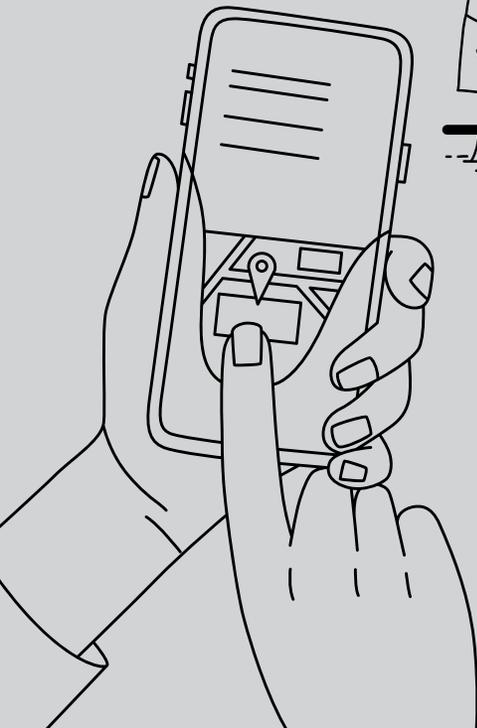
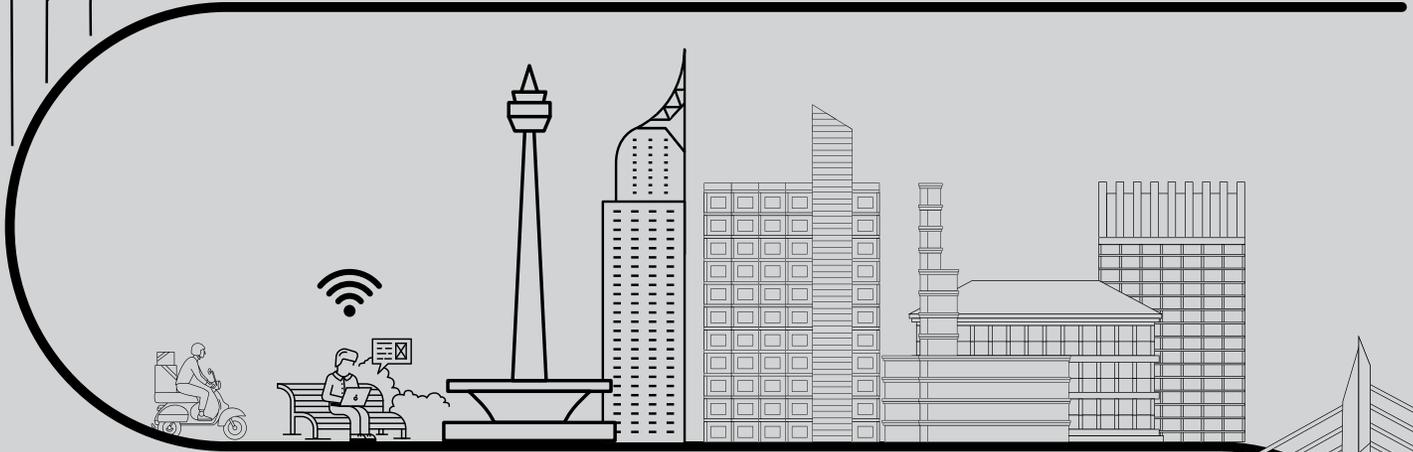
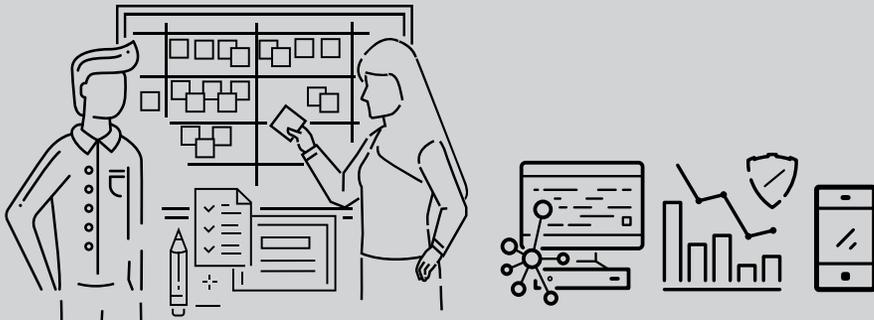


# ANNUAL REPORT

2018

SHAPING DEVELOPMENT PRACTICE  
& HUMANITARIAN ACTION  
FOR THE DIGITAL AGE





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& HUMANITARIAN ACTION  
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# HIGHLIGHTS

**2018** was a seminal year for big data analytics in the public sector in Indonesia. The sophistication of demand for our services from public sector stakeholders increased and there was a greater realisation amongst our data partners in the private sector of the potential of their data to inform public policy and promote social good. Pulse Lab Jakarta was set up in 2012 as the Asia Pacific lab of UN Global Pulse, to facilitate more agile policy responses to better protect vulnerable populations from the impacts of global crises. The data ecosystem in Indonesia is closer than ever before to meeting these needs.

## CATALYSING PUBLIC SECTOR DIGITAL TRANSFORMATION

In the years since Pulse Lab Jakarta was first set up, the digital economy both in Indonesia and across the region has boomed.

Indonesia is the proud home of many tech unicorns, which are transforming society and generating tractable data on what was formerly the grey economy. The data exhaust being produced by the digital transformation of society and the economy also holds the potential to increase state capacity by offering new insights relevant to nearly every aspect of government.

One of the highlights we wrote about a year ago was the increase in demand from the public sector for data innovation services, but what has truly stood out in 2018 has been the increased sophistication of demand for big data analytics. A more nuanced understanding of what can be achieved by mining different big data sets is evident among our public sector partners, as is the appreciation that to scale this work, investment in their tech infrastructure is required. Innovative thinkers already exist, such as Jakarta Smart City, proving that digital transformation within the public sector is politically and technically possible.

Within government, the Satu Data Indonesia initiative represents a big step forward for Indonesia's ambition to become the country with the strongest digital economy in ASEAN by 2020. The Satu Data initiative, which Pulse Lab Jakarta has been supporting

by applying human centred design to model a data governance framework at the local government level, is expected to lay the foundation for harnessing the power of data within the public sector, including developing public-facing data registries and embracing the use of diverse, high granularity and near real-time sources of data. These are also the foundation blocks for the successful application of artificial intelligence in government and the Fourth Industrial Revolution.

Pulse Lab Jakarta continues to act as a catalyst for these changes. We have a broad portfolio of data innovation projects with line ministries and city administrations across Indonesia, providing policy-relevant insights and more importantly, applied knowledge across Indonesia on what is possible with new sources of data. As highlighted by our impact studies, the information systems, developed based on some of these research projects, have found sustainable homes in the Executive Office of the President of Indonesia, the National Ministry of Development Planning and Jakarta Smart City, among others.

We have also supplemented these research initiatives with support to the ecosystem, such as working to advance data governance, as well as connecting academics and policy makers to new data sources, technologies and methods through conferences and research dives. It was great to see young Indonesian academics gain recognition for their work with big data, access to which Pulse Lab Jakarta facilitated via our research dives, and we feel immense pride that their research

insights have gained traction in different parts of government. Fusing local experience in the development of big data-related technologies is central to the founding logic of the UN Global Pulse Lab network and we were glad to see this progress in 2018.

We are proud of the role we have played in catalysing public sector innovation. No longer are we talking about the possibilities -- instead we are working with our wide range of partners to implement data-driven change within departments, ministries and agencies. We helped define how data innovation projects can take-off, we provided guidance on data innovation for policy making and we conducted groundbreaking research with data from the private sector that is changing how the public sector measures wealth, inflation and other facets of development planning.

### THE RISE OF PUBLIC PRIVATE DATA PARTNERSHIPS

We continue to be uniquely positioned at the nexus of government and private sector and have played a strong role in convening data partnerships that generate sustained value for our stakeholders. In line with Indonesia's ambitious Fourth Industrial Revolution agenda, articulated in part by the Indonesia 2045 Vision, Pulse Lab Jakarta has been described as the R&D data unit of the Government and we have been privileged to work with many companies who understand the shared value of their data. We have carved out a niche as an R&D partner for companies looking to enhance their social impact.





A highlight of the lab in 2018 was expanding our research portfolio through partnerships with the private sector. Companies such as Go-Pay, BTPN, Wow!, Amarthya, OLX among others, have collaborated with us on various research projects based on priority areas in Indonesia's National Medium Term Development Plan and the uptake by the government on the insights gained from these new data sources is encouraging. Grab, a ride hailing and logistics platform operational across Southeast Asia, is working with us on understanding the dynamics of transportation demand across public and private provision. We have also been partnering with Visa, the payments solutions business, on encouraging the burgeoning fintech sector to extend its services to the unbanked segment of the population. In 2018, we expanded our shared value partnership with Digidata, a major mobile network operator across Papua New Guinea and the South Pacific, with whom we have been conducting groundbreaking research with anonymised mobile network data to produce new and better tools to inform policy making and better protect vulnerable populations.

Indonesia is at the forefront of harnessing the data revolution. The use of big data for official statistics has risen dramatically in recent years and Indonesia has been experimenting with new data sources such as mobile network data, satellite imagery and social media for statistical indicators, examples of which have been celebrated at global fora. Throughout 2018, Indonesia was unfortunately struck by a series of natural disasters which meant that government was stretched to understand and respond to the evolving needs of affected communities. The ability to use social media to analyse forced displacement and other risks became a valuable capacity for understanding human resilience after natural disasters and useful for targeting resources.

The emergence of digital economies and the globalisation of data and information are creating many new opportunities for the poor and vulnerable and we were proud to expand our financial inclusion project this year and work in partnership with fintech companies – market players – on sustainable solutions for financial inclusion. We are aware of the risks that come with

new digital technologies and artificial intelligence and have always placed an emphasis on data privacy and protection. Research ethics and data privacy will remain cornerstones of our work in the years to come.

### SHARING LESSONS ACROSS THE REGION

In 2018, Pulse Lab Jakarta hosted together with Indonesia's Ministry of Foreign Affairs and the DiploFoundation an International Seminar on Digital Diplomacy which served as a roundtable for diplomats, development practitioners, digital natives and civil society members to exchange fresh ideas and approaches on how to both adopt and adapt to digital diplomacy. Disruption is happening across all sectors and even diplomats are having to change how they interact.

Using the lessons learned from digital transformation domestically, Indonesia is committed to strengthening South South Triangular Cooperation not only through humanitarian assistance but also through capacity building and sharing of lessons learned from Indonesia across the Indo-Pacific region. In parallel, Pulse Lab Jakarta expanded the geographic reach of its activities in 2018, from analysing micro-financial transactions in Cambodia, to analysing mobile data for disaster management in Vanuatu, through to developing a relative wealth index in Papua New Guinea. PLJ is grateful to our UN and private sector partners for their support with these projects.

### ONWARDS AND UPWARDS

We have been fortunate in 2018 to partner with diverse agencies, ministries and companies committed to social good and we have expanded the boundaries of our research. Looking forward we want to focus on reducing inequalities and ensuring that economic growth is inclusive. We intend to keep experimenting with new data sets and, in our capacity as the R&D data lab of the Government of Indonesia, we will continue sharing the lessons we have learned widely across the region.

Our success has been down to the flexible and unwavering support of our stakeholders, the Government of Indonesia, Government of Australia and the United Nations. Our Steering Committee keeps us on track, provides us with a basis for moving forward and ensures that we keep focused on those we were set up to serve.



Pulse Lab Jakarta would not exist and continue to thrive without the core funding support that we receive from the Government of Australia. Thank you.

We invite and encourage you to read through this report which showcases the projects that we worked on in 2018.

# 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.

As part of the UN Global Pulse network, our mission is to accelerate the discovery and adoption of data innovation for sustainable development and humanitarian action.

UN Global Pulse's three main services include:



Driving exploratory research on new insights that can be gleaned from unconventional data sources;



Helping UN agencies, governments and development partners make better use of their data; and



Advocating for the ethical use of data and technological platforms in line with the protection of individual privacy.

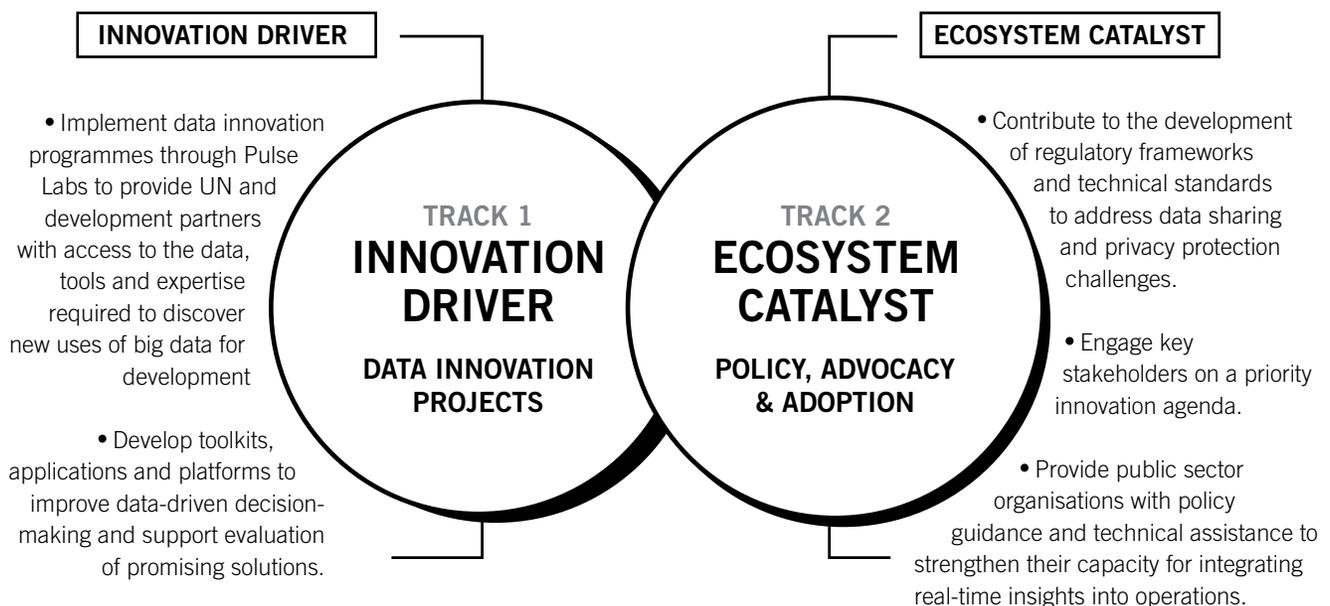
Using data sets drawn from mobile communications, remote sensing and social media, among others, we have generated insights for policy and practice on topics ranging from fuel subsidies to natural disasters. Across our research projects, many of which are delivered alongside our partners, we rely on 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 and decision-making. Throughout 2018, the partnership took into account the need for timely information to:



Within this framework, Pulse Lab Jakarta adopts a two-track innovation strategy for all its activities, in line with UN Global Pulse's overall strategy:



## ORGANISATIONAL LOGIC

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

(1) **better use of data in public decision-making**, which is expected to significantly contribute towards (2) **improved public policy**, which would ultimately result in (3) **increased public well-being**, particularly among vulnerable communities.

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

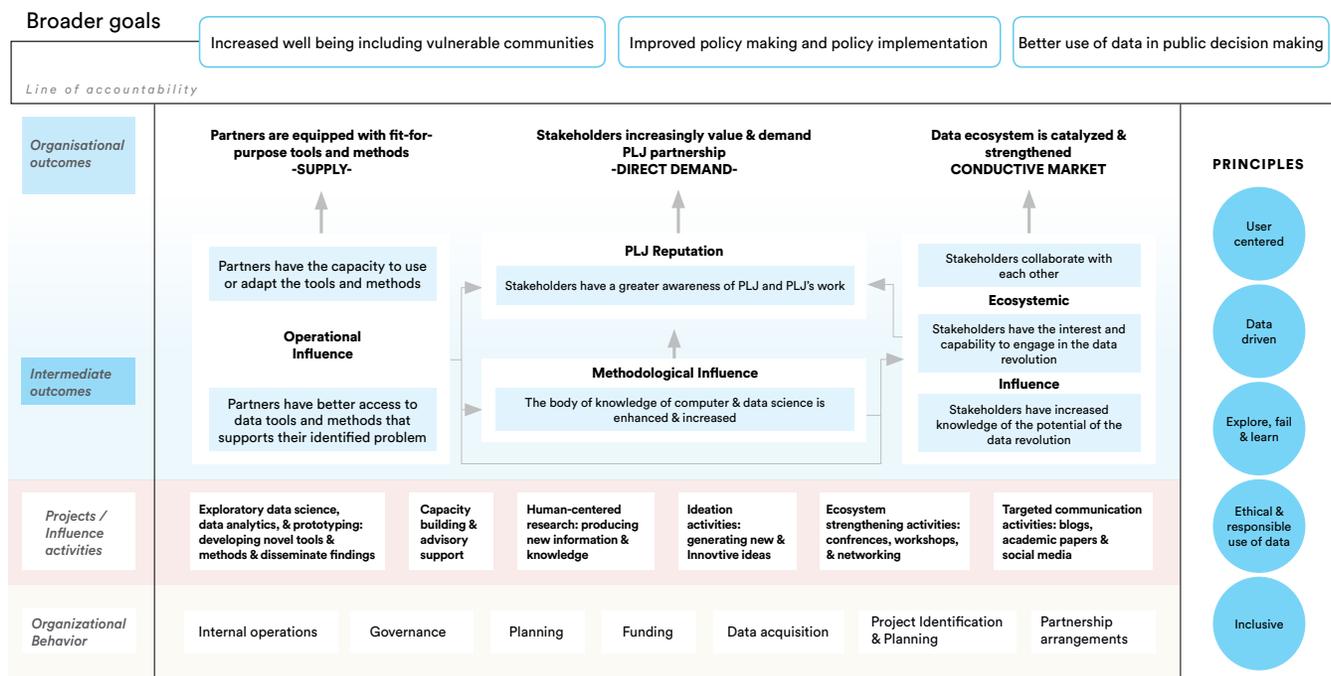
1. PLJ partners are equipped with fit-for-purpose tools and prototypes;
2. Stakeholders increasingly value and demand PLJ partnership; and
3. The data ecosystem is catalysed and strengthened.

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

- User centered
- Data driven
- Explore, fail and learn
- Ethical and responsible use of data
- 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 comprises 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 (most recently in December 2018) 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 is also being encouraged to explore the feasibility of possible options to sustain the work of the Lab beyond donor grant funding.

PLJ presents its work plan to the Steering Committee for endorsement on an annual basis, and our research and development activities are guided by the priority areas of the Government of Indonesia through the 2015-2019 RPJMN (Rencana Pembangunan Jangka Menengah Nasional) and the UN through its Partnership Development Framework (UNPDF). This work plan also takes into account the Sustainable Development Goals as well as the recommendations of the Data Innovation Mission of August 2014 that was led by Bappenas and based on the Government of Indonesia's agenda.



# RESEARCH SUMMARY

PROJECT NAME	AREA(S) OF WORK	DATA	LOCATION	PARTNER(S)	SDGS
SDG Monitoring Dashboard	Support disaster response and humanitarian action, improve trade and competitiveness, explore urban and regional dynamics, advance the sustainable management of natural resources	Satu Data Portal APIs	Indonesia	Bappenas' Data and Information Centre (Pusdatin), Indonesia's SDGs Secretariat	
Satu Data Toolkit	Support disaster response and humanitarian action, improve trade and competitiveness, explore urban and regional dynamics, advance the sustainable management of natural resources	Behavioural insights from field research, Satu Data draft presidential regulation	Indonesia (Makassar, Mojokerto, Kulon Progo, Pontianak)	Executive Office of the President of Indonesia (KSP), Bappenas, National Democratic Institute	
Port Network Analysis	Improve trade and competitiveness	Automatic Identification System (AIS) Data	Indonesia	Bappenas Directorate of Macroeconomics and Statistical Analysis, Universitas Gadjah Mada	
ATM Transaction analysis	Improve trade and competitiveness, explore urban and regional dynamics	Records of debit card transactions	Indonesia	Department of Statistics at Institut Teknologi Sepuluh Nopember	
Financial Access Map	Improve trade and competitiveness, protect the poor and vulnerable	Socio-economic data, geospatial infrastructure data, network coverage data, financial services location data	Indonesia	Secretariat for the National Council for Financial Inclusion (SNKI), Women's World Banking	
Banking on Fintech: Financial Inclusion for Micro Enterprises in Indonesia	Improve trade and competitiveness, protect the poor and vulnerable	Behavioural insights from field research	Indonesia	Indonesia Fintech Association, BTPN Wow!, Go-Pay, Amarthia, UNCDF-SHIFT	

PROJECT NAME	AREA(S) OF WORK	DATA	LOCATION	PARTNER(S)	SDGS
Microfinance Customers' Journey in Cambodia	Improve trade and competitiveness, protect the poor and vulnerable	Loans and savings mobilisation data	Cambodia	UNCDF SHIFT	   
Research Dive: Financial Inclusion	Protect the poor and vulnerable, improve trade and competitiveness, explore urban and regional dynamics	Social media data, National Socio Economic Survey data, bank branches, public market stores, post offices, OJK financial inclusion and financial literacy survey data and TNP2K household survey data	Indonesia	Financial Services Authority, Microsave Indonesia	   
Strengthening Disaster Response Using Mobile Network Data	Support disaster response and humanitarian action, protect the poor and vulnerable	Mobile network data	Papua New Guinea, Vanuatu, Samoa	UN Delivering Together Facility, Digicel, UNCT Papua New Guinea, Vanuatu and Samoa	  
Suara Komunitas	Support disaster response and humanitarian action, protect the poor and vulnerable	Citizen-generated data	Indonesia	PMI, IFRC, UN OCHA, UNICEF	  
Humanitarian Response to the Sulawesi Earthquake and Tsunami	Support disaster response and humanitarian action, protect the poor and vulnerable	3W ("Who Does What Where") data	Indonesia	UN OCHA, AHA Centre, Humanitarian Data Exchange, Humanitarian Country Team	  
A Disaster Monitoring Big Data Tool	Support disaster response and humanitarian action	Hazard-related data that are available globally through APIs. Other data sets that have been accessed through partnerships.	Indonesia and the Pacific Islands	OpenStreetMap, Twitter, Humanitarian Data Exchange	   
Vampire	Support disaster response and humanitarian action	National Socio Economic Survey data, WFP's household food security survey data, rainfall anomalies and the Indonesian Vegetation Health Index data	Indonesia, Sri Lanka	World Food Programme, Food and Agriculture Organisation, Executive Office of the President of Indonesia (KSP)	   

PROJECT NAME	AREA(S) OF WORK	DATA	LOCATION	PARTNER(S)	SDGS
Nowcasting Air Quality Using Twitter	Support disaster response and humanitarian action, protect the poor and vulnerable	Air Quality Index, fire hotspot data, air temperature data and Twitter data	Indonesia	Twitter	   
Estimating the Quality of Crowdsourced Translations	Support disaster response and humanitarian action	Translator Gator 2	ASEAN member states and Sri Lanka	-	  
Analysing Twitter Data Streams to Detect Irregular Events	Explore urban and regional dynamics	Social media data	Indonesia	Twitter	  
Rural to Urban Migration in Indonesia	Explore urban and regional dynamics	Telkomsel mobile network data and XL mobile network data	Indonesia	World Bank, Empatika, XL Axiata	  
Analysing CCTV Data to Improve Traffic Safety in Jakarta	Explore urban and regional dynamics	CCTV footage	Indonesia	Jakarta Smart City, University of Chicago's Data Science for Social Good Fellowship programme	  
Poverty Mapping	Protect the poor and vulnerable, explore urban and regional dynamics	Mobile network data and tele-survey data	Papua New Guinea	UN Delivering Together Facility, Digicel, UNCT Papua New Guinea	   
Estimating City-level Poverty Rates	Protect the poor and vulnerable, improve trade and competitiveness, explore urban and regional dynamics	OLX data, data on poverty from Statistics Indonesia (BPS)	Indonesia	OLX, Statistics Indonesia (BPS)	   
Flood Mitigation in Bandung	Explore urban and regional dynamics, support disaster response and humanitarian action, protect the poor and vulnerable	Usability testing insights	Indonesia (Jakarta, Bekasi, Sukabumi, Ciseeng, Banyumas)	Department of Communication and Informatics of Bandung City Government, Labtek Indie	  

PROJECT NAME	AREA(S) OF WORK	DATA	LOCATION	PARTNER(S)	SDGS
After Dark: Safe Transit for Women Travelling at Night	Explore urban and regional dynamics	Behavioural insights from field research	Indonesia (Semarang, Surabaya, Medan)	UN Women	   
Research Dive: Urban and Regional Development	Improve trade and competitiveness, explore urban and regional dynamics, protect the poor and vulnerable	GDELT data, location data on public health facilities and hospitals, geospatial data, road network data, water consumption data, water survey data, social media data and electricity utility data	Indonesia	Bappenas, Indonesia Australia Infrastructure Partnership (KIAT)	    
Research Dive: Artificial Intelligence and Machine Learning for Estimating Poverty	Protect the poor and vulnerable, improve trade and competitiveness, explore urban and regional dynamics	Satellite imagery data, e-commerce data, social media data and TNP2K and Ministry of Social Affairs household survey data	Indonesia	Bappenas, Ministry of Social Affairs, Knowledge Sector Initiative, Artificial Intelligence Journal	    





TRACK 1

# ▶ INNOVATION DRIVER

- ▶ Exploring Insights from New Data Sources
- ▶ Equipping Partners with Fit-For-Purpose Tools and Methods
- ▶ Uncovering Behavioural Insights to Complement Data Analytics

# Exploring Insights from New Data Sources

## MOBILE NETWORK DATA

Over the course of 2018, Pulse Lab Jakarta made significant progress in mining anonymised mobile network data to inform public policy and humanitarian action. We define mobile network data as the information elements contained in anonymised call detail records (CDRs) created by mobile network operators for billing purposes. CDRs summarise anonymous mobile subscribers' activities, such as phone calls, text messages and data connections, but contain no information on their content. As this data is uniquely detailed and tractable, it can capture information not easily found from other sources at a scale that would be difficult to recreate through other means. Once anonymised and aggregated to appropriate levels, mobile network data can provide a variety of insights with value for development partners. Throughout the year, we conducted mobile network data analysis covering various phenomena including internal migration, socio-economic structures and forced displacement associated with extreme events. These research projects contributed to knowledge and policy on addressing poverty and responding to natural disasters.

### RURAL TO URBAN MIGRATION

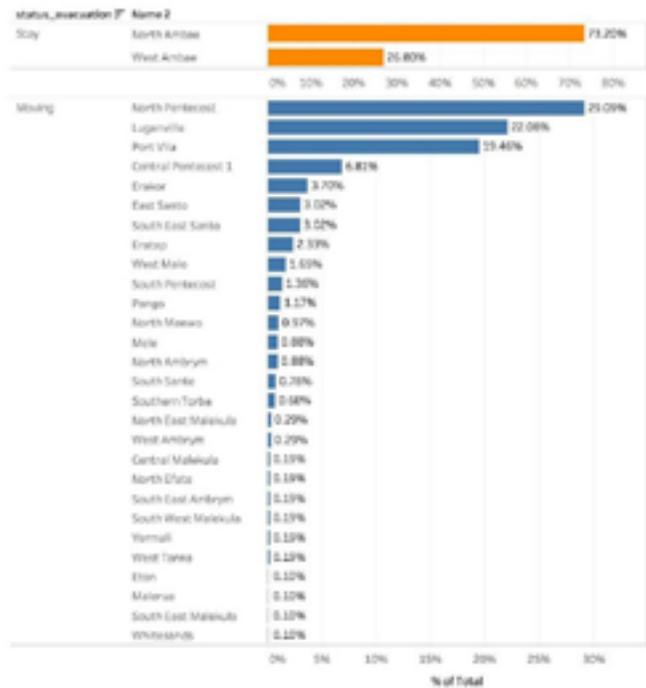
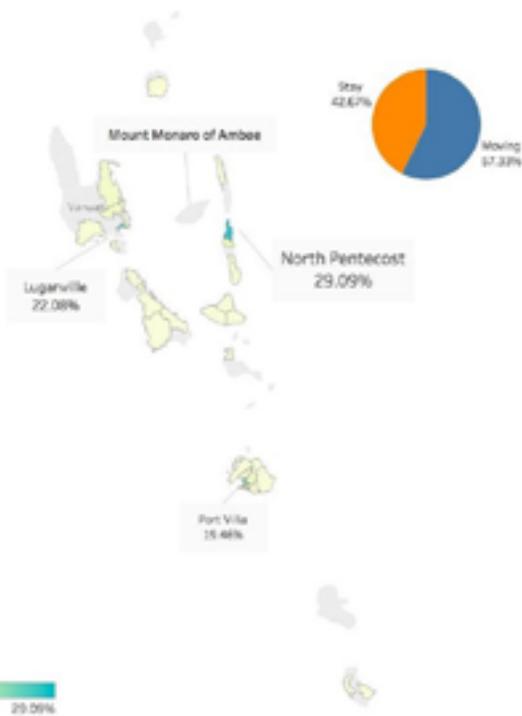
Commissioned by the World Bank, Pulse Lab Jakarta and Empatika conducted research into the experiences of rural to urban migrants in Indonesia. PLJ led the quantitative component of the project which used mobile network data from Telkomsel and XL to develop statistics on the source communities of migrants and magnitude of short term migration to seven major cities across the country. The analysis informed the targeting of the qualitative research conducted by Empatika as well as generated new insights on migration, finding that internal migration is significantly underestimated in official statistics.



SDGs	Area of work
  	 <p>EXPLORE URBAN AND REGIONAL DYNAMICS</p>

## DISASTER RESPONSE

In partnership with Digicel, Pulse Lab Jakarta has been engaged in a research project (funded by the UN Delivering Together Facility) to mine mobile network data for insights on natural disasters. Covering the Highlands Earthquake in Papua New Guinea and the Ambae Volcano in Vanuatu, PLJ has developed insights on internal displacement to inform the targeting of humanitarian assistance. Our analysis indicated that not only can mobile network data be used to map evacuations in near real-time, but there is also the potential of building predictive models for evacuee destinations. In Vanuatu, the analysis created operational impact as the Ambae Volcano erupted again in August 2018, and the Government requested insights on citizen displacement, which PLJ delivered in a timely manner.



Insights on the evacuation destinations of anonymous mobile phone subscribers, submitted during the August 2018 state of emergency on Ambae island

Conducting multifractal analysis of the network signals in Vanuatu, we found that regularity existed in the signals. The finding confirms the value of the data set as a source of insights on social phenomena and anomalies, such as natural disasters. Building on this research, we analysed the impact of Tropical Cyclone Donna on population flows and subscriber behaviour in Vanuatu, finding that the data set contained many useful signals of relevance to policy makers. We closed out the year by preparing baseline information on Samoa so that we are ready to conduct analysis and provide useful insights should a cyclone impact the country over the coming months. The preparation included mapping the locations of storm shelters to understand which cell towers might see an increase in load during a cyclone; understanding the ratio between subscriber density and population density to develop rough scaling factors for population flows; descriptive analysis of the different frequencies of commuting and migration between administrative units; and descriptive analysis of the social network.

SDGs	Area of work

## POVERTY MAPPING

SDGs	Area of work
	

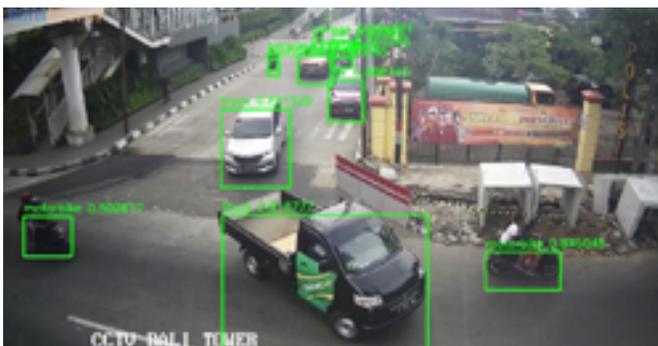


Relative wealth index predictions for Papua New Guinea at the district level

Funded by the UN Delivering Together Facility, and in partnership with UN DOCO, the UN Country Team in Papua New Guinea and Digicel, Pulse Lab Jakarta developed a model to predict wealth and poverty at a high degree of spatial granularity based on mobile network data and a survey of mobile network users. This project was inspired by similar work conducted in Rwanda by a team of academics. Our aim was to replicate the methods and operationalise the approach to inform development practice, which is of particular relevance due to the data sparse context. The predictions from the model will be compared to findings from the ongoing demographic health survey to understand the accuracy of these predictions in the context of the general population - not just mobile network users. The United Nations in PNG is using the findings to target better area-based development programmes, and plans to re-run the model for more frequent impact tracking.

## CCTV DATA

### USING DEEP LEARNING TO TACKLE TRAFFIC SAFETY IN JAKARTA



Objects are detected and classified into different categories

SDGs	Area of work
	 <p>EXPLORE URBAN AND REGIONAL DYNAMICS</p>

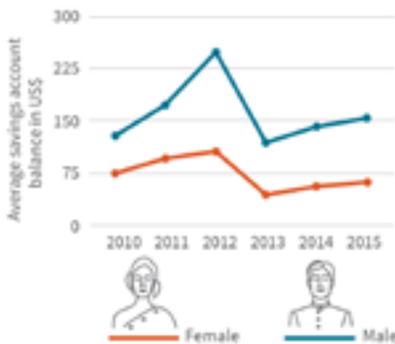
Pulse Lab Jakarta together with Jakarta Smart City had the opportunity to participate in the University of Chicago's Center for Data Science and Public Policy annual Data Science for Social Good fellowship, a summer programme training aspiring data scientists to work with government and non-profit partners on innovative projects with social impact. Our project analysed CCTV data in Jakarta for the purpose of improving traffic safety, and was selected as one of the global challenges that the fellows took on for their three-month programme. Deep learning methods were used to identify objects in the video frames - a task that humans can do well but one that is labour-intensive and hard to scale, making computer vision a more efficient approach. These tasks helped in the realisation of a pipeline that converts raw, unstructured video frames into data on traffic flows and traffic safety. The approach is now being integrated into Jakarta Smart City's information systems, and scaled to cover the 3000 or so CCTV cameras at traffic intersections in Jakarta. A research paper on the project received a Highlighted Paper Award at the NIPS 2018 AI for Social Good workshop.

# FINANCIAL DATA

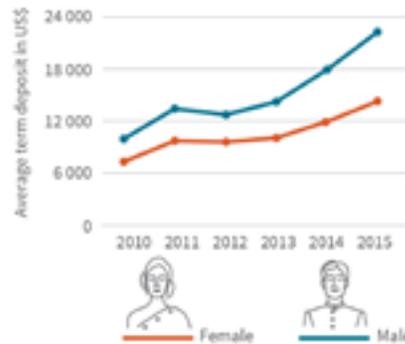
## MICROFINANCE CUSTOMER JOURNEY IN CAMBODIA

Average Savings Mobilization by Gender

a) Average Savings Accounts Balance in US\$

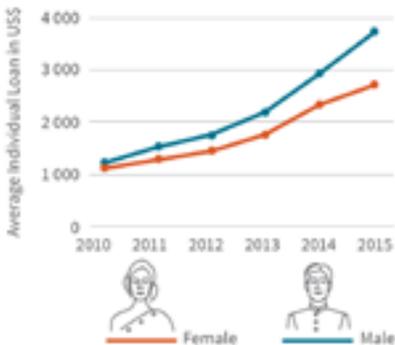


b) Average Term Deposit in US\$



Average Loan Mobilization by Gender

a) Average individual loan amount in US\$



b) Average group loan amount in US\$



Microfinance can improve the lives of individuals who don't have access to traditional banking services, which can be especially useful for low-income earners in times of financial uncertainties.

UNCDF-SHIFT programme together with Pulse Lab Jakarta studied the journey of a group of microfinance customers in Cambodia using data from four leading microfinance institutions, finding significant gender and youth gaps in average loans and savings mobilisation across the country.

PLJ is conducting further studies on customer segmentation, network analysis and adaptive capacity, which are expected to reveal insights on the types of customers, as well as patterns of short and long term resilience to climate shocks. More broadly, the research aims to gather insights on ways to improve microfinance services in order to accelerate national economic growth.



SDGs	Area of work

## ATM TRANSACTION ANALYSIS

Pulse Lab Jakarta and the Department of Statistics at Institut Teknologi Sepuluh Nopember investigated whether it is possible to infer the level of income from the mobility data contained in anonymised ATM transactions. The research examined human mobility based on the locations of ATMs where the transactions occur, and their relationship with users' income levels. Emphasis was placed on low income segments of the population in order to ascertain poverty-related insights. The links between different patterns of human mobility and income that we uncovered are useful for interpreting insights from other big data sets. The results, which are based on debit card transaction records from an Indonesian bank, suggest that with regards to ATM withdrawals, men are more mobile than women, and in general those with higher mobility tend to be younger than 40 years old.



SDGs	Area of work

## FINANCIAL INCLUSION DATA DIVE

Across Indonesia, new data are being generated that provide opportunities for financial institutions and those in the policy-making domain to understand the needs of different communities so as to increase their access to financial services and products. To examine the various dimensions of financial inclusion and its significance for Indonesian society,

as well as the progress made and challenges that are ahead, Pulse Lab Jakarta invited researchers, policymakers and domain experts to participate in a data dive at the Lab with the goal of answering pressing policy and development questions.

The research focused on measuring financial awareness and financial literacy based on social media data; measuring financial access based on information regarding both financial institutions and non-financial institutions; modelling gender-based differences in financial inclusion; and assessing the impact of digital opportunity on financial inclusion. The preliminary results were presented to representatives from the Indonesian Government (the Financial Services Authority, Secretariat for the National Council for Financial Inclusion and Statistics Indonesia), Indonesian Fintech Association and research think tanks who offered comments on how the analyses can be refined to fast track financial inclusion efforts in the country.



Location of Financial and Non-financial Institutions in Pontianak  
 ● Bank ● ATM ● Indomaret ● Alfamart

SDGs	Area of work

# SHIPPING DATA

## PORT NETWORK ANALYSIS FOR DEVELOPMENT POLICY

SDGs	Area of work
   	 IMPROVE TRADE AND COMPETITIVENESS

The Automatic Identification System (AIS) is a tracking system used on ships and by vessel traffic services. Alongside its practical application to maritime safety, AIS is useful for research on a variety of topics. Based on a request from the Directorate of Macroeconomics and Statistical Analysis in Bappenas and an initial analysis (conducted at our previous data dive on trade and competitiveness) of port network connectivity using AIS data, further analysis was conducted using the data set with a view to informing maritime development policy.

The research included developing summary statistics of vessel activity at ports across Indonesia, describing the evolution of the port network across Southeast Asia over the past few years, and predicting how the maritime network in Indonesia and across the region will evolve given specific scenarios -- including with and without *Tol Laut*, a major marine infrastructure investment programme promoted by the Government of Indonesia.

Initial findings suggest that the implementation of *Tol Laut* can reduce network dependency on Singapore by roughly 8 per cent and on Tanjung Priok by 24 per cent. At the 2018 Indonesia Development Forum, one of our Research Dive alumni received the best paper award for her forward-thinking Big Data research on analysing port connectivity in Southeast Asia using Global Marine Vessel Automatic Identification System data.



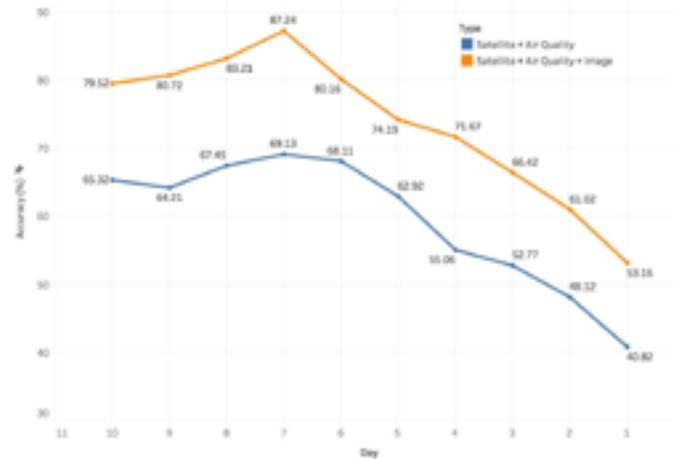
Shipping links across ports in East and Southeast Asia

# SOCIAL MEDIA DATA

## NOWCASTING AIR QUALITY USING TWITTER



In some communities in Indonesia, real-time air quality information is not available, which is crucial for improving response efforts in regions affected by wildfires and haze. This gap inspired our data science team to develop a model that leverages real-time sensing and integrates social media images. The model produced at best, 87.24 per cent forecast accuracy - an improvement of 18.11 per cent compared to the baseline model (that uses only satellite and air quality information) based on 2014 data from Pekanbaru, Riau. Pulse Lab Jakarta has also been working closely with the National Information Resources Service in the Ministry of Interior Safety of the Republic of Korea to provide technical assistance for a similar model that the Ministry is developing to monitor the prevalence of fine dust particles in the Republic of Korea.



Comparing the performance of both models

SDGs	Area of work

## ANALYSING TWITTER DATA STREAMS TO DETECT IRREGULAR EVENTS

With a view to discovering new approaches that can detect irregular events such as large gatherings and natural disasters in near real-time, Pulse Lab Jakarta analysed Twitter data from eight locations in Greater Jakarta to identify events taking place and then compared their temporal and spatial aspects with signals from the data set. The team was able to detect with reasonable accuracy several events, for example Sunday Car Free Days, based on signal anomalies. The results confirm that social media data can be harnessed to detect special events in urban areas, which may vary across time and space. Early event detection can help city officials with setting up alert measures and improving response time in the event of public emergencies.



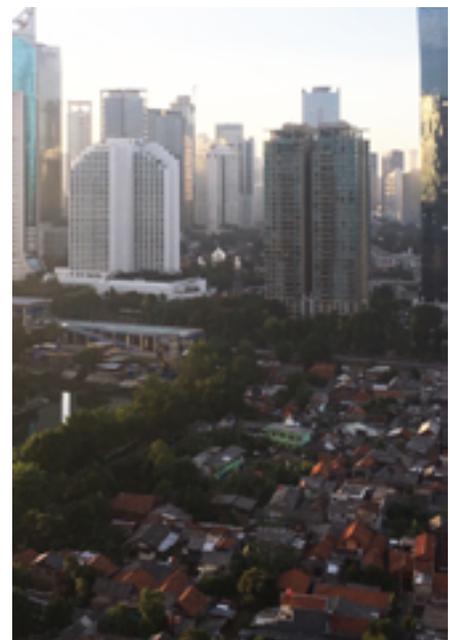
Scores of protestors gather in Central Jakarta during a demonstration

SDGs	Area of work
  	 EXPLORE URBAN AND REGIONAL DYNAMICS

## E-COMMERCE DATA

### ESTIMATING CITY-LEVEL POVERTY RATES

Beyond business development, e-commerce data can be useful for other purposes, for example as an alternative source of insights on poverty rates. Examining 2016 OLX data that has been aggregated at the city level for 118 cities in Indonesia, our team got together with other researchers during one of the Lab's data dives to test the accuracy of using this data set to estimate city-level poverty rates. Three machine-learning models were developed using Artificial Neural Network (ANN) and Support Vector Regression (SVR) methods. The models were assessed against an accuracy performance metric, which demonstrated that e-commerce data can be used to predict poverty levels within each city with high level of accuracy and significantly low error margins. The results were validated by comparison to poverty level records from Statistics Indonesia (BPS). The research method is being refined to measure poverty rates for other administrative levels, such as at the province and sub-district level.



SDGs	Area of work
   	

# CITIZEN-GENERATED DATA

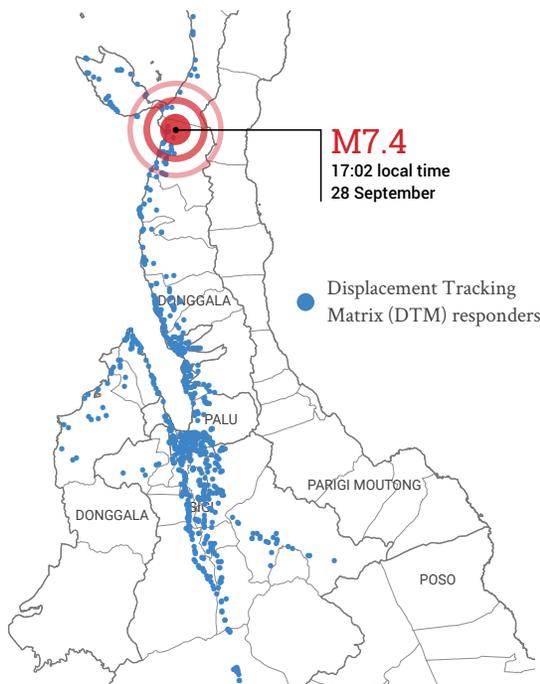
## ESTIMATING THE QUALITY OF CROWDSOURCED TRANSLATIONS

To wrap up the second phase of Translator Gator (the Lab’s web-based crowdsourcing translation platform), we publicly released the data that was crowdsourced online. Totalling almost 1.5 million gaming activities performed by nearly 4,000 registered players, the complete data set is available for download on TranslatorGator.org and includes disaster-related keywords for almost 30 languages spoken throughout the ten ASEAN Member States and Sri Lanka. We analysed the data set to estimate the quality of the crowdsourced translations, by creating a set of models using features from the language corpora to classify the (a) translators, (b) source expressions and (c) translated expressions. Using two regression models and two supervised learning methods, the results were better than those produced by the baseline approach that relies on peer-review scores. A technical paper detailing the approach and results were submitted and accepted to the 2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining.

	<b>4,000</b> registered players		<b>1.5 MILLION</b> gaming activities
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 **ALMOST 30 LANGUAGES**

SDGs	Area of work
  	 SUPPORT DISASTER RESPONSE AND HUMANITARIAN ACTION



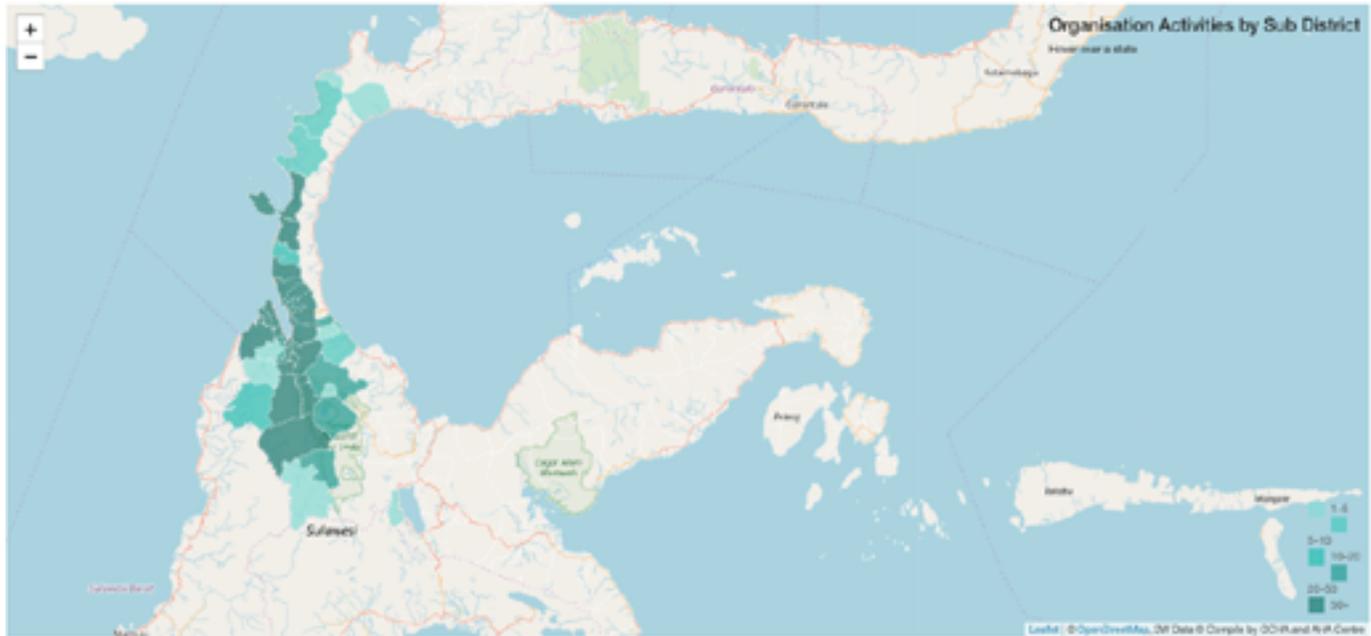
Central Sulawesi earthquake response shared in the bulletin's first edition

## COMMUNITY ENGAGEMENT NEWS BULLETIN

*Suara Komunitas* – ‘Community Voices’ – is a community engagement news bulletin that presents feedback gathered from communities affected by the Central Sulawesi earthquake. Developed by PMI (Palang Merah Indonesia) and IFRC (International Federation of Red Cross and Red Crescent Societies) with support from UN OCHA, Pulse Lab Jakarta and UNICEF, the news bulletin is a product of the Community Engagement Working Group consisting of individuals from a range of agencies who meet weekly in Palu to present sector-based updates and feedback as well as coordinate collective action. The tool is designed to help humanitarian responders make decisions and adapt programming by providing insights into what communities are saying as the response progresses. The bulletin is informed by inter-agency community engagement efforts including discussions with affected people, community focus group discussions and radio programmes. It integrates quantitative data and qualitative information that complements the community feedback which humanitarians are responding to.

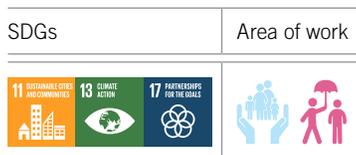
SDGs	Area of work
  	

## HUMANITARIAN RESPONSE TO THE SULAWESI EARTHQUAKE AND TSUNAMI



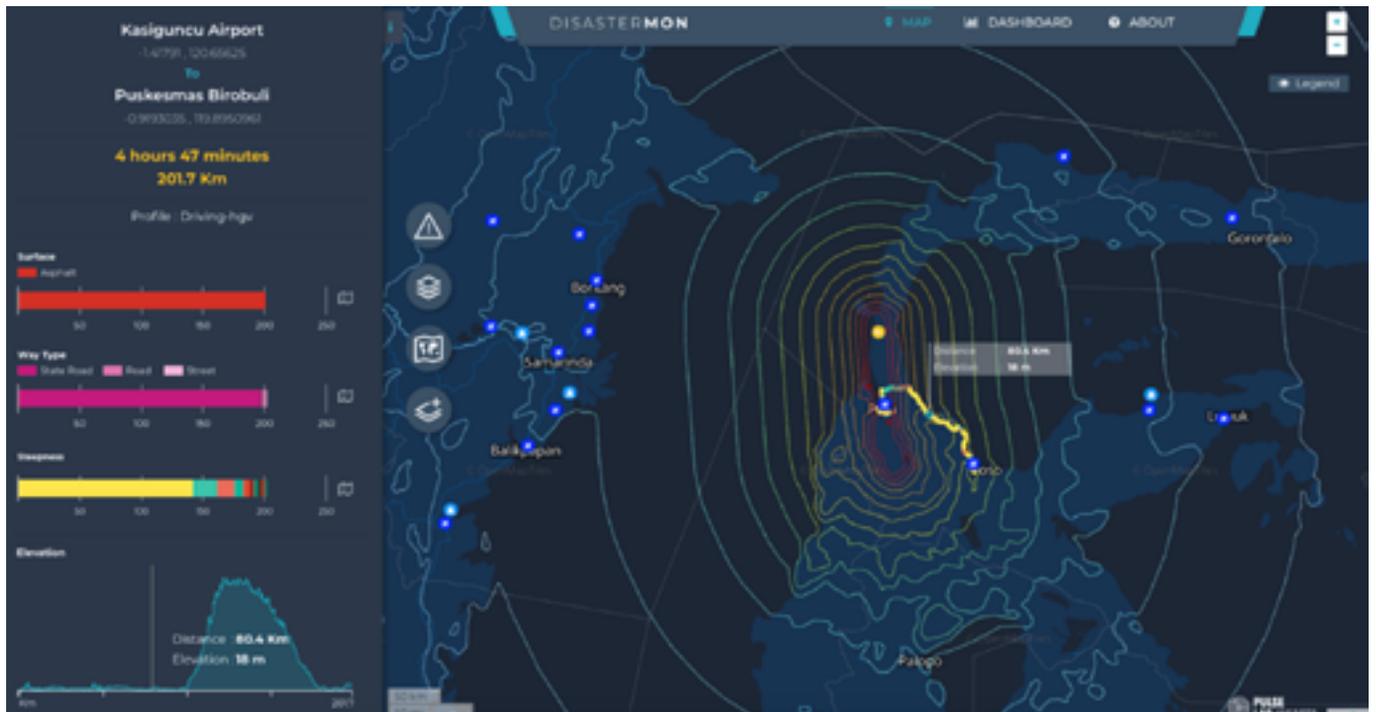
Organisation 168	Activites 7946	Location 50
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Joining forces to support relief efforts for the September 2018 Central Sulawesi Earthquake and Tsunami, Pulse Lab Jakarta partnered with UN OCHA, AHA Centre and Humanitarian Data Exchange to create a data visualisation dashboard, which highlights the status of ongoing humanitarian response in the region. The dashboard uses the 3W (“Who Does What Where”) data set which UN OCHA and AHA Centre receive from lead clusters and sector agencies (sector-specific coordination group of humanitarian organisations focused on strengthening preparedness and technical capacity to respond to humanitarian emergencies). Providing a visual representation of ongoing response, the dashboard is useful for indicating potential overlaps or gaps in response, as well as enabling the Government and interested organisations to identify potential humanitarian partners on the ground.



# Equipping Partners with Fit-For-Purpose Tools and Methods

## A DISASTER MONITORING BIG DATA TOOL



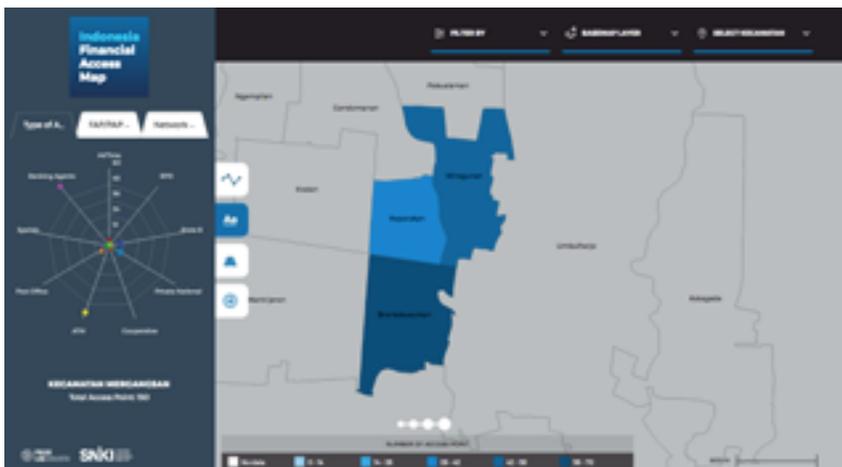
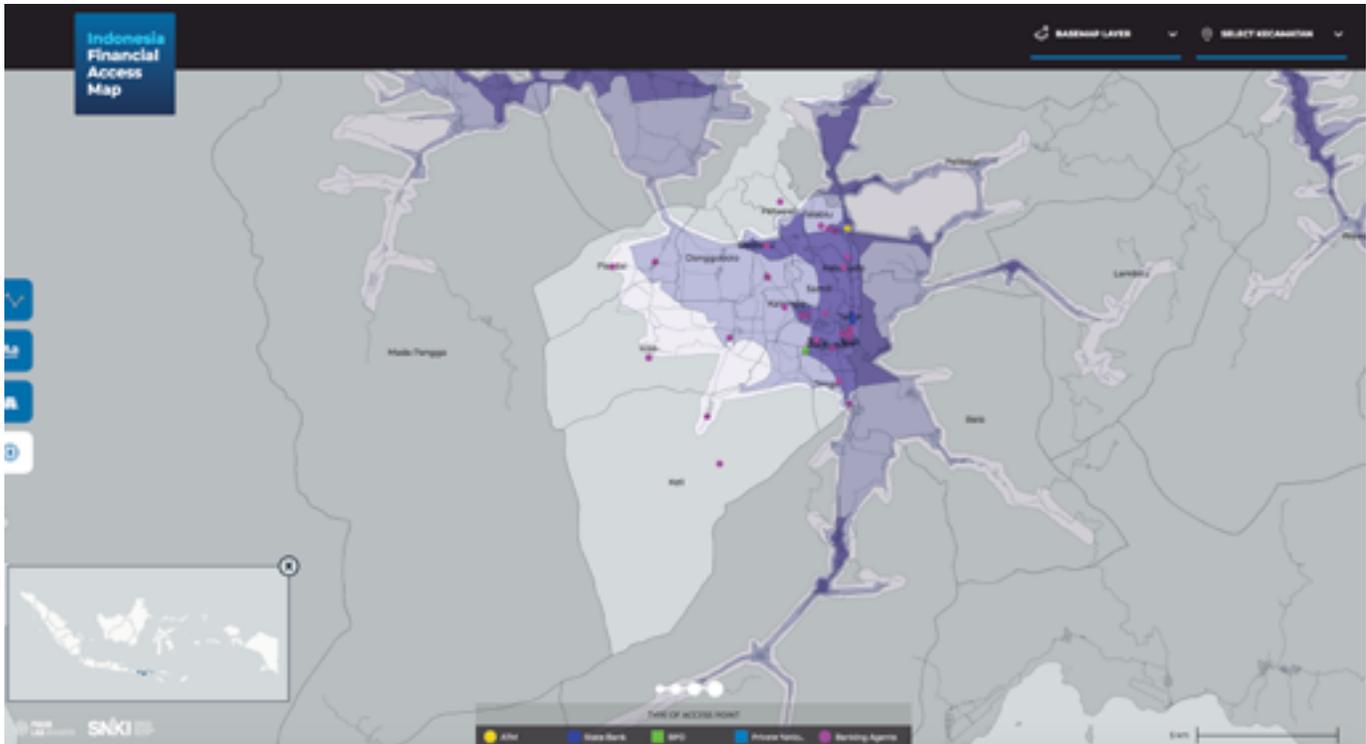
Planning logistics data insight layer

Building on our cyclone monitoring tool called CycloMon, our team at the Lab has been developing an integrated big data analytics and visualisation tool to provide timely insights for natural disaster monitoring, emergency response and management of cyclones, earthquakes, hurricanes and floods in Indonesia and countries in the Pacific region. Nicknamed DisasterMon, the tool features three main data insight layers related to logistics planning, social media communication and socio-economic variables, which are based on multiple data sources, including open data platforms, national statistics, social media, among others. DisasterMon seeks to enhance natural disaster monitoring at the local, national and international

levels using big data, and has the potential to influence future development of automated real-time disaster monitoring systems. The team is also exploring the development of other layers for volcano and wildfire disaster events, as well as the integration of additional data sets such as mobile network data.

SDGