

- **Kevern DeBellott**
Director, Dept. of Disaster
Management & Emergencies

LAND ADMINISTRATION

- Visualization of parcel boundaries over imagery has illustrated potential land conflicts, dept. can now proactively address land issues.
- Allows for improved monitoring of Crown Lands.
- Allows virtual analysis of parcels engaged in a property transaction to ensure validity.

"We have woken up to the common thread that weaves all our growth agenda and development ambitions together. That common thread is up-to-date, high-quality imagery."

- **Wayneworth Hamilton**
Director, Lands & Survey Dept.

LAND VALUATION

- Imagery has been the basis of Automated Valuation Models (AVMs) to yield reasonable estimates of property value.
- PLACE imagery helps identify and create new variables to feed into AVMs for more accurate valuation estimates.

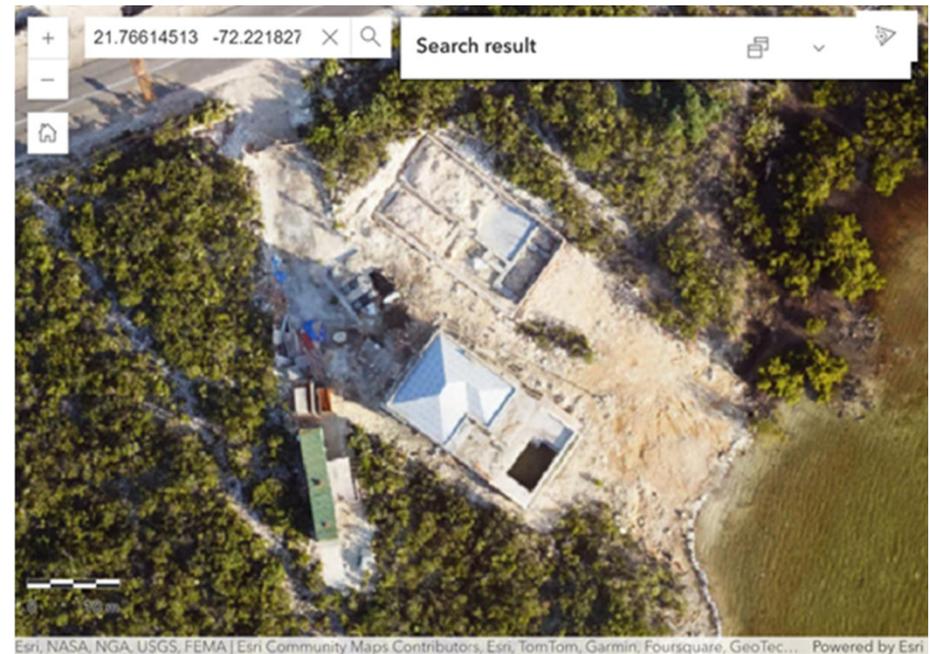
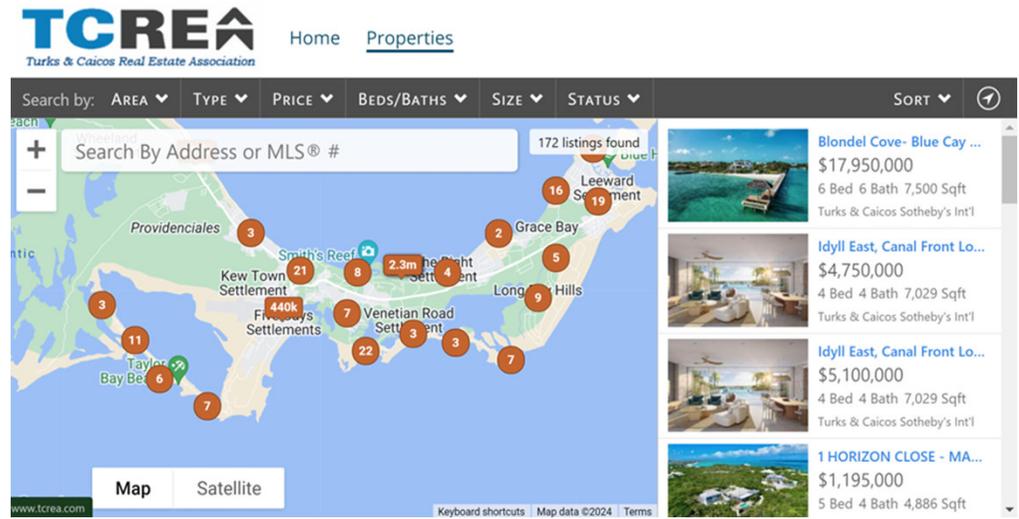
"Data from PLACE helps us to be more efficient in our time use and will help us use machine learning tools to significantly enhance our valuation modelling capabilities, improving accuracy and reducing costs."

-**Eric Allen,**
Chief Valuation Officer
Lands Division 

TURKS AND CAICOS

VALUATION AND TAXATION

- PLACE high resolution imagery can be used to further improve AVM accuracy and defensibility. The ability of AVMs to yield reasonable estimates of value are mostly determined by the quality and availability of data coupled with the activity/efficiency of the market.
- PLACE imagery helps identify and create new variables to feed into AVMs for more accurate [valuation estimates](#).
- After adding in variables derived from PLACE imagery, regression models could explain 70-78% percent of the variation in sale price meeting International Association of Assessing Officers ([IAAO](#)) standards for valuation accuracy and uniformity.



PLACE image quality, including color, shading, and resolution allowed for better identification of property and buildings

TUVALU

SOLAR CAPACITY

Machine Learning was used to detect:

- The number of solar panel clusters = 224
- The total area of solar panels = 9,600 sq. meters
- And an estimate of the power generated ~ 1,700 kW

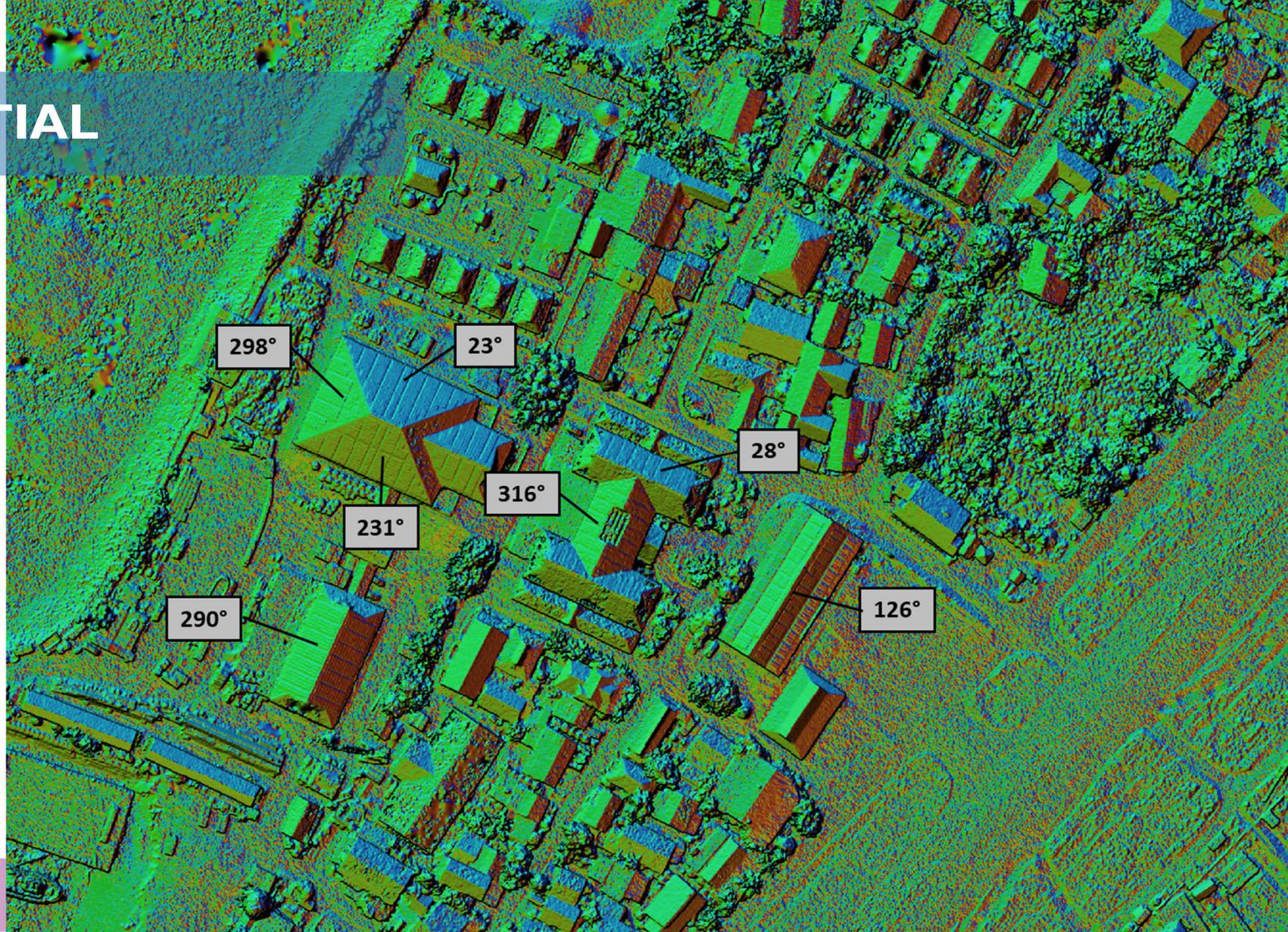
** Assumes a 1 sq.m solar panel generates 175 watts*



TUVALU

SOLAR POTENTIAL

- Machine Learning was used to detect:
 - Building Outlines
 - Building Heights
 - Roof Slope
 - Roof Type and Pitch Angle
- Using this information, it's possible to identify the roofs with the ideal pitch and exposure needed to generate solar energy and prioritize for installation.



0° is North 180° is South
90° is East 270° is West

TUVALU

POTABLE WATER CAPACITY

Machine Learning was used to detect water tanks:

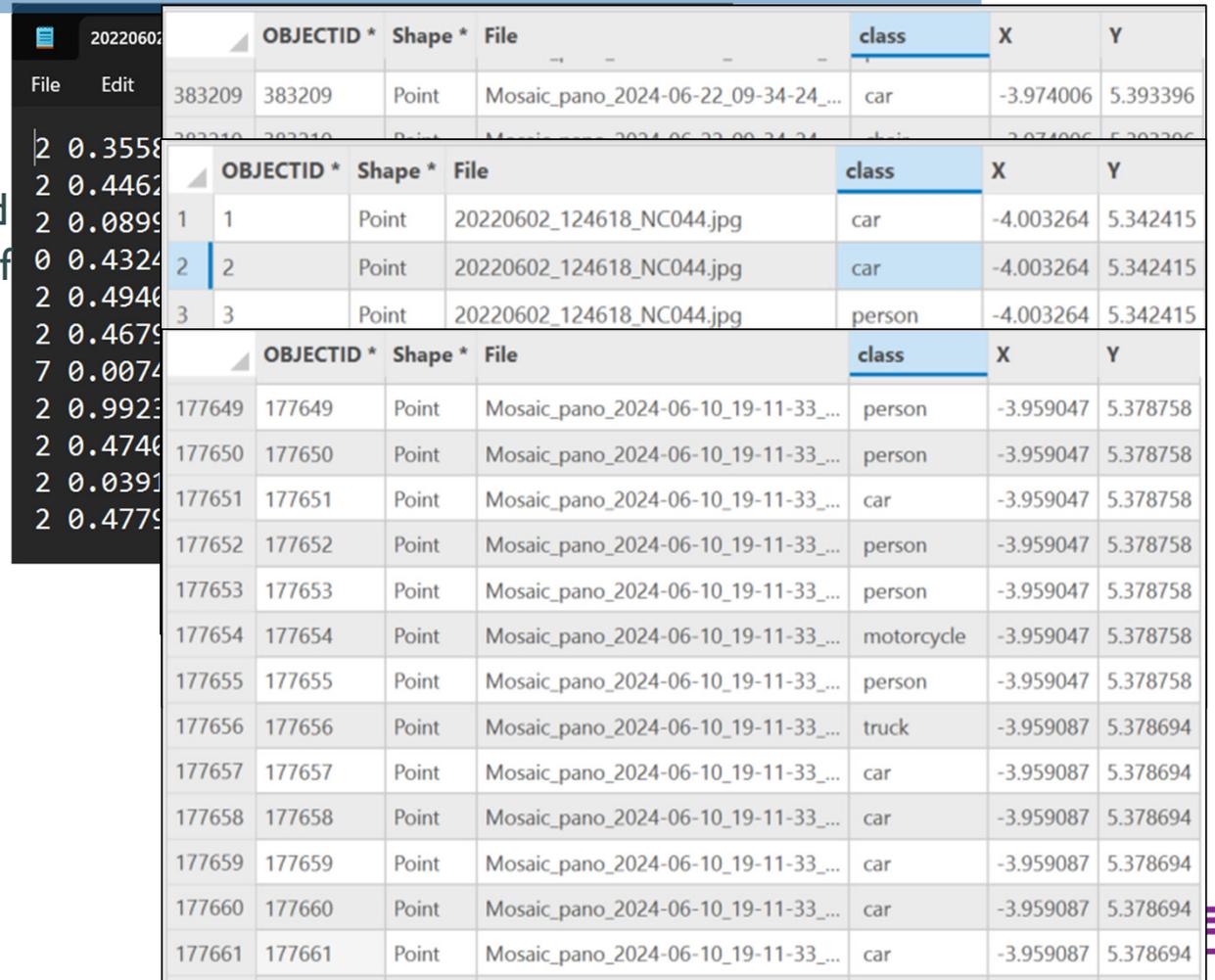
- Most of the storage tanks are of a standard height (2.3 meters) and diameter (2.5 meters).
- Tank capacity is estimated at **5 cubic meters**
- ML generated a vector layer showing the location and number of water tanks in Funafuti
- Estimate was **1890 tanks** equivalent to **9450 Cubic Meters** of potable water storage.



Automated Feature extraction using ML

PLACE GROUND: DETECTIONS DATABASE

- All PLACE Ground collections have been processed using YOLOv8 with results documented in text files.
- A text file for each 360 image is prepared detailing the bounding box coordinates of each detection and the object class.
- Detections include 80 classes, such as:
 - Animated objects; person, car, animals...
 - Street furniture; fire hydrant, stop sign, parking meter, bench, tree...
 - Small objects; cell phone, laptop, chair...
- Detections from all collections are consolidated into a feature class in an ArcGIS Database linking the detection class to the location in the map.



OBJECTID *	Shape *	File	class	X	Y
383209	Point	Mosaic_pano_2024-06-22_09-34-24_...	car	-3.974006	5.393396
1	Point	20220602_124618_NC044.jpg	car	-4.003264	5.342415
2	Point	20220602_124618_NC044.jpg	car	-4.003264	5.342415
3	Point	20220602_124618_NC044.jpg	person	-4.003264	5.342415
177649	Point	Mosaic_pano_2024-06-10_19-11-33_...	person	-3.959047	5.378758
177650	Point	Mosaic_pano_2024-06-10_19-11-33_...	person	-3.959047	5.378758
177651	Point	Mosaic_pano_2024-06-10_19-11-33_...	car	-3.959047	5.378758
177652	Point	Mosaic_pano_2024-06-10_19-11-33_...	person	-3.959047	5.378758
177653	Point	Mosaic_pano_2024-06-10_19-11-33_...	person	-3.959047	5.378758
177654	Point	Mosaic_pano_2024-06-10_19-11-33_...	motorcycle	-3.959047	5.378758
177655	Point	Mosaic_pano_2024-06-10_19-11-33_...	person	-3.959047	5.378758
177656	Point	Mosaic_pano_2024-06-10_19-11-33_...	truck	-3.959087	5.378694
177657	Point	Mosaic_pano_2024-06-10_19-11-33_...	car	-3.959087	5.378694
177658	Point	Mosaic_pano_2024-06-10_19-11-33_...	car	-3.959087	5.378694
177659	Point	Mosaic_pano_2024-06-10_19-11-33_...	car	-3.959087	5.378694
177660	Point	Mosaic_pano_2024-06-10_19-11-33_...	car	-3.959087	5.378694
177661	Point	Mosaic_pano_2024-06-10_19-11-33_...	car	-3.959087	5.378694

Automated Feature extraction using ML

PLACE GROUND: GEOREFERENCING DETECTIONS

- PLACE Ground is processed using YOLOv8 to remove personally identifying information e.g. faces and number plates
- It can also be used to detect features of interest e.g. street signs, windows, animals, trees, ATMs, street furniture, cars, etc
- PLACE Ground has also been used to assign information to pre-detected building footprints – such as detecting the number of windows and doors.



Automated Feature extraction using ML

PLACE GROUND: OPTICAL CHARACTER RECOGNITION (OCR)

- As an additional step or in integration with an OCR model.
- Multiple robust models are available to recognize and extract text from images.
- Text can be extracted and added to a searchable tabular geodatabase.





Flooding in Abidjan, Côte d'Ivoire -- 2022

FROM OUR PARTNERS

“Working in partnership with SPC and PLACE has helped the Land & Survey Office realise our vision for building a digital twin for Tuvalu. This is critical to supporting our response to the ever-increasing challenges to our nation from climate change and natural disasters. Using the powerful combination of AI and street and aerial imagery means that Tuvalu will be at the cutting edge of technology as we plan for the future”

- Faatasi Malolonga, Director of the Department of Lands & Survey, Tuvalu.

“The primary concern that we have is updating our geographic information. PLACE has allowed us to make a significant leap forward by offering these tools and quality training. The PLACE model is horizontal; it is an alternative partnership model in which we work side-by-side. From the start, we worked together on the areas of interest we had”

Fernand Bale, Director of CIGN/BNETD (National Mapping Agency of Côte d'Ivoire)

“PLACE is a very insightful and practical program. It really helps our day-to-day activities and broadened our knowledge”

Exec Director CSIR-BRRI (Council for Scientific & Industrial Research, Building & Road Research Institute) Ghana

IMPACT

The Invisible Made Visible

Map 100's of millions of people and their places

Partner Success

Our community members are actively providing solutions to make a better place

Data at Scale

Map an area the size of Africa (40 million sq kms) providing insights for climate finance, deforestation, housing, financial services, planning, infrastructure, environment and others



Mobilized Funding and Jobs

Disburse at least USD 100M to organizations and businesses mapping place and create 1000s of skilled jobs in countries where PLACE is mapping

Sustainable Non-Profit

Build and maintain a sustainable non-profit technology organization that maps the world in the public interest

Data Trust

Build and maintain a data trust that is independently stewarded to work in the public interest and provides a means for participation and representation of many

Data Democratized

Put data back in the hands of communities, businesses, organizations and governments



Vision. To be the most compelling data trust of mapping data for the benefit of people, community, and planet.

Mission. To make timely, affordable, and reliable mapping available for our government partners and community members.

Purpose. We are passionate about helping governments gain **sovereignty** over mapping data to better deliver services to their citizens and communities and to create innovation and opportunity.

WHERE TO NEXT?

- More data collection – Nigeria, CIV
- Unlock “stranded” imagery assets
- Build partnerships – SPC, Cities Alliance, UN Foundation
- Growing PLACE Community – increasing data use globally, ensuring reuse of the data
- Expanding PLACE Hubs & PLACE Labs program – local jobs, skill and capacity building
- Continue to fundraise for more data
 - Grant funding from – Omidyar, GIF, Dovetail, Rockefeller, Mozilla, AWS,
 - Project funding from – SPC, World Bank, MCC
- SCALE

JOIN US

Peter Rabley,
Founder, PLACE
prabley@thisisplace.org

Washington DC, USA

Denise McKenzie
Managing Partner, PLACE Trust
dmckenzie@thisisplace.org

London, United Kingdom



[@ThisisPLACE](https://www.linkedin.com/company/thisisplace)



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www.thisisplace.org

ANNEX

DEVELOPING SECURE PROPERTY RIGHTS AT SCALE

A major challenge facing Governments is the lack of secure property rights for most of their population. As people are not on the Government map they can and are ignored – essentially invisible in the eyes of Government. By putting all people on the map, PLACE enables people to be seen and to have their own agency as well as a formal defensible record of their use and occupation of land.

Objective
To rapidly collect high quality, accurate map data that provides evidence of occupation and use that allows delivery of secure property rights. Community groups and organizations can use these data to advocate for and deliver property rights.

<p>Problem Property rights are ill defined with most of the population having no security of tenure</p>	<p>Impact Delivers an easy to use, accurate, up to date map showing where people live and in what conditions. Allows rapid inventory of housing and population. Provides proof of occupation and use – essential to securing property rights.</p>
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Problem

- Lack of up-to-date information about people and places
- An inability by Government to document and recognize informal urban "squatters"
- Community organizations such as Cadasta cannot work efficiently and effectively

Approach

<p>Data used →</p> <ul style="list-style-type: none"> • PLACE Aerial imagery • PLACE Ground imagery 	<p>Output</p> <ul style="list-style-type: none"> • Informal settlements rapidly and accurately mapped • No cost to govt. or community groups • Evidence of occupation and use at known time • Data rapidly produced at scale • Citizens and community groups have equal access to engineering grade data
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Outcomes

- The combination of high-resolution aerial and street imagery allows the rapid and accurate collection of data to provide at scale evidence of occupation and use
- Community and international groups can utilize data at scale to Government input documents needed to grant formal property rights
- Governments and funders now know the areas to direct support to and to partner with community organizations more effectively



SDG 1.4.2: Proportion of total adult population with secure tenure rights to land, with (a) legally recognized documentation; and (b) who perceive their rights to land as secure, by sex and by type of tenure.

DEVELOPING A PERMANENT SOCIAL SAFETY NET

One of the major challenges facing Governments is the effective delivery of citizen centric social interventions, and while there have been successes the lack of up-to-date information about people and places severely impacts Governments' ability to effectively target and distribute a range of essential services whether social security payments or vaccinations

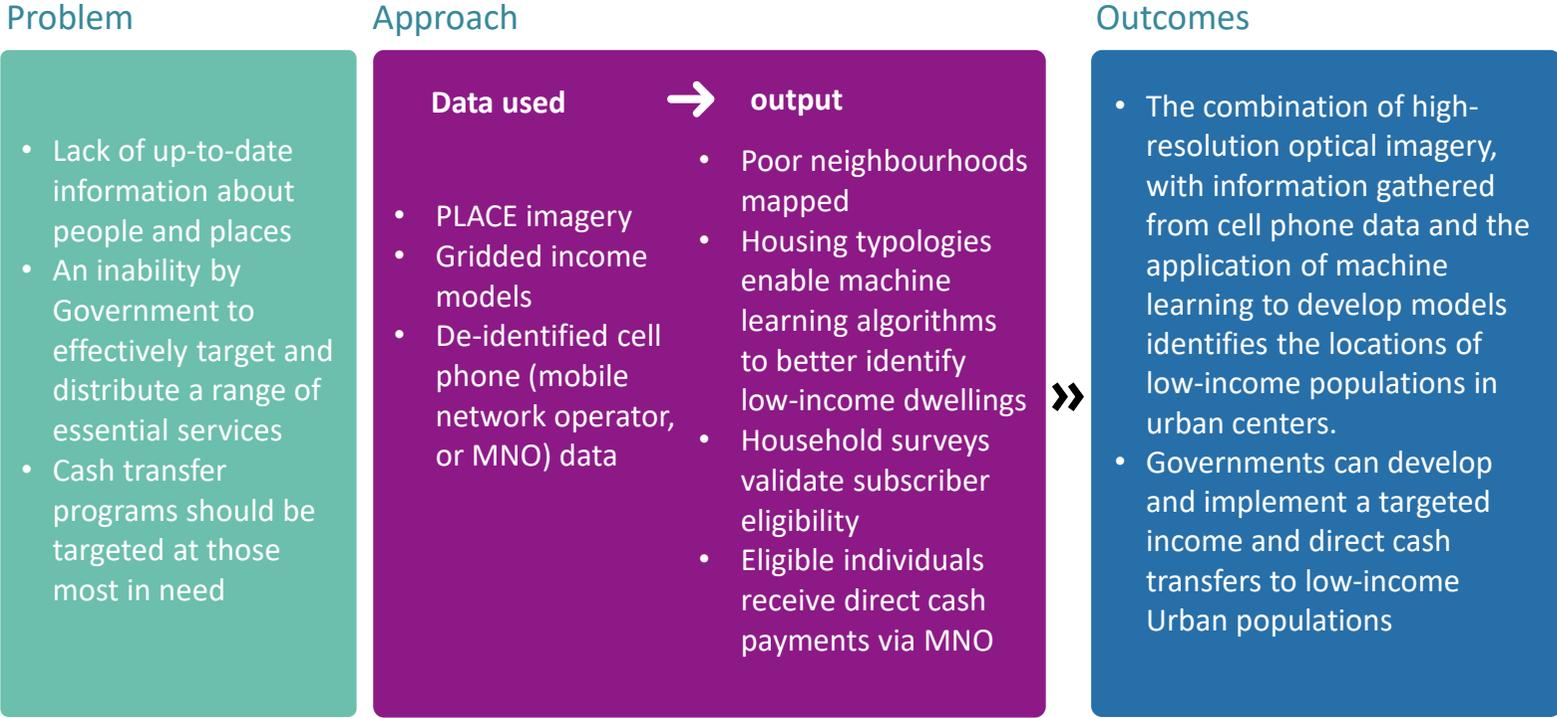
Objective
To collect more granular income and household data which can be used to issue vouchers, cash cards, or other electronic payments to those families identified as not being able to afford those commodities unless they continue to be subsidized

Problem
Near-universal cash transfer programs are cumbersome and a burden on a country's finances

Impact
Cost and time for enrollment. Not able to leverage cell phone data to improve delivery. Staffing and infrastructure challenges



SDG 1:
End poverty in all its forms everywhere



Enhancing direct cash transfer programs to allow more effective income modelling and targeting and subsequent effective cash distribution with more precision (PLACE Imagery & Income Model, AtlasAI)



REFINING POPULATION ESTIMATES

Population mapping and understanding the significance of data related to human populations drives policy, resource allocation and accurately tracking contemporary changes in urban areas



Population data underlie all 17 SDGs.

Objective
To identify, locate and serve those living in poverty, with lack of resources (health, financial, technical, safety, etc.) through regularly updated mapping data

Problem

Accurate & timely data on urban populations in low-to-middle income countries is not readily available to the governments & organizations who need it

Impact

Lack of provision of necessary resources and interventions for populations in need including flooding, housing, service delivery and others

Problem

- Vulnerable people are unable to access basic human needs because they are not counted in official data
- Governments struggle to plan for or respond to emergencies by not knowing where people are
- Not adequately achieving SDGs "everywhere"

Approach

Data used

- PLACE Aerial Imagery
- Secondary data: census data
- Cell phone data, small area surveys, etc.

→ Output

- Data disaggregated by geography, wealth, disability, age, etc.
- Tracking demographic dynamics
- Mapping spatial inequities



Outcomes

- Ensuring everyone is counted and has a voice in elections
- Resources are allocated equitably
- Understanding human needs lack of resources
- Money and time saved given limited resources can be allocated more accurately
- Targeted health and other social support programs
- Targeted assistance in the event natural disasters
- Better track the impact of investments on populations
- Track shifts in aging



Refining population models – WorldPop overlaid on PLACE Imagery showing over estimation of Urban population (Stats from WorldPop)



BETTER INSURANCE COVERAGE

Sound financial decisions require the right information. The financial sector relies on good data, for example, to understand creditworthiness of potential borrowers, assess business opportunities for investments, or carry out actuarial analysis to evaluate alternative financial instruments and strategies.

Objective

Knowing where assets are is critical not only in pricing asset risk but also structuring appropriate and cost-effective financial products to manage or transfer this risk.

Problem

Cities and small island states have heavy exposure to natural disasters. They account for 70% of all natural disasters in recent years.

Impact

\$100B annual loss over the last decade, 2/3rds of which was uninsured.



SDG 11: Sustainable cities and communities

Problem

- Information must be collated from data spread across multiple entities
- Low or irregular frequency of data updates
- Lack of clarity or inconsistent asset values
- Lack of information on the physical location of assets

Approach

Data used-

PLACE Ground and PLACE Aerial for:

- Physical location of assets
- Primary characteristics of assets such as siting, aspect, slope, surrounds
- Secondary characteristics such as roof type, foundation or wall siding, population distribution, construction quality, materials, size, height,



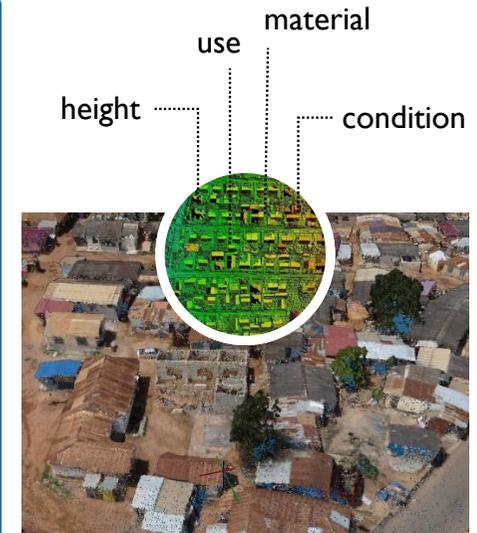
Output

- Accurate, up to date, and reliable data on assets
- Better estimates of assets exposed to natural hazards
- Accurate and timely analysis to quantify risk and inform improved (financial) decisions



Outcomes

- Improved pricing of risks enables both better financial decisions but also improved risk management more generally
- Access to reliable data on assets could spur the development of improved probabilistic catastrophe risk models, with risk modeling firms competing on the risk estimation rather than collecting primary data
- Better standards of data on public assets, insurance exposure, and related losses arising from disaster events



IMPROVED HOUSING RESILIENCE

Sound housing investment programs require the right information and good data to understand where the most vulnerable housing stock is and to plan targeted infrastructure investments for home sanitation (kitchen sinks with running water, flushing toilets and windows for proper ventilation), energy efficient technologies and flood mitigation measures among others

Objective
To rapidly and cost effectively map the current state of housing, identifying vulnerability to health pandemics as well as natural disasters and climate change and develop informed policy interventions and targeted investments

Problem
In Bogota Colombia, 59% of housing is vulnerable. Families on the periphery might need home improvement subsidies. Subsidies should be flexible depending on where the housing is e.g., overcrowding in the city center

Impact
Vulnerable housing stock and populations are at risk from the consequences of natural calamities and the subsequent financial impact



SDG 11: Sustainable cities and communities

Problem

- Lack of information on the physical location of housing by vulnerability type
- Low or irregular frequency of data updates
- Lack of information on the physical location of assets

Approach

Data used -PLACE Ground and PLACE Aerial for:

- Physical location of housing
- Primary characteristics of assets such as construction, occupancy, height,
- Secondary characteristics such as roof type, population distribution and other census data

➔

Output

- Access to accurate, up to date, & reliable data on housing type, households & vulnerability
- Improved targeted upgrading programs & investment
- Housing type proxy for household income

Outcomes

- Identify the most vulnerable housing
- Target policy design, response, and monitoring
- Target beneficiaries, job creation through small works for neighborhood upgrading and home improvement
- Map infrastructure gaps, scale up neighborhood upgrading and urban regeneration and design home improvement and rental subsidy schemes
- Provides a toolkit for municipalities that lack technical and financial resources



Mapping roof condition as a proxy for housing resilience (World Bank).



Modelled surface for flood risk using PLACE Imagery



PLACE PRINCIPLES

PURPOSE

Club Good

We fill the vacuum created by a failed public good and provide a trusted alternative to a private good model. We do not compete with our members. By being non-rivalrous our members can thrive from the use of place-based data.

Value Creation

What we do is of value to our members enabling them to create new products, services and insights from the use of place-based data.

Ecosystem

We power a thriving ecosystem that enables businesses, governments, and organizations to be successful through the production and use of place-based data.

TRUST

Accountability

We are based on, and live by a transparent and accountable member based governance model, acting as a trusted steward of place-based data. We abide by the Locus Charter principles that support ethical and responsible practice when using and maintaining location data.

Openness

We must be as open as reasonably possible balancing the interests of all our members

Data Quality & Security

Our data meets quality standards defined by our members. It is reliable, complete, up to date, and secured in a manner which protects the asset.

FUNCTION

Platform

Our technology is based on a proven scalable platform to store and make available vast amounts of place-based data. Providing secure, controlled access for members, it is designed for interoperability

Financially Sustainable

We must be financially viable covering our costs, servicing our debt, investing in R&D, and funding other investment needs.

Learning & Innovation

We deliver benefits to our members by constantly learning, innovating and collaborating.

OUR DNA: OMIDYAR NETWORK PROPERTY RIGHTS INITIATIVE (2013-2020) BECOMES PLACE (2020>). Innovation, Grants & Investments.

