

ANNUAL REPORT 2017

SHAPING DEVELOPMENT PRACTICE &
HUMANITARIAN ACTION FOR
THE DIGITAL AGE



**PULSE
LAB JAKARTA**



ANNUAL REPORT 2017

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HUMANITARIAN ACTION FOR
THE DIGITAL AGE





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2017 AT A GLANCE

This year marked the end of the initial five-year phase of Pulse Lab Jakarta (PLJ). One of the biggest highlights of the year was the increased adoption of our data tools and methods by our partners, especially within the public sector. The year has also seen a marked change in our engagement with our government counterparts - each collaborative research project that we do builds a stronger trust-based relationship, resulting in genuine dialogue on how new data sources and advanced data analytics can best inform priority policy issues.

The results that we achieved in 2017 were very much built on the experiments, mistakes and lessons that we have learned from during the first five years. As the Lab continues to evolve, our ability to adapt and course-correct during this learning phase ensured that Pulse Lab Jakarta continues to add value to our development partners and stakeholders.



Buoyed by a productive Steering Committee meeting in late 2016 where our stakeholders reaffirmed their commitment to the work of the Lab, we kicked off 2017 on the global stage, where we showcased our data innovation work alongside our Pulse Lab network colleagues at the inaugural World Data Forum in Cape Town in January.

In February, we worked with Indonesia's Ministry of National Development Planning (Bappenas) and the Knowledge Sector Initiative (KSI) to host the *Data Revolution for Policy Makers* conference, which focussed on how harnessing new data sources for policy making actually worked in practice. Attended by more than 300 practitioners from Indonesia and across the region, the conference brought together experience and lessons on how new data sources are being used in the public sector. One key message that stood out was how much the Government of Indonesia has embraced new approaches to optimise the use of different data sources. The conference also highlighted data-driven innovations happening at city and district level, as well as how these initiatives can help reconfigure citizen engagement with government.

Perhaps because it coincided with the momentum around several of Indonesia's own efforts to strengthen data governance, explore new data sources, and push for evidence-informed policy-making, the Government of Indonesia's enthusiasm to engage in collaborative research and data innovation remained high throughout the year. Building on our previous forays into thick data, we worked with the Executive Office of the President of Indonesia and Open Data Lab to conduct user research on data governance at district and province level. The results of these have been turned into user-friendly toolkits to help subnational officials collect and share better quality data. By tweaking our existing tools and platforms, we have also worked with several government units to automate the analysis and visualisation of their existing data. The latter half of the year also saw us working closely with Bappenas' Economic Affairs team on experimental research projects that integrate different data sources to monitor the dynamics of Indonesia's economy.

Part of our contribution to building demand for data innovation and strengthening the broader data ecosystem is connecting practitioners, academics and policy makers. Our Research Dives, which we started in 2016, brought together data scientists and domain experts from research institutions and universities across the Indonesian archipelago. The three Research Dives held in 2017 tackled statistics for measuring Sustainable Development



By tweaking our existing tools and platforms, we have also worked with several government units to automate the analysis and visualisation of their existing data.



Goals (SDGs); experimented with e-commerce, postal network, and vessel tracking data to understand the dynamics of trade and competitiveness; and explored a wealth of transport-related data for insights on traffic management and intelligent transport systems. In addition to inspiring new research projects, the Research Dives have enabled the Lab to connect with a network of experts around the country who can help us meet some of the demand for research insights.

Another thread that stood out in the tapestry of 2017 was the expansion and adoption of our data tools for decision makers - the development of which has always been iterative. One of our earliest projects was a feasibility study on whether fire hotspots in Indonesia could be identified through social media. This evolved into our haze-tracking platform, Haze Gazer, which was officially announced during the first UN World Data Forum and is now installed in the Situation Room of the Office of the President of Indonesia. Haze Gazer has subsequently informed the development of a cyclone monitoring system (CycloMon) for the South Pacific countries, and that is now being transformed into a global Disaster Monitoring Platform (DisasterMon). We were able to test the potential of combining insights from two big data sources (social media and mobile data) under our proposal to the 26th ACM International Conference on Information and Knowledge Management (CIKM) AnalytiCup competition, for which we received an honourable mention. This provided us with access to aggregated mobility insights in Singapore, which we have used to augment the Haze Gazer platform.

Our other data tools continued to build their user base; for example, our collaborative work with the World Food Programme

(WFP) on creating a Vulnerability Assessment Monitoring Platform for the Impact of Regional Events (VAMPIRE) was extended to Sri Lanka, where the Ministry of Disaster Management of the Government of Sri Lanka has adapted the platform to monitor disasters across the island nation. The adoption, initial impact and potential of VAMPIRE was recognised by WFP with the project being awarded the agency's innovation prize for 2017. Also, our Translator Gator tool continued its expansion across ASEAN countries (plus Sri Lanka), in partnership with seven other international organisations, translating key disaster-related words into local languages as an initial step to machine learning in the event of real disasters.

More than anything, the adoption and expansion of our methods and data tools demonstrated the value of our initial learning years. Creating these platforms takes time, as they are built upon repeated experimentation, concept-testing, and continuous learning of what worked (and more importantly, what didn't). The investments of time, effort and resources are worthwhile as most of our outputs are scaleable and are already being reused by other projects.

The year also saw us taking on a different kind of design challenge: we collaborated with UNDP Sri Lanka on the design of a social innovation lab that will promote experimentation in government, facilitate interdisciplinary collaboration, and harness citizen-centred solutions. The resulting road map has been used as a guide for embracing innovation and consolidating stakeholder support for the establishment of such an innovation lab. We were thrilled to hear that UNDP Sri Lanka secured multi-year core funding from the Government of Sri Lanka for its inaugural Citra Lab, which is now up and running.

Throughout the year, we trialled a fee-for-services model to test what is possible in the market. What we have found is that the demand for data analytics and user experience insights exists in the public sector and among development programmes; although the blue-skies component of the Lab's research and development work as well as the ecosystem catalyst function cannot be sustained by the market. We will work to establish the pricing model for services that can be sustained by the market during the next phase of PLJ, as well as how service response times would be impacted by the frictional costs of developing contracts for each activity.



As an initial step down the path of fees-for-services, we were pleased to take on a new project on financial inclusion in Indonesia and look forward to sharing the results of this project throughout 2018. In addition, following our successful collaboration on haze impact in 2016, we combined forces once again with the Reality Check Approach, under a partial cost-recovery model, to provide a complementary quantitative and qualitative approach to domestic migration. We were also pleased to be able to leverage existing funds and projects conceptualised and tested in Indonesia in new markets around the region for which we received funding from the UN Development Group in New York.

As with other innovation labs, one enduring question for us is how we measure the impact of what we do. We have



invested in a results measurement framework that helps us manage our internal results in a systematic way, which can then contribute to assessing our impact overall. The results gathered through our impact log, for instance, help us reflect on the feedback given by partners and stakeholders on whether our work has operational, methodological, or ecosystemic influence. At the end of the day, the question we ask ourselves is one of value: by doing what we do, do we add value to what our partners do?

For much of our research work, these are questions that we are only starting to see answers to now. What we are seeing is the impact of work that we started three and four years ago, but it is a long process and we have been fortunate enough to have supporters of our work that are in it for the long haul. This is important as our results are not instantaneous.



Although we maintain our independent exploratory research, much of our work has morphed into collaborative projects with partners who can scale up and implement the methods, data products, and data tools that we develop together.



As we develop and scale successful data products and tools with our partners, we continue to encounter issues related to responsible data access, data privacy and research ethics. In addressing these complexities we are guided by the UN Global Pulse Privacy and Data Protection Principles¹ and the Data Innovation Risk Assessment Tool², as well as the UN's Data Privacy, Ethics and Protection Guidance Note³, which the UN Global Pulse network helped to develop in 2017. Given the emergent nature of technology, and the fact that more and more data is produced by ever-changing technologies, our operating principles will need to continuously adapt. We will, however, persist in advocating for the sustainable access and responsible, privacy-protecting use of data and ensure that ethical big data analysis is a valuable resource for evidence-based decision making.

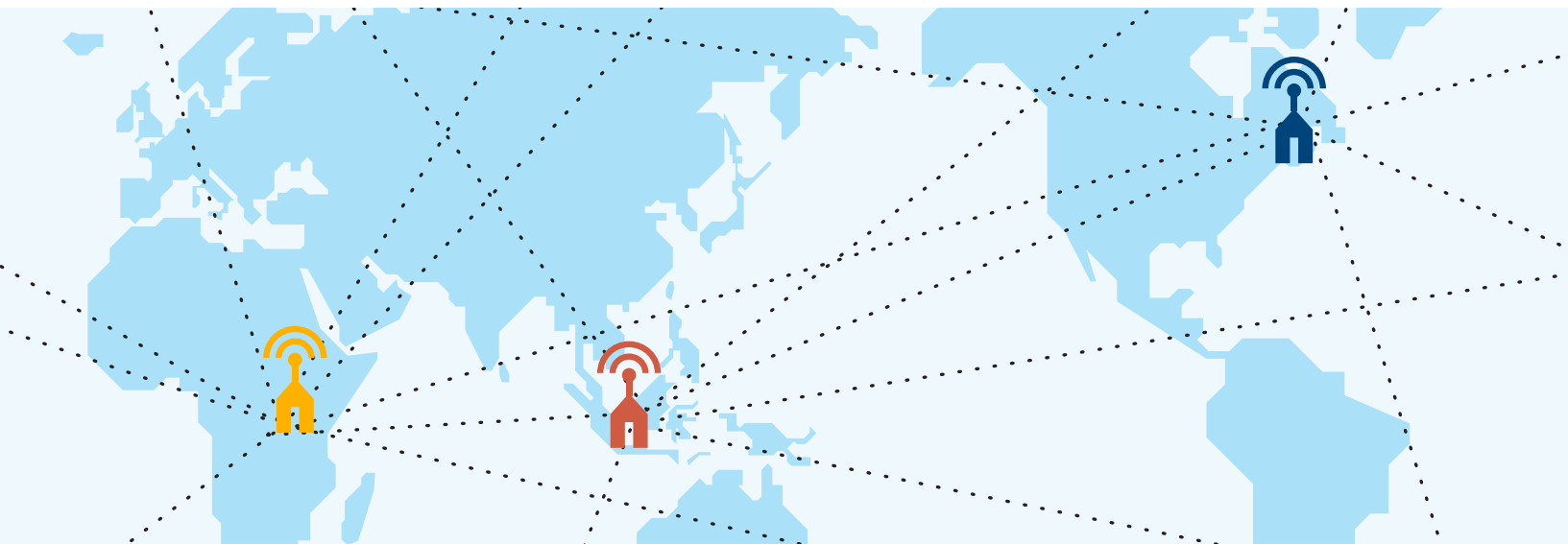
At the end of this, our first phase of PLJ's development, we have been heartened by the change in how we operate. We have moved from a supply-driven posture to being more demand-driven, and this has been underscored by the fact that we received 31 research project proposals alone from one Indonesian ministry in 2017 to include in our 2018 research plan. Although we maintain our independent exploratory research, much of our work has morphed into collaborative projects with partners who can scale up and implement the methods, data products, and data tools that we develop together.

The second phase of PLJ's development starts in 2018. We expect the next five years to be as productive as the first five - we also intend to develop our path to sustainability as well as ensure our data tools can continue to scale.

¹ <https://goo.gl/tNMPVe>

² <https://goo.gl/Zc6QFe>

³ <https://goo.gl/4q2DFW>



ABOUT US

Pulse Lab Jakarta (PLJ) combines data science and social research to help make sense of our interconnected, interdependent, and complex world. The Lab is a joint initiative of the United Nations (UN) and the Government of Indonesia, via United Nations Global Pulse and the Ministry of National Development and Planning (Bappenas) respectively.

As the first innovation lab of its kind in Asia, PLJ is working to close information gaps in the development and humanitarian sectors through the adoption of Big Data, real-time analytics and artificial intelligence.

We want Big Data and artificial intelligence to be harnessed responsibly as a public good.

Through a network of Pulse Labs in New York, Jakarta and Kampala, our mission is to accelerate the discovery and adoption of data innovation for sustainable development and humanitarian action.

Using datasets drawn from mobile communications, remote sensing, social media, among others, we have generated insights for policy and practice on topics ranging from fuel subsidies to natural disasters. Across our research projects, many of which are delivered alongside our partners, we rely on the expertise of our team of data scientists, data engineers, statisticians, policy specialists and ethnographers.



AREAS OF WORK

The overarching objective of this partnership between the UN and the Government of Indonesia is to enable policymakers and government agencies (including sub-national governments) to use near real-time Big Data to inform policy making, planning and budgeting. The partnership also takes into account the need for timely information to:



Protect the poor and vulnerable



Support disaster response and humanitarian action

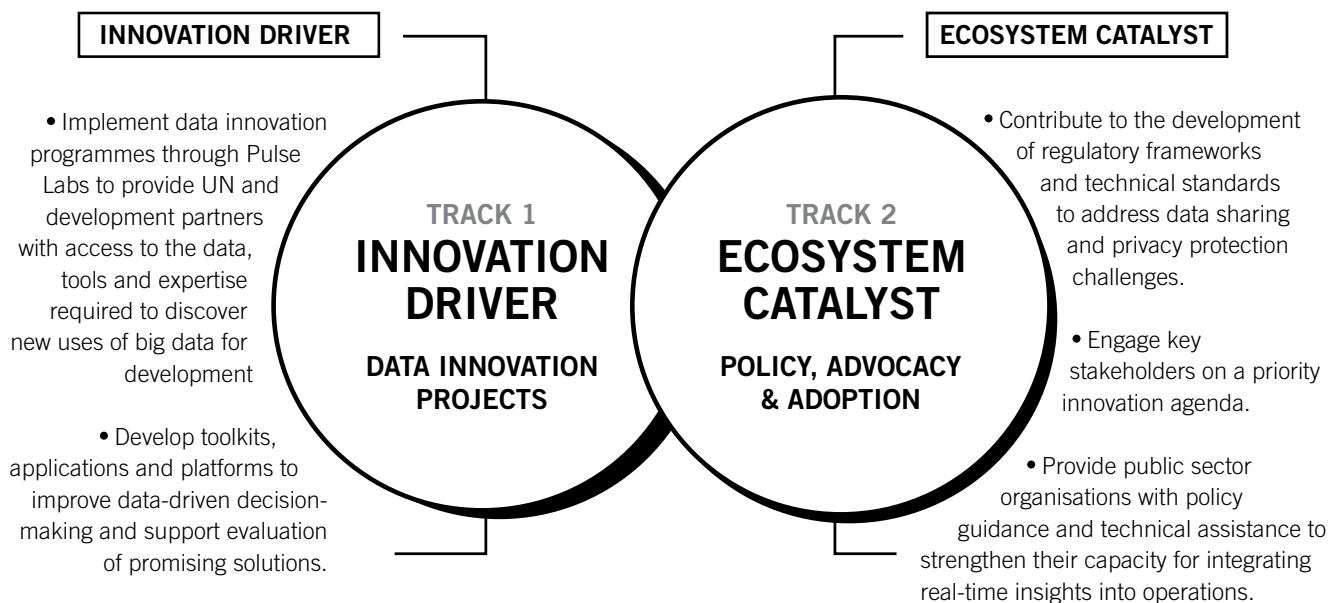


Improve trade and competitiveness



Explore urban and regional dynamics

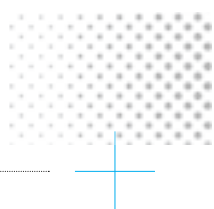
Within this framework, the Lab adopts a two-track strategy for all activities, aligned with that of the Global Pulse Lab network:



ORGANISATION LOGIC

Pulse Lab Jakarta's work aims to contribute towards three broad societal goals:

- BETTER USE OF DATA IN PUBLIC DECISION MAKING**, which is expected to significantly contribute towards
- IMPROVED PUBLIC POLICY**, which would ultimately result in
- INCREASED PUBLIC WELL-BEING**, particularly among vulnerable communities. These goals align with the Sustainable Development Goals (SDGs).



PLJ's work is expected to lead to three main organisational outcomes:

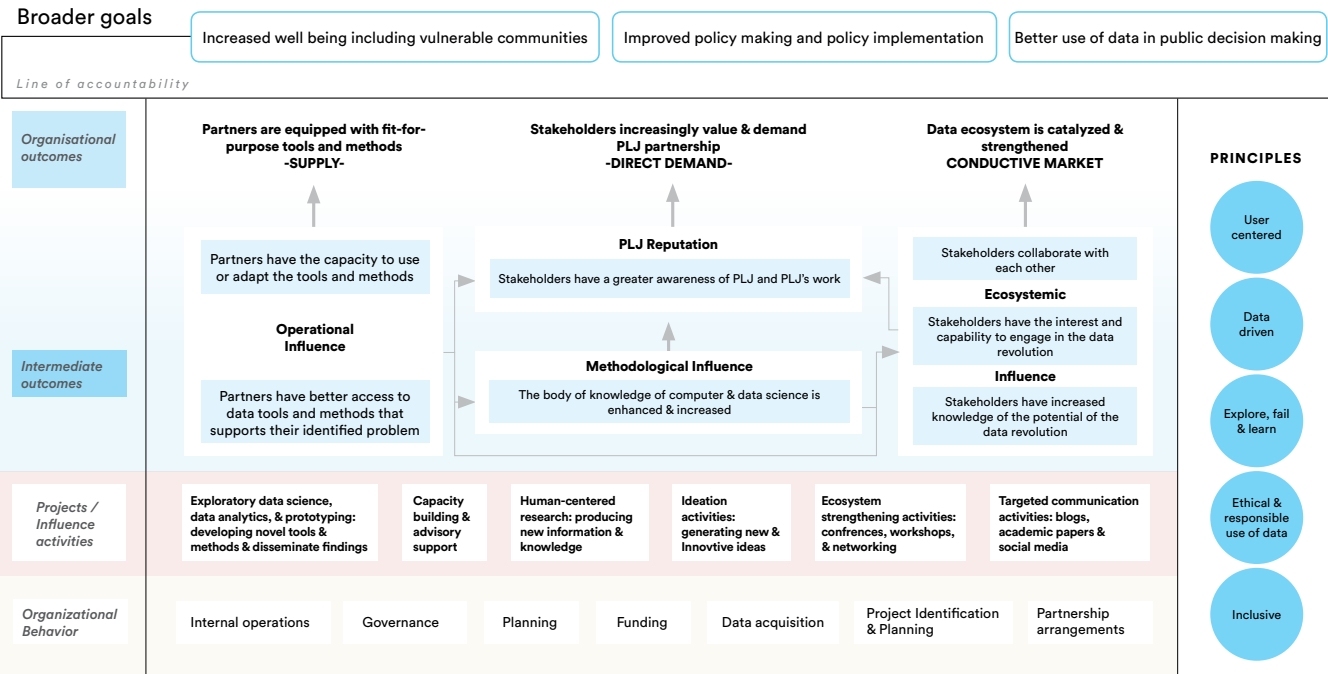
- 1. PLJ partners are equipped with fit-for-purpose tools and prototypes;
- 2. Stakeholders increasingly value and demand PLJ partnership; and
- 3. The data ecosystem is catalysed and strengthened.

The following principles drive the manner in which PLJ operates and cut across all the work of the Lab:

- Responsible and Ethical Use of Data
- Explore Well, Fail Well and Learn Well
- User Centred
- Data Driven
- Inclusive

In practice, the types of activities we do to achieve our organisational goals include:

- *Exploratory data science, data analytics and prototyping* - including developing new tools and methods and disseminating findings;
- *Human-centred research* - producing new insights and knowledge on the interface between communities/individuals and data;
- *Ideation activities* - harnessing new and innovative ideas from citizens;
- *Ecosystem strengthening* - contributing to the discourse on Data for Development and the interaction between key stakeholders;
- *Capacity strengthening and advisory support to key partners;* and
- *Targeted communication activities to broaden awareness on data innovation.*



GOVERNANCE

The Lab's activities are guided by a Steering Committee which is composed of representatives, in equal measure, of the Government of Indonesia and the UN in Indonesia. The Steering Committee provides overall guidance and strategic direction for the Lab. PLJ also has a Technical Committee which meets on a regular basis to discuss the progress of activities. The Technical Committee reports to the Steering Committee.

PLJ continues to maintain technical coordination with the Ministry of National Development Planning (BAPPENAS) as its main government counterpart. The Steering Committee has advised PLJ to continue building upon successful research and proof-of-concepts that have already been done, in addition

to exploring new areas of work. The team at the Lab was also encouraged to explore the feasibility of possible options to sustain the work of the Lab beyond donor grant funding.

The lenses through which PLJ has focussed its 2017 research and development activities continue to be guided by the priority areas of the Government of Indonesia through the RPJMN (Rencana Pembangunan Jangka Menengah Nasional) and the UN through its Partnership Development Framework (UNPDF). This includes the Sustainable Development Goals as well as the recommendations of the Data Innovation Mission of August 2014, which was led by Bappenas and based on the Government of Indonesia's agenda.



2030 Agenda for Sustainable Development





TRACK 1

INNOVATION DRIVER

- Data Analytics
- Fit-for-Purpose Prototypes & Toolkits
- Data Platforms
- Strategic Exploration

Data Analytics

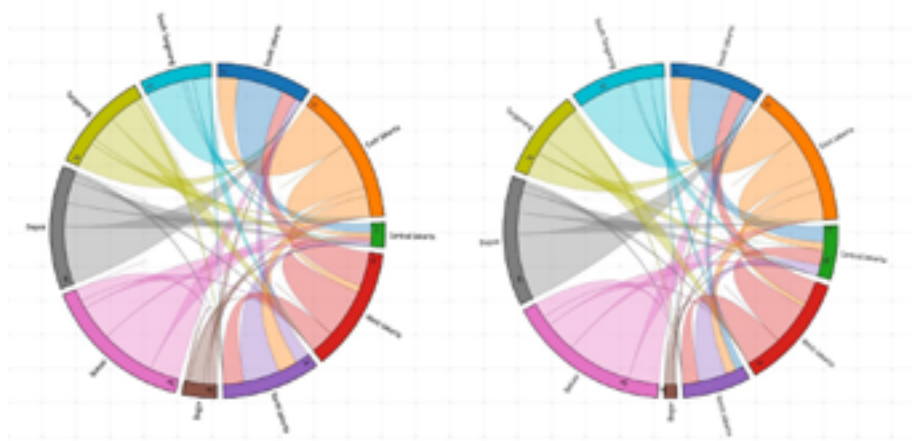
OPTIMISING PUBLIC TRANSPORT WITH TWITTER DATA

SDGs	Area of work
	 EXPLORE URBAN & REGIONAL DYNAMICS

Some estimates for Greater Jakarta put the population at more than 30 million people. Within the boundaries of the city itself, the transport system has to handle 1.38 million daily commuters. In collaboration with Jakarta Smart City and the Indonesian Institute of Statistics, PLJ investigated whether Twitter data could help provide policy makers with regular updates to best optimise public transport.

Origin-destination statistics for the 10 cities in Greater Jakarta were produced from GPS-stamped tweets, by identifying a subset of people who commute between these areas. The initial results were calibrated based on the population distribution and Twitter usage distribution, then verified with the Indonesian Bureau of Statistics' official commuting records.

The very high correlation between the official commuter flows and the commuting statistics inferred from Twitter (visualised in the chord diagram





Official commuter flows (left) compared to commuting statistics inferred from Twitter (right)

above) confirms that geo-tagged tweets can reliably fill existing information gaps in the official commuting statistics. Additionally, the research team was able to accurately determine (based on comparison with the Indonesian Institute of Statistics data) the top two destination cities for people travelling from 8 of the 10 origin cities in Greater Jakarta, decreasing the cost related to conducting traditional surveys to figure out such commuting patterns.



PUBLIC PERCEPTION OF INDONESIA'S BIGGEST VACCINATION CAMPAIGN

SDGs	Area of work
	 PROTECT THE POOR AND VULNERABLE



The Indonesian Ministry of Health launched one of its biggest immunisation campaigns in 2017, focused on vaccinating 70 million children against the measles and rubella viruses.

Inspired by one of the Lab's past research projects which was done to understand public perception of immunisation based on analysis of social media signals, PLJ partnered with UNICEF to screen a collection of public tweets (timestamped around the launch of the vaccination campaign) to gain a broad view of Indonesians' perspectives, map influences on social media, and develop a system to flag any upcoming issues around vaccination.

The tweets collected were filtered using a prepared taxonomy and analysed through a series of approaches. The preliminary results indicated that majority of the tweets contained an appeal/invitation for individuals to participate in and support the campaign, while some anti-vaccine sentiments were observed to a much smaller degree.

ESTIMATING SOCIOECONOMIC INDICATORS FROM MOBILE PHONE DATA

SDGs	Area of work
  	 PROTECT THE POOR AND VULNERABLE

Building on past studies which show that data from mobile phones (in particular from call detail records and airtime credit purchases) can be used to understand socio-economic conditions, PLJ conducted research into the potential of using mobile phone data to produce a set of proxies for education and household characteristics.

Using anonymised mobile data from the Pacific island nation of Vanuatu, proxies for four statistical indicators were extracted from mobile phone data that was made available by a local carrier. These indicators included education, household assets, household expenditure, and household income.

The findings of the research confirmed a relatively strong correlation between indicators from the mobile dataset and data from the official statistics provided by the National Statistics Office in Vanuatu. The use of mobile phone data to estimate socioeconomic indicators advances other considerations that seek to develop reliable proxies based on such data to monitor and evaluate the SDGs.

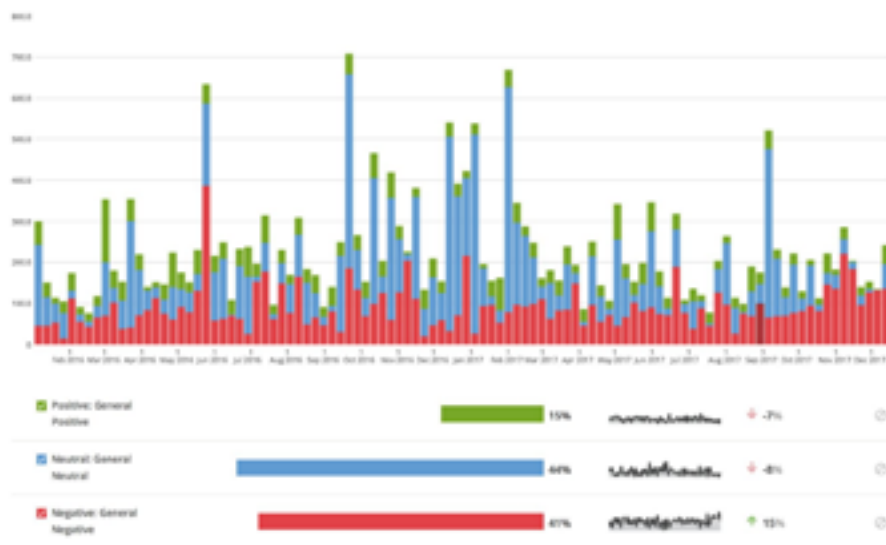


PUBLIC TRANSPORT ANALYSIS IN THE MALDIVES

SDGs	Area of work
	 EXPLORE URBAN & REGIONAL DYNAMICS

In the late 1990s, the Government of the Maldives began a reclamation project to develop the island of Hulhumalé in order to accommodate the growing population in Malé, the country's capital situated nearby.

Joining forces with our colleagues at UNDP Maldives and UNDP Bangkok Regional Hub, PLJ designed a pair of research projects to investigate urban mobility patterns using origin-destination analysis, and to perform sentiment analysis of public transport using Twitter data in order to better understand people's commuting experiences from Hulhumalé.



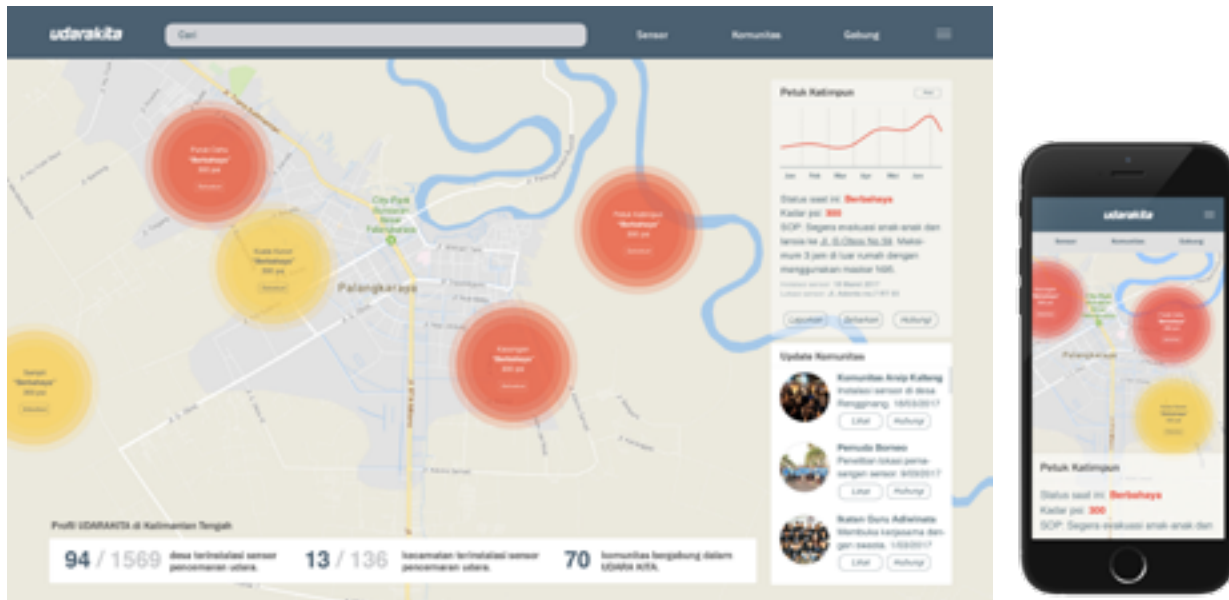
Hulhumalé residents' perception of public transport based on Twitter data analysis

Though unable to conduct the origin-destination analysis due to a lack of geo-tagged tweets among people from Hulhumalé, our research team performed a series of sentiment analysis as a first step. At a macro level, the sentiment analysis (which confirmed that people had more negative than positive opinions of public transport services) was intended to provide a general understanding about citizen perceptions of public transportation, and accentuate any major issues that may be worth examining. The possibility of accessing alternative data sources to capture insights on mobility is being explored.



Fit-for-Purpose Prototypes & Toolkits

LOW-FIDELITY HAZE PROTOTYPES



Air Quality Information system open dashboard

From disrupted commutes to medical complications, there are numerous accounts in communities across Indonesia about how residents have been affected with the haze phenomenon. Shaped by PLJ's thick data/social research, Reality Check Approach's ethnographic research and the feedback from a preliminary prototyping Co-Design for Change workshop in Jakarta, a set of prototypes was designed to lessen the impact of air pollution from wildfires - designed with human-centered elements that are practical for stakeholders, including students, teachers, parents and community volunteers.

These prototypes include:



- a **school emergency plan** (entails designated locations where children can temporarily attend classes away from haze-concentrated areas);
- a **haze emergency kit** (consists of a mask, goggles, materials to seal open gaps/cracks, and do-it-yourself air filtration device); and
- an **air quality information system** (relies on community involvement as it is a system that requires a network of citizens to collect air quality information using sensors, as well as, to disseminate the information).



The haze emergency kit contains materials that can be used to seal gaps around doors and windows.

SDGs	Area of work
	PROTECT THE POOR AND VULNERABLE

A SERVICE DESIGN TOOLKIT

SDGs	Area of work
	 EXPLORE URBAN & REGIONAL DYNAMICS

Understanding the enabling environment of a particular project is necessary for effective development and delivery of service. This includes considering factors such as the social and political contexts and the relevant stakeholders in the network. Yet, navigating these terrains can be complicated and demands extensive amount of time and effort.

Pulse Lab Jakarta participated in a service design initiative to develop a citizen-centric public transportation service in Makassar - The Pasikola. Following the initiative, which was undertaken along with United Nations Development Programme (UNDP) and Bursa Pengetahuan Kawasan Timur Indonesia (BaKTI), we chronicled our learnings on taking an idea from a design sprint to a ready-to-test prototype in a toolkit.



The toolkit provides a guiding framework to help simplify some of these processes—in a practical and efficient way; it gives a bird's eye view of the challenges stakeholders are likely to encounter; and it outlines crucial tasks that need to be considered in order to ensure a top-quality service design and an effective delivery model. The toolkit was also designed with the hope that it may be used to steer the innovation process for conceptualising service design projects: moving from problem identification to tangible concepts, and from concepts to tested pilots.

A GUIDE TO PARTICIPATORY URBAN DATA COLLECTION & DESIGN

SDGs	Area of work
 	 EXPLORE URBAN & REGIONAL DYNAMICS



With more than fifty per cent of the world's population living in urban areas, designing solutions with communities and enabling citizens to be involved in urban planning are good participatory ideals, but how should a city go about doing so?

PLJ teamed up with Participate in Design to compile approaches to urban data collection and design from around the world to answer that question. The guide shares insights into how other cities have done, from initiating participatory urban data collection to realising participatory urban design.

While the 24 samples contained in the guide are not instructional blueprints due to their unique political, social, economic and other contexts, they are useful for replicating active citizen and public participation in imagining urban change.

WAWASAN SATU DATA TOOLKIT



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SDGs	Area of work
 	 EXPLORE URBAN & REGIONAL DYNAMICS

For some data stewards working across Indonesia's public sector, the many uses of the data they collect are not always immediately known. PLJ worked closely with the Executive Office of the President (KSP) to develop the *Wawasan Satu Data* toolkit. The toolkit is aimed at helping data stewards within the public sector holistically understand data governance policies and framework, which are particularly aligned with the draft Presidential Regulation on Satu Data Indonesia.

As facilitators of the toolkit testing workshops in 2017, both PLJ and The Executive Office of the President were tasked with unpacking the content of the toolkit (which includes an array of practical items from storyboards to help streamline data collection flow to a Satu Data dictionary to explain common terminologies used in data governance) and helping participants to understand each component. The testing stage, which is the final step for developing and finalising the *Wawasan Satu Data* toolkit, has three overarching objectives: to understand, plan and build a sustainable data governance system.

Makassar, Kulon Progo, Pontianak and Mojokerto were chosen as the pilot locations for the toolkit testing to help assess data governance guidelines relevant to local government, including at the city and district levels.





URBAN VULNERABILITY MAPPING

In 2015, PLJ provided a grant of 10,000 USD to the Urban Poor Consortium (UPC) as part of its Innovation Mini Grant Competition. The funds were used to conduct a two-month project called Mapping Vulnerability in Urban Communities. Partnering with Peta Jakarta and d-associates architects, UPC piloted a community-led data collection approach in two communities in Jakarta.

Based on popular demand from local stakeholders to learn more about the inner workings of the approach, UPC in 2017 shared its approach to participatory urban vulnerability mapping in the form of a toolkit. It is a step-by-step guide to participatory data collection, management, data visualisation and decision making in urban communities.

One of the long-term objectives of the toolkit is to help citizens identify and articulate their community challenges from their own data.



SDGs	Area of work
 	 EXPLORE URBAN & REGIONAL DYNAMICS



Data Platforms

TRANSLATOR GATOR 2

Creating taxonomies, better known as a sets of keywords, is an important step in analysing social media data. However, building a taxonomy of key terms for less-known languages, including local dialects and jargon, is often challenging.

In 2017, PLJ launched the second pilot of Translator Gator, a gaming platform designed to crowdsource the translation of disaster-related keywords in almost 30 languages spoken throughout the ten ASEAN Member States and Sri Lanka.

Almost 1.8 million activities across four gaming components (translation, evaluation, classification and synonyms) were recorded within 100 days. The platform is a proof of concept which exhibits how translations that have been crowdsourced online can help relevant authorities understand the conversations/behaviours of local communities during a disaster.



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Translator Gator user interface







www.translatorgator.org

SDGs	Area of work
 	 PROTECT THE POOR AND VULNERABLE



HAZE GAZER EXPANSIONS

SDGs	Area of work
  	 PROTECT THE POOR AND VULNERABLE

In Indonesia, where forest and peatland fires can be annual occurrences, the Government relies on timely and effective means of tracking and managing the impact of these events.





Haze Gazer is a crisis analysis and visualisation tool, which PLJ developed to provide real-time insights on the locations of fire and haze hotspots; the strength of haze in population centres; insights on the locations of the most vulnerable cohorts; and the response strategies of affected populations (including in-situ behavioural changes).

In 2017, the platform evolved in twofold: 1) it became an open platform, accompanied with a mobile phone version that enables users to conveniently utilise it on the go; and 2) the platform expanded to Singapore where it is also being combined with mobility data to gather insights that can better inform the haze crisis.



PLJ's data engineer explaining features of the Haze Gazer platform to UN Resident Coordinator in Indonesia, Anita Nirody (far right) and other guests during a visit to the Lab.

VULNERABILITY ANALYSIS MONITORING PLATFORM FOR IMPACT OF REGIONAL EVENTS

SDGs	Area of work
  	 PROTECT THE POOR AND VULNERABLE



www.pulselabjakarta.org/vampire

Responding to the challenges which the 2015 El Niño-induced drought placed on communities in Indonesia, PLJ teamed up with the World Food Programme and the Food and Agriculture Organisation to develop an integrated, multi-tier tool that provides near real time analysis on the impact.

Known as VAMPIRE (Vulnerability Analysis Monitoring Platform for Impact of Regional Events), the tool has three layers and utilises several sources of Big Data. These sources include population data, national socio-economic data, household food security data, rainfall anomaly data, standardised precipitation index and vegetation health index.

In 2017, VAMPIRE scaled up to Sri Lanka. Beyond a one-way transfer of tech, it was contextualised to the country with improvements to aid the efforts of Sri Lankan Ministry of Disaster Management. The most recent iteration includes additional databases and indicators that now enable flood impact analysis. The team is currently working to develop additional layers.

VAMPIRE was one of the winners of the 2017 WFP Innovation Challenge.





CYCLONE MONITORING PLATFORM

SDGs	Area of work
	<p>PROTECT THE POOR AND VULNERABLE</p>

Big Data plays a pivotal role in helping disaster authorities to enhance preparedness, including their ability to monitor and respond to natural disasters like cyclones. In 2017 PLJ developed CycloMon, an analytics and visualisation platform with capabilities to monitor action before, during and after cyclones across the world.

Its basic functions rely on a series of automatic processes that collect, analyse and visualise information from weather satellites on the path of a cyclone, combined with insights



www.cyclomon.org

from social media and baseline information on the preparation for and impact of the cyclone on communities.

With functionalities similar to Haze Gazer, our haze crisis analysis tool, CycloMon allows for the exploration of rich, country-specific information mined from various sources of social media, such as text-, image-, and video-based content.

Strategic Exploration

MARITIME TRANSPORT NETWORK ANALYSIS

SDGs	Area of work
	 IMPROVE TRADE & COMPETITIVENESS

Maritime transport is important for economic development in the littoral member states of the Association of Southeast Asian Nations. Global marine vessel automatic identification system, in particular, is a key instrument for analysing the maritime transport network.

Together with academics from across Indonesia, PLJ analysed current port connectivity in South-East and East Asia and the further integration of the existing network under the Tol Laut development plan.

Our analysis indicates that the implementation of Tol Laut can reduce network dependency on Singapore by eight per cent



and on Tanjung Priok by 24 per cent. In terms of network efficiency, when Bitung becomes a hub port for Eastern Indonesia, as foreseen by Tol Laut, the study suggests that this should lead to an increase in efficiency by 20 per cent when compared to the current network.

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USING HUMAN CENTERED DESIGN TO UNCOVER PAIN POINTS AT INDONESIAN PORTS



Indonesia ranked 63rd in the Logistics Performance Index in 2016, scoring low in almost all key measures, including timeliness. Together with the Australia Indonesia Partnership for Economic Governance (AIPEG), PLJ conducted a study on how to improve the import experience in

Indonesia to contribute to the country's trade competitiveness.

While the study started out with an investigation into how port dwelling times affect the import process, pain points beyond the dwelling time were revealed, such as the barrier of a distrust of the overall system paired with issues of interrupted information flows.

Among a handful of other implications, the findings suggest that redesigning the current multiplatform online system into a single hub that can track all imported goods would tremendously reduce the administrative strains and burdens.

SDGs	Area of work
 	 IMPROVE TRADE & COMPETITIVENESS



DIVING INTO MDGs DATASETS TO INFORM THE SDGs



The implementation of the new Sustainable Development Goals (SDGs) has brought about challenges, especially concerning data collection and availability. During one of the Lab's Research Dives in 2017, researchers gathered to analyse publicly available data on the previous Millennium Development Goals across 34 provinces in Indonesia.

The team developed a set of proxies for currently unavailable SDG indicators, one of which included *the proportion of population using safely managed drinking water services* (this was done by using multiple measurements including the proportion of population below poverty line, the proportion of population consuming clean water, and the proportion of population with access to improved sanitation).

Along with our team at the Lab, the guest researchers looked at elements of correlation (to discover statistically meaningful correlations among MDGs indicators); causation (to reveal any causal relationship among MDGs indicators); quality of data (to analyse and improve the quality of the dataset); and data disaggregation (to propose a set of statistical methods to disaggregate Indonesian data by gender, age, and at the subnational level) with a view to filling data gaps and better understanding the relationships among the SDGs indicators now being implemented.



Millennium Development Goals (MDGs)

SDGs



IDENTIFYING OPPORTUNITY AREAS FOR FLOOD MITIGATION

SDGs	Area of work
 	 EXPLORE URBAN & REGIONAL DYNAMICS



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Community members in Sukagalih, Bandung work together to clear the streets of debris in an effort to reduce flooding.

The Bandung locale has faced repeated flooding over the years. Experts have pointed to the decrease of green space, inefficient waste management system and inadequate drainage capacity as contributing factors. Information pertaining to these factors are scattered throughout different government units—and are often dated.

Considering Bandung's Smart City endeavours on urban development and aiming to identify opportunity areas for flood mitigation, PLJ research team immersed in the community and surveyed multiple stakeholders while uncovering their journeys during these untoward events.

Two key points emerged:

- 1) Flood mitigation is a joint effort that requires cross-institution and cross-administration coordination, covering the scope of preparedness, response as well as recovery efforts.
- 2) While existing throughout different government units, without a sense of holistic coordination, the available data related to floods cannot be properly utilised.

In 2018, our social systems team hopes to expand its research to further unearth community-based solutions.



TRACK 2

ECOSYSTEM CATALYST

- **Connecting Practitioners, Academics & Policymakers**
- **Supporting Communities of Practice**
- **Reducing Barriers to Adoption**
- **South-South Cooperation**

Connecting Practitioners, Academics & Policymakers

DATA REVOLUTION FOR POLICYMAKERS CONFERENCE

SDGs	Area of work
	   



The ongoing data revolution is transforming our ability to sense changes in our economies, societies and environment. To take stock of progress in Indonesia, Pulse Lab Jakarta co-hosted an international conference in February 2017 under the theme, “Expanding the Evidence Base: Government Demand for Advanced Data Analytics in Indonesia”.

With more than 250 participants in attendance over a two-day period, contributions came from researchers, policy makers, activists, data analysts, entrepreneurs, civil society organisations, UN agencies and government representatives. The conference was also co-hosted by KSI (Knowledge Sector Initiative) and the Indonesian Ministry of National Development Planning (Bappenas).

The conference was structured into plenary sessions and data clinic sessions. During the plenary sessions, representatives from the Indonesian government, the UN, as well as from public and private entities addressed a number of topics, including: taking stock of the data landscape, applications of real-time data for decision making, the policy side of data innovation, synchronising and sharing data, forging data partnerships, reconfiguring citizen engagement, and making sense of the overall data.

Data experts among these groups also headed prototype cafe sessions, where they displayed several applications used for real-time data analysis and decision making. Altogether, the prototype cafe sessions were a showcase of work and advanced data analytics tools that can be used to capture citizen opinions, visualise information and provide new insights on behaviour, livelihoods, and economic activity to improve service delivery.

The data clinic sessions, on the other hand, aimed to facilitate direct dialogue between experts and participants on particular topics, as well as to share hands-on skills related to a certain aspect of data innovation. The conference broadly highlighted how new technologies and data could better inform policy making.



RESEARCH DIVE FOR DEVELOPMENT

SDGs	Area of work
	    

To broaden research engagement within the Big Data ecosystem, Pulse Lab Jakarta regular invites analysts and academics to participate in a three-day, hackathon-style research sprint at the Lab. Dubbed ‘Research Dive for Development’, during this event participants dissect and mash up various datasets related to development and humanitarian issues in Indonesia and across the region.



In 2017, PLJ organised three Research Dives under the themes: statistics for the Sustainable Development Goals (SDGs), trade and competitiveness, and transportation. As customary, a technical report was produced for each Research Dive, which includes technical papers on methodologies, findings and recommendations put together by the teams. Some participants from the Research Dives have also had their papers accepted to national/international journals and conferences.

Since its inception in 2016, participants from 85 universities, 12 government institutions and 5 research institutions/NGOs have taken part. We were also pleased to partner with private sector data partners, such as OLX Indonesia, Twitter, and PT Jasa Marga (Indonesia Highway Corp.), who were all generous to share selected anonymised datasets for us to research.



Our Research Dive tradition centers on giving an opportunity to researchers from different institutions and a variety of disciplines to network and share expertise, discovering new insights that can be useful for policy prescriptions while laying the foundation for new collaborations. A four-city reunion for past participants is being planned for the first quarter of 2018.

Supporting Communities of Practice

ECOSYSTEM MAPPING OF INDONESIAN START-UPS





In Indonesia, social entrepreneurs often face the difficulty of securing credit, especially for marginalised groups that do not have enough collateral. Accessing credit though is crucial for boosting entrepreneurship and promoting self-employment across the entire Indonesian landscape.

One of the patterns observed is that many enablers/investors tend to focus on accelerating the efforts of social enterprises that are located on the most populated island, Java. Thus to expand opportunities to other parts of the country, Platform Usaha Sosial and PLJ designed an online ecosystem mapping tool that surveys the venture capitals of start-ups in Indonesia, in part to help new start-ups find suitable funding support.

Through the use of interactive map visualisation, enablers/investors can see the distribution of social enterprises in Indonesia. The interactive map not only shows their locations, but also displays information about the SDGs parameters, target market, and other information related to social enterprises. At the time of its creation, the tool's database included more than 500 social enterprises.

SDGs	Area of work
 	 IMPROVE TRADE & COMPETITIVENESS

BIG IDEAS COMPETITION

SDGs	Area of work
	 PROTECT THE POOR AND VULNERABLE

PLJ's 2017 Big Ideas Competition - organised under the theme "combating climate change" - received 160 proposals from applicants throughout ASEAN Member States, Sri Lanka and the Republic of Korea. Aligned with the UN's Sustainable Development Goal #13 (Climate Action), the competition sought original, data-driven ideas to monitor climate related indicators.

The first batch of proposals underwent evaluation from a committee of experts with diverse backgrounds in climate change, disaster response and innovation. Following that, 12 proposals were selected to advance to the second round based on the quality of the idea, the importance of the issue addressed, use of more than one source of data, as well as the ability to be implemented.

The competition awarded 11 teams, of which the grand prize went to a team from Myanmar, which conceptualised an application to help monitor and assist in the reduction of methane emissions through insect consumption. The challenge inspired new approaches and facilitated connections between data communities and technology innovators across the region.



IMPROVING MOBILITY IN BANDUNG

SDGs	Area of work
 	 EXPLORE URBAN & REGIONAL DYNAMICS

Nearly two million passengers in Bandung can be transported by *angkot* minibus annually. And yet, only one third utilises this mode of transport, while the number of private vehicles in the city continues to increase.

Following the city government's launch of the Bandung Urban Mobility Project, PLJ along with a few partners (Data Science Indonesia, Hivos and Code4Bandung) kicked off a data-driven initiative to assess the project's progress and to help shape some realistic goals.

Taking the form of a series of ideation workshops with players from local communities, it was revealed that there are several ongoing approaches with similar goals. So, to better





Elementary school students in Bandung participate in a #Walk2School campaign

synchronise current and future activities aimed at improving mobility in the area, we gleaned and highlighted the need to:

- Consider transit-oriented development as a long-term goal.
- Optimise existing capacity with real-time data analytics.
- Improve the public transportation experience.
- Reduce private vehicle usage.
- Transform the behavior and attitude of road users.

SUPPORTING THE INNOVATION AGENDA IN SRI LANKA

SDGs	Area of work
	   



Photos Courtesy of UNDP Sri Lanka

Drawing from PLJ's own experience as an innovation lab, in 2017 we collaborated with UNDP Sri Lanka to assess the organisational and ecosystem readiness for an innovation lab in Sri Lanka. We utilised a human centered design approach during the scoping mission, focused on obtaining the stories, experiences, and needs of those who might be potentially involved and impacted directly by the lab.

The scoping mission took place as the first step in a two-pronged process to develop the Lab. Subsequent to the scoping mission, we conducted a multi-stakeholder workshop, which stimulated some of the lab's approaches and the interaction between different stakeholders to identify potential clients. In addition, we looked at some of the challenge areas that could be tackled in the early phase of the lab, while identifying which approaches and skill sets would be the most relevant for the lab to add value to Sri Lanka's innovation ecosystem.



Supporting the establishment of a Policy Innovation Lab as a safe space to test out innovative policy prototypes, our pre-assessment approach entailed in-depth interviews, concept testing, ideation and prototyping workshops.

Reducing Barriers to Adoption

BANKING ON FINTECH: FINANCIAL INCLUSION FOR MICRO ENTERPRISES IN INDONESIA

SDGs	Area of work
 	 

Micro and small-to-medium enterprises (MSME) in Indonesia employ more than 107 million people, contributing to more than half of the country's GDP. In 2016, the Government launched a National Strategy for Financial Inclusion, which aims to provide regulatory support for banking institutions as they work to guarantee more Indonesians' access to financial services.

With the support of the Department of Foreign Affairs and Trade (DFAT), Australia and in collaboration with the Indonesia Fintech Association (AFTECH),



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PLJ kicked off a research project called 'Banking on Fintech: Financial Inclusion for Micro Enterprises in Indonesia'.

To promote resilience and growth within Indonesia's unbanked micro business sector, the research aims to understand the experiences of early fintech adopters among those enterprises, as well as contribute to the Government of Indonesia's financial inclusion goals by uncovering behavioural and data analysis insights on micro enterprises as potential users of financial technology. We are currently developing partnerships with those who have committed to supporting the financial inclusion agenda and aim to incorporate our findings to create prototypes by mid-2018.

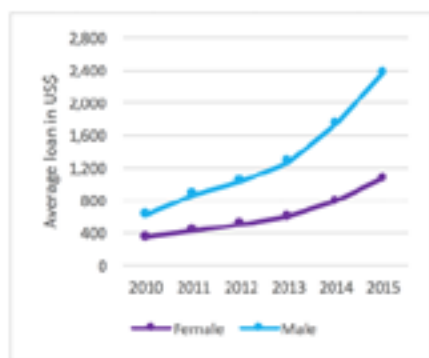


THE GENDER GAP IN FINANCIAL INCLUSION

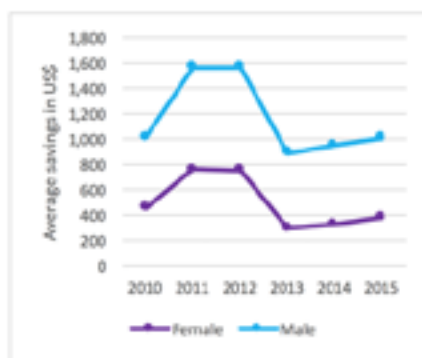
SDGs	Area of work
 	 

Globally, there has been great progress in advancing financial inclusion. However, there remains a gender gap in account ownership, savings, credit, and payments behaviour. The UN Capital Development Fund (UNCDF) SHIFT Programme and PLJ teamed up to support four financial service providers and the regulator in Cambodia in analysing anonymised financial records.

The research project has curated around 5.4 million anonymised savings and loan records from 2.6 million customers to examine savings account dormancy and borrower exit, and to improve financial service usage. Our data analysis suggests that while men and women have equal access to credit and savings services in



(a) Average Loan Amount in US\$



(b) Average Savings Amount in US\$

the region, the actual usage patterns in terms of the loans and savings amounts mobilised are much lower for most women.

These results highlight the need to tailor individual loan products better to the specific needs of women, and that there can be more extensive promotion of term deposits over savings accounts.

BUILDING DEMAND FOR DATA ANALYTICS THROUGH COLLABORATIVE RESEARCH



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Policy analysts within Bappenas participating in one of Pulse Lab Jakarta's data innovation clinics.

We teamed up with our main government counterpart, the Indonesian Ministry of National Development Planning (Bappenas), to host a seminar in 2017 showcasing our collaborative research on using new data sources and advanced data analytics to monitor the dynamics of Indonesia's economy.

During the seminar, four different Directorates presented the results of their research to a broader Bappenas audience. PLJ's role in this forum was to moderate the discussion and answer technical questions on data analytics. The bulk of the discussion, however, was between Bappenas sector experts, technical advisors, and policy analysts on how best to utilise new data sources to complement existing analysis on upcoming national planning priorities.

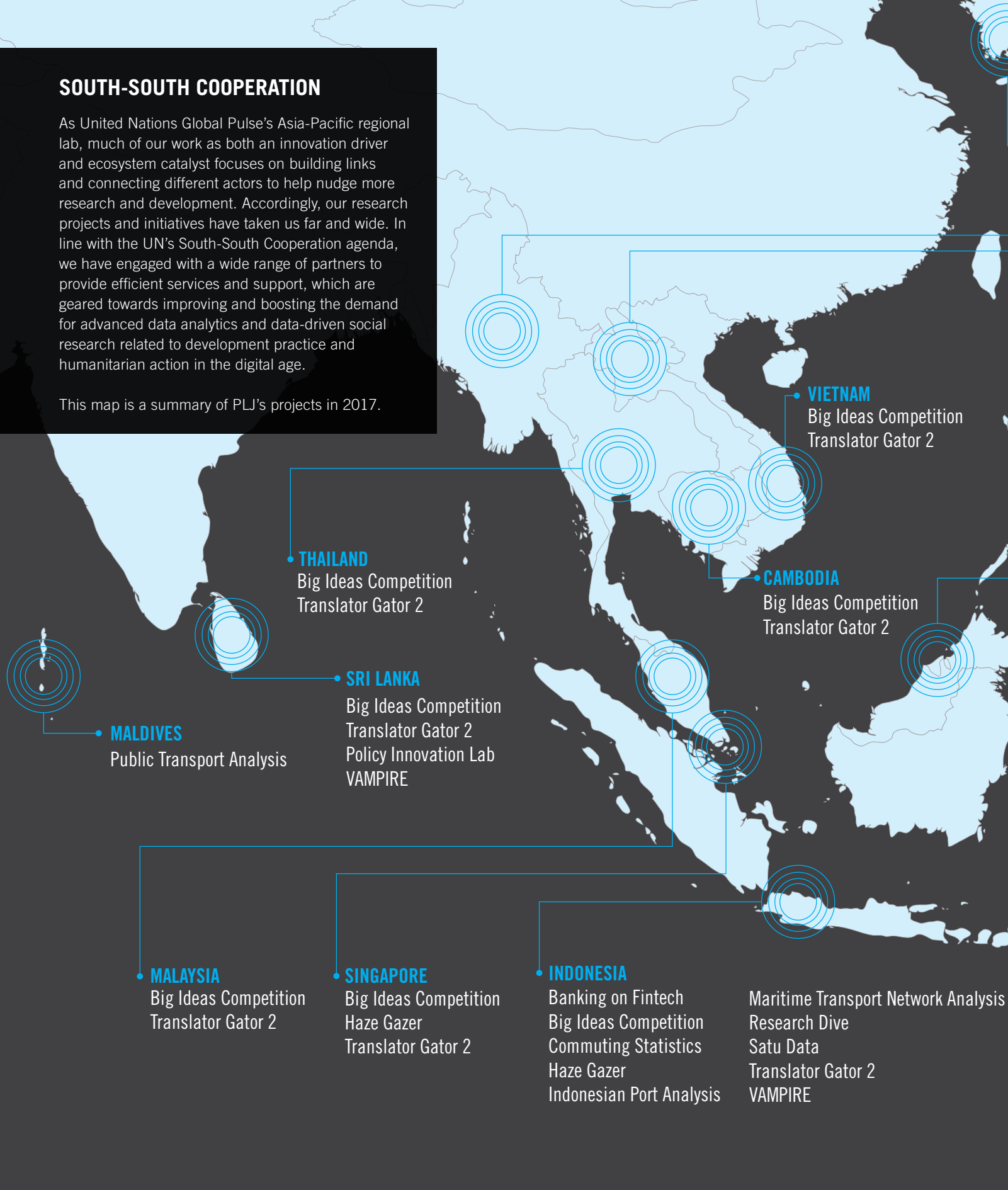
In addition to discussing the benefits of integrating different data sources, it was also good to observe a lively debate around the flaws and limitations of some of the approaches. Several members of the audience also raised the point that, although concepts like perception analyses can be useful if used appropriately, optimal use of Big Data analytics means looking beyond social media data and thinking critically about which data sources would yield the best insights.

SDGs	Area of work
	   

SOUTH-SOUTH COOPERATION

As United Nations Global Pulse's Asia-Pacific regional lab, much of our work as both an innovation driver and ecosystem catalyst focuses on building links and connecting different actors to help nudge more research and development. Accordingly, our research projects and initiatives have taken us far and wide. In line with the UN's South-South Cooperation agenda, we have engaged with a wide range of partners to provide efficient services and support, which are geared towards improving and boosting the demand for advanced data analytics and data-driven social research related to development practice and humanitarian action in the digital age.

This map is a summary of PLJ's projects in 2017.



• **THAILAND**
Big Ideas Competition
Translator Gator 2

• **VIETNAM**
Big Ideas Competition
Translator Gator 2

• **CAMBODIA**
Big Ideas Competition
Translator Gator 2

• **MALDIVES**
Public Transport Analysis

• **SRI LANKA**
Big Ideas Competition
Translator Gator 2
Policy Innovation Lab
VAMPIRE

• **MALAYSIA**
Big Ideas Competition
Translator Gator 2

• **SINGAPORE**
Big Ideas Competition
Haze Gazer
Translator Gator 2

• **INDONESIA**
Banking on Fintech
Big Ideas Competition
Commuting Statistics
Haze Gazer
Indonesian Port Analysis

Maritime Transport Network Analysis
Research Dive
Satu Data
Translator Gator 2
VAMPIRE



• **REPUBLIC OF KOREA**
Big Ideas Competition

• **LAOS**
Big Ideas Competition
Translator Gator 2

• **MYANMAR**
Big Ideas Competition
Translator Gator 2

• **PHILIPPINES**
Big Ideas Competition
Translator Gator 2

• **BRUNEI DARUSSALAM**
Big Ideas Competition
Translator Gator 2

• **VANUATU**
Mobile Data Network Analysis
CycloMon

PROJECT MAP

Emerging Outcomes

As part of our results management framework, we have identified three main pathways where our work brings value to our broader stakeholders. **Operational influence** is how we contribute to our partners' capacity to use data tools and methods that PLJ has developed. This is fundamentally driven by PLJ's core exploratory data science, data analytics and user insights projects, as well as our direct capacity building initiatives. **Methodological influence** is how we leverage our work and disseminate it more widely in order to broaden the overall body of knowledge on data innovation for development. **Ecosystemic influence** is how our work contributes to a stronger data innovation ecosystem, both in Indonesia and in the region. This includes stakeholders having the interest and capability to harness new data sources for development, as well as improved collaboration amongst our different stakeholders.

Operational and methodological influence relates closely to our work in driving innovation, or Track 1 of the Global Pulse Lab network. Ecosystemic influence relates to Track 2 of our work, especially in contributing to a strong, dynamic and conducive data ecosystem through policy advocacy and stakeholder engagement. Rather than rigid categories, however, these tracks are more heuristics to typify the work that we do and what value we potentially bring.

Operational Influence

PLJ has built upon and expanded the analytical platforms that we have developed in recent years. For example, our Haze Gazer platform has informed the development of a cyclone monitoring system (CycloMon) for the South Pacific countries, and that is now being transformed into a global Disaster Monitoring Platform (DisasterMon). We have also augmented Haze Gazer with mobility data from Singapore for richer insights that could inform haze crises in the area. Besides the open platform at hazegazer.org, a version of Haze Gazer has also been installed in the situation room of the Executive Office of the President of Indonesia, as part of an integrated early warning system.

The Vulnerability Assessment Monitoring Platform for the Impact of Regional Events (VAMPIRE) that we developed

with colleagues from the World Food Programme (WFP) has also been significantly expanded. The open version of VAMPIRE (pulselabjakarta.id/vampire/) contains global rainfall anomaly data, in addition to more specific baseline and climate data for two countries: Indonesia and Sri Lanka. The version of VAMPIRE that has been installed in the Office of the President of Indonesia has informed the government's decisions on how to address drought in certain regions¹. A modified version of the platform has been adopted by Sri Lanka's Ministry for Disaster Management for real-time information and situation monitoring of disasters².

We have also seen emerging operational influence from some of our previous user research work. A year after its publication, our study on Indonesia's business registration process from the viewpoint of small business owners³ was still being used as a reference by the Australia Indonesia Partnership for Economic Governance (AIPEG) to discuss improvements for business registration with the Indonesian Ministry of Trade. Meanwhile, our scoping report for UNDP Sri Lanka's social innovation lab⁴ has helped the team in Colombo consolidate support for the lab and secure multi-year core funding from the Government of Sri Lanka to set up the new entity, named Citra Lab⁵.

¹ <https://goo.gl/sAHm1S>

² <https://goo.gl/yU4AWf>

³ <https://goo.gl/w2YeCb>

⁴ <https://goo.gl/5Hkq6p>

⁵ <https://goo.gl/KdQcRC>

Methodological Influence

In terms of methodological influence our work in collaboration with the Indonesian Institute of Statistics using Twitter data to infer commuting statistics for the Greater Jakarta region is a highlight. The Indonesian Institute of Statistics is adopting this method to enhance commuting statistics produced by the Government henceforth, as a complement to traditional commuting surveys.

Also of note is the augmentation of Haze Gazer with mobile data from SingTel to assess the impact of haze on human mobility in Singapore, which received an honourable mention in the 26th ACM International Conference on Information and Knowledge Management (CIKM).

Building on our partnership with OLX Indonesia, the analysis of e-commerce data as proxies for economic dynamics, as explored during one of our Research Dives, was used to frame further collaborative research with Bappenas' Economic Affairs team. The research dive approach itself has also been recognised by partners as a way to unlock additional value from data sets, highlighted by the ambition of OLX Indonesia to host research dives in-house to generate shared value from its data.

We are also seeing methods we have developed with mobile network data and microfinance data appear in funding proposals by UN country teams in Fiji, Samoa and Papua New Guinea. We remain connected to these teams as a knowledge partner for quality assurance, but the integration of these new approaches into development programming is encouraging.

Ecosystemic Influence

Our efforts to build not only demand for real-time data analytics, but also a better

understanding of how our government counterparts can optimally use these insights to inform salient policy issues, seem to be bearing results. In implementing the collaborative data projects with Bappenas' Economic Affairs division, each of the Directorates involved assigned their own analysts to work with Pulse Lab Jakarta's researchers. These analysts played an instrumental role in shaping the research questions, clarifying the drivers behind the policy issues, and identifying what kinds of analyses were already available. They also led the way in exploring the connections between digital footprints and other contextual datasets.

The results of these projects were then showcased to other divisions in Bappenas as an example of how Big Data analytics could be used to inform development planning and policy formulation. This coincided with a broader push from the Bappenas Minister to harness new data sources to inform development planning. Towards the end of 2017, we received 31 proposals for collaborative research from Bappenas to be considered as part of our 2018 research plan. Although we are certain that many, many external factors outside of our control have influenced this significant spike in demand, we very much welcome this as an indicator of increased appetite for experimentation with new data sources within Indonesia's apex planning agency.

Beyond the governmental-side of the data innovation ecosystem, we have witnessed an increase in collaboration between and publications by academics active in natural language processing, which had been directly attributed to our first Research Dive on natural language processing for sustainable development by a sector expert. In addition, one of the outcomes

of our fifth research dive on transportation was a collaboration between the toll agency regulator and some of the research dive participants regarding an impact evaluation of the switch to cashless payment toll gates. We are delighted to be seeding demand for and supply of evidence drawn from big data and other sources.

Private sector partners have been fundamental to the success of PLJ, as they are often the custodians of the big data sets from which we develop new value. Although in previous years our private sector partners were framed primarily as data philanthropists, we are beginning to see a shift in the relationship to one of shared value. Our research, as part of the data collaboratives in which we participate, generates new public value, but also accelerates the adoption of new research methods and advanced data analytics by our private sector partners, enhancing business operations. These shared value models are attracting more private enterprises to contact us to explore their data, and more broadly to investigate the value of their networks and data as part of the data innovation ecosystem.

Pulse Lab Jakarta has always drawn talent and inspiration from both the technology and non-profit communities. We were delighted to be part of Indonesia's first Py-Con, a convention for the discussion and promotion of the Python programming language. We like to think that our hosting of Python meetups in previous years contributed to the growth of this community. It has also been great to witness the increase in demand for data products and tools by non-profits; PLJ has delivered support to a few partners in this sector, as has the tech community at large, led by the likes of Data Science Indonesia and Code for Bandung.



Outreach

As part of our efforts to contribute to the discourse on data innovation and data analytics, as well as to promote harnessing digital data sources and artificial intelligence for social good, Pulse Lab Jakarta has hosted, organised, facilitated and contributed as resource persons in a range of national and international events. Below is a timeline summary of our activities throughout the year, many of which were conducted in collaboration with our partners from government institutions, the private sector, academia and civil society organisations.



JANUARY

World Data Forum Cape Town, South Africa

UN Global Pulse showcased its work on data innovation around the SDGs during two sessions it hosted on ‘Big Data Innovations for Sustainable Development’ and ‘Working with Big Data and New Data Sources’.



FEBRUARY

Assessing the Technological Turn in Humanitarian Action Policy Discussion Singapore

PLJ discussed the potential of using Big Data for humanitarian action and disaster risk management in the Asia Pacific region.

International Conference on Data Revolution for Policy Makers Jakarta, Indonesia

PLJ in collaboration with BAPPENAS and KSI convened policy makers, data analysts and other stakeholders to explore the opportunities and challenges of utilising new data sources for policy making.



IFRC Flood Resilience Innovation Conference Jakarta, Indonesia

PLJ described how emerging digital datasets can support flood resilience, and emphasised the need for humanitarians to venture out and meet with innovators who are engaged on the frontline.



MARCH

Research Dive 3: Statistics for SDGs Jakarta, Indonesia

PLJ brought together statisticians from across Indonesia to analyse data from the MDGs as a means to support the implementation and monitoring of the SDGs.



Lab Visit: Kaveh Zahedi - UNESCAP Deputy Executive Director Jakarta, Indonesia

iData Studio Regional Workshop Bangkok, Thailand

PLJ outlined how certain data innovations and human centered design methodologies have become useful for transforming insights into action through a collaborative design approach.



APRIL

IEEE Pacific Visualization Symposium
Seoul, South Korea

PLJ exhibited UN Global Pulse's storytelling project on 'Rescue Signatures in the Mediterranean' that shows the magnitude of ongoing rescue operations and enables an interactive analysis.

NetMob Conference
Milan, Italy

PLJ presented findings on two of its mobile phone data analysis research projects: (a) Using Twitter data from mobile phone to produce commuting statistics in Indonesia and (b) Using mobile phone data to produce socio-economic statistics in Vanuatu.

Lab Visit: Haoliang Xu - Asst. Secretary General of the UN/UNDP Director of the Regional Bureau for Asia and the Pacific
Jakarta, Indonesia**Buka Warung: Media & Blogger**
Jakarta, Indonesia

PLJ in association with TEMPO Institute organised an open lab event for media personnel and new media bloggers, which sought to address challenges related to data journalism.

International Conference on the Digital Economy: Security and Privacy in the Big Data Era
Jakarta, Indonesia

Pulse Lab Jakarta facilitated the visit of UN Special Rapporteur on the Right to Privacy, Professor Joe Cannataci, to give a keynote address at the international conference on 'Security and Privacy in the Big Data Era' which was organized by Padjadjaran University. The conference helped highlight how protecting the security and privacy of the public will boost confidence and trust and encourage growth in the digital economy.

MAY

Global Landscapes Forum: Peatland Matters
Jakarta, Indonesia

PLJ described the features of its real-time haze analysis platform known as Haze Gazer, which is designed to provide insights to enhance response strategies for disaster management authorities.

Australia-Indonesia Youth Leaders Seminar
Jakarta, Indonesia

PLJ gave an overview of the Lab's projects which utilise digital data for social good during a TED-talk event held at the Australian Embassy in Jakarta.



Photo credit: Australian Embassy, Indonesia

Humanitarian Data Exchange Workshop
Jakarta, Indonesia

PLJ together with UNOCHA facilitated a workshop session which explored innovative methods for generating insights from complex datasets to support efforts in the humanitarian field.

Data Innovation Clinic with Bandung City Governments
Bandung, Indonesia

PLJ in collaboration with HIVOS and Data Science Indonesia facilitated a sharing session with the Department of Communication and Informatics (Diskominfo) and the Agency of Planning, Research and Development (Bapelitbang), in which they explained how Big Data may be leveraged for policy making in Bandung.



JUNE

AI for Good Global Summit
Geneva, Switzerland

PLJ highlighted the Lab's data analytics projects during a panel discussion on how governments, private sector industries and stakeholders today are using Artificial Intelligence for social good.

Collective Intelligence Conference 2017
New York, United States

PLJ presented the findings of the first phase of the Lab's Translator Gator project (designed to crowdsource development related keywords), and discussed emerging approaches that can be used to monitor citizen feedback on public sector programmes.

Forum on Innovative Data Approaches to SDGs
Incheon, South Korea

PLJ echoed the importance of the ongoing data revolution, given the demands of the complex SDGs, particularly focusing on how improvement in how data is produced and used may be used to close existing data gaps.

4th WeGO General Assembly
Ulyanovsk, Russia

PLJ's Urban and Regional Dynamics Lead served as one of the judges for the WeGO (the World Smart Sustainable Cities Organisation) Smart Sustainable City Awards and chaired a session on 'Internet of Things (IoT), Big Data and Analytics'.

**Behavioural Exchange 2017 Conference**
Singapore

PLJ surveyed a set of approaches related to how new digital data sources and real-time data analysis techniques may be useful in shaping and informing public policy decision making process.



JULY

Indonesia Innovation Forum 2017

Jakarta, Indonesia

PLJ moderated a panel discussion themed on ways to improve innovative research and technology application in Indonesia.

Lab Visit: Members of the Australian Parliament

Jakarta, Indonesia



AUGUST

Indonesia Development Forum (IDF) 2017

Jakarta, Indonesia

PLJ showcased VAMPIRE (an early warning system for climate impact) during a session on technology and inequality, as well as its analysis on Transjakarta passengers travel behaviours during the 'Ideas and Innovation Marketplace'.



ASEAN Strategic Policy Dialogue on Disaster Management 2017

Singapore

PLJ took part in the ASEAN strategic policy dialogue on disaster management, speaking in particular about how big data can add value to improve planning and preparation efforts.



Research Dive 4: Trade and Competitiveness

Jakarta, Indonesia

PLJ in collaboration with OLX Indonesia hosted 17 academics and researchers from diverse disciplines to dive into various new types of data to explore the dynamics of trade and competitiveness in Indonesia and across the region.



SEPTEMBER

UNDP GCPSE's Disruptive Technologies for Government Conference

Singapore

PLJ's Head of Office participated in a panel discussion, addressing the opportunities and challenges of embracing new technologies that have been changing the way governments operate.

3rd Sankalp Southeast Asia Summit

Jakarta, Indonesia

PLJ discussed the importance of experimentation and prototyping in the social impact space.



Asia Pacific South 3DExperience Forum

Surabaya, Indonesia

PLJ contributed to a panel discussion, focusing on some of Indonesia's smart cities and the use of technology to assist in urban planning and design.

OCTOBER

Strategic Dialogue on Poverty and Inequality in Asia and the Pacific
Bangkok, Thailand

PLJ discussed several innovative methods and complementary data that can support research, and enhance knowledge and policymaking in Asia and the Pacific.

IDEAFEST

Jakarta, Indonesia

PLJ explored through an interactive dialogue how new technologies can help communities start a social movement as well as measure its impact.

2017 International Conference on Sustainable Development Goals Statistics
Manila, The Philippines

PLJ presented a selection of its data innovation projects and discussed the potential of integrating different data sources to monitor the SDGs.

**Embassy Briefing**

Jakarta, Indonesia

PLJ hosted a group of representatives from different foreign embassies in Jakarta during a coffee morning, and featured some of the Lab's flagship projects.

PLJ Buka Warung with Bappenas

Jakarta, Indonesia

PLJ organised a sharing session for members of the Directorate of Maritime and Fisheries within Bappenas to present updates on some of the Lab's work around using new data sources to generate insights for public policy.



NOVEMBER

General Lecture at ITB, ITS & UI

Bandung, Surabaya, Jakarta, Indonesia

PLJ organised a lecture series at three universities on the topic of Big Data, Thick Data and their overlaps.

**Research Dive 5: Transportation**

Jakarta, Indonesia

PLJ invited researchers and domain experts to participate in its research sprint on transportation, analysing toll data, traffic CCTV data, public transportation and social media data to improve traffic management.

United Nations Climate Change Conference (COP 23)

Bonn, Germany

PLJ highlighted the benefits of its collaboration with government partners and other stakeholders, and discussed how it designs innovation projects to help achieve the SDGs in Indonesia.

**4th UN Conference on Big Data for National Statistics**

Bogota, Colombia

PLJ presented three of its projects as case studies for data collaboratives for the SDGs: nowcasting food prices, commuting statistics from social media and VAMPIRE.

Australia-Indonesia Fintech Exchange

Melbourne & Sydney, Australia

PLJ led a session on the opportunities of fintech for financial inclusion and presented its project to support financial inclusion for micro enterprises in Indonesia.

DECEMBER

Python Conference 2017

Surabaya, Indonesia

PLJ described how it designs service APIs for Big Data sources to a group of Python enthusiasts from across Indonesia.

The International Conference on Data and Information Science (ICoDIS) 2017

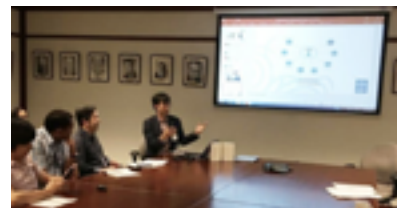
Bandung, Indonesia

PLJ led a discussion on how emerging digital data sources, such as social media, can be used responsibly for social good.

Asian Development Bank - Big Data for Sustainable Development for Humanitarian Action Seminar

Manila, The Philippines

PLJ discussed how different types of big data, including social media and satellite imagery, can provide real-time insights not only to decision makers but also to citizens.

**Expert Group Meeting on Data-Driven Smart Government**

Manila, The Philippines

During the Expert Group Meeting on data-driven smart governments organised by UNESCAP, PLJ presented on how Big Data may be used to advance sustainable development.

Data Visualisation Workshop

Bandung, Indonesia

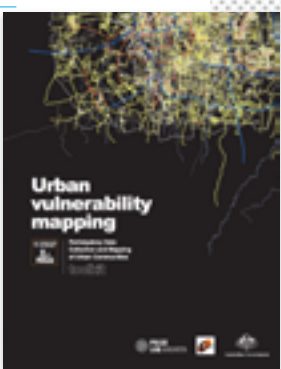
PLJ's visual designer underlined the importance of data visualisation in today's data-rich world, unpacking some snazzy examples and the concepts behind them.



Publications



Navigating the Terrain: A Toolkit for Conceptualising Service Design Projects



Urban Vulnerability Mapping Toolkit



Data Revolution for Policy Makers - Proceedings



Through Haze-Tinted Glasses



Pulse Stories 4
Let's Get Down to Business



Pulse Stories 5: Setting Sail



3rd Research Dive Technical Report - Statistics for SDGs



4th Research Dive Technical Report - Trade & Competitiveness



5th Research Dive Technical Report - Transportation



How a Social Lab can Support the Change Agenda in Sri Lanka



From Urban Data Collection to Urban Design: A Guide to Participatory Approaches Around the Globe

Academic Papers



“Social Media Insights for Sustainable Development and Humanitarian Action in Indonesia”

International Conference on Data and Information Science

“Better Informing the Situational Information on Haze Crises in Southeast Asia and Its Impacts on Human Mobility in Singapore”

CIKM Analyticup on DataSpark Mobility Open-Task Challenge

“Statistical Analysis of Postal and Trade Network Data within ASEAN Countries and Beyond”

7th International Seminar on New Paradigm and Innovation on Natural Sciences and Its Application

“Understanding the Effects of Traffic and Weather Conditions on Public Transport Use in Jakarta”

CIKM Workshop on Big Data Analytics for Enhancing Public Transport (Big Transport)

“VAMPIRE and PRISM - New Vulnerability Monitoring Platforms on Food and Livelihood Security in Indonesia and Sri Lanka”

3rd Conference on Data for Policy

“Keyword Expansion for Understanding Events in Indonesian Tweets”

ICML Workshop on Interactive Machine Learning and Semantic Information Retrieval

“Mining Social Media to Inform Peatland Fire and Haze Disaster Management”

Journal of Social Network Analysis and Mining

“Nowcasting Commodity Prices Using Social Media”

Journal of PeerJ Computer Science

“Nowcasting Commodity Price with Google Trends and Twitter”

Korea Computer Congress

“Estimating the Indicators on Education and Household Characteristics and Expenditure from Mobile Phone Data in Vanuatu”

5th Conference on the Scientific Analysis of Mobile Phone Datasets (NetMob)

“Inferring Commuting Statistics in Greater Jakarta from Social Media Locational Information from Mobile Phone”

5th Conference on the Scientific Analysis of Mobile Phone Datasets (NetMob)

“Collaborative Translation to Better Listen to Citizen Feedback and Voices on Public Sector Programmes”

5th Collective Intelligence Conference

Media Coverage

FEBRUARY

BAPPENAS Supports Data Revolution for Policy-Making

“Bappenas Dukung Revolusi Data Bantu Perumusan Kebijakan Publik”

Source: Berita Satu, 22 February 2017



MARCH



Indonesia Promotes The Use of Data for Policymaking

Source: Digital News Asia, 2 March 2017

“As the largest economy in the Southeast Asia (SEA), Indonesia is one of the founding members of the Open Government Partnership (OGP), a multilateral initiative to promote transparency, fight corruption and harness new technology to strengthen government.”

Navigating Indonesia's Data Innovation Ecosystem: A Reflection

Source: Nesta, 10 March 2017

MAY

How Governments Around The World Are Turning To Data

Source: Innovation Enterprise, 10 May 2017

“According to recent research by Garner, a quarter of government CIOs believe that a lack of digital skills are a barrier to achieving their goals, and chief among them is data science” skills.



JUNE

Gotong Royong Terjemahkan Bencana (Crowdsourcing Disaster Keywords)

Source: KOMPAS, 14 June 2017

Wildfires' 'killer haze' tracked with Twitter as it spreads

Source: New Scientist, 29 June 2017

JULY

Two Paths to Supporting Grassroots Innovation

Source: Stanford Social Innovation Review, 18 July 2017

“An innovation experiment in Indonesia yields insights on how international development organizations can effectively foster innovation within the communities they aim to help.”

Wildfire Prevention and Risk Reduction for Children’s Health and Wellbeing (part 2)

Source: BaKTI News Edition 138 page 1, June-July 2017

PASIKOLA, Petepete Anak Sekolah (PASIKOLA, Petepete for students)

Source: BaKTI News Edition 138 page 1, June-July 2017

AUGUST



Mapping Innovation Humanitarian Aid

Source: Nesta, 4 August 2017

How Indonesia’s President monitors food security

Source: GovInsider, 24 August 2017

SEPTEMBER

Enhancing Resilience to Extreme Climate Events: Lessons from the 2015-2016 El Niño Event in Asia and the Pacific

Source: ReliefWeb, 7 September 2017



OCTOBER

How Indonesia Cut Malaria Reporting by 19 Days

Source: GovInsider, 25 October 2017



NOVEMBER

In Conversation with... Derval Usher, Head of Office for Pulse Lab Jakarta

Source: Centre for Public Impact, 3 November 2017

Sustainable Eating and Climate Change

Source: The Jakarta Post, 21 November 2017

DECEMBER

Designing Conversations on Public Service Delivery

Source: Open Government Indonesia, 27 December 2017



Data Privacy & Data Protection Principles



UN Global Pulse and its lab network take data privacy very seriously. Big Data represents a new resource with the potential to revolutionise development and humanitarian practice, but we are mindful that legitimate concerns about privacy and data protection present challenges to harnessing big data for public good.

Global Pulse has set up a Data Privacy Advisory Group, which comprises experts from public and private sector, academia and civil society as a forum to engage in continuous dialogue on critical topics related to data protection and privacy. Dr Sinta Dewi, Professor of Law at the University of Padjadjaran Indonesia joined the Data Privacy Advisory Group in 2016, which has enriched the discussion on data privacy from an Indonesian perspective.

Purpose of use

We access, analyse or otherwise use data for the purposes consistent with the United Nations mandate and in furtherance of the Sustainable Development Goals.

Risk and harm assessment and risk mitigation

We perform a risk assessment and implement appropriate mitigation processes before any new or substantially changed project is undertaken. We take into consideration the impact that data use can have not only on individuals but also on groups of individuals.

Data minimisation

We ensure the data use is limited to the minimum necessary.

Data retention

We ensure that the data used for a project is being stored only for the necessary duration and that any retention of it is justified.

Data security

We ensure reasonable and appropriate technical and organisational safeguards are in place to prevent unauthorised disclosure or breach of data.

Data quality and accountability

We design, carry out, report and document our activities with adequate accuracy and openness.

Right to use

We access, analyse or otherwise use data that has been obtained by lawful and fair means, including, where appropriate, with the knowledge or consent of the individual whose data is used.

Individual privacy

We do not access, analyse or otherwise use the content of private communications without the knowledge or proper consent of the individual. We do not knowingly or purposefully access, analyse, or otherwise use personal data, which was shared by an individual with a reasonable expectation of privacy without the knowledge or consent of the individual.

Purpose compatibility

We ensure to the extent possible, that all of the data we use for project purposes is adequate, relevant, and not excessive in relation to the legitimate and fair purposes for which the data was obtained

Data sensitivity

We employ stricter standards of care while conducting research among vulnerable populations and persons at risk, children and young people, and any other sensitive data.

Our collaborators

We require that our collaborators are acting in compliance with relevant law, data privacy and data protection standards and the United Nations' global mandate.



Partnerships

Throughout 2017, Pulse Lab Jakarta has collaborated with several key local and international partners on a range of projects. Our work would not have been possible without them.

Development Partners



Government

Indonesian:



Foreign:

Ministry of Science, ICT
and Future Planning

Communications Authority of Maldives



Sri Lanka Ministry of Disaster Management

Private Sector



<http://gyroid.io>



Academia



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Civil Society



Donors

Pulse Lab Jakarta is very grateful for the generous support of all our donors whose invaluable support keeps us experimenting with new data sources for public good.



Australian Government



Become A Pulse Lab Partner

Pulse Lab Jakarta is keen on forming partnerships with companies and organisations within the region and beyond to collaborate on research. There are various forms of partnerships possible:

- Become a data philanthropy partner and share your data for analysis.
- Become a research partner and work on a project with PLJ.
- Become a technology partner and build prototypes and/or test new tools.
- Present a big data analysis tool or method at a training session or workshop.
- Sponsor a fellow to join the Pulse Lab and work on data visualisation, data analysis, GIS mapping, and/or software development.
- Provide funding, or in-kind, support for PLJ's work.

If your organisation is interested in collaborating with Pulse Lab Jakarta, please contact the team at plj@un.or.id

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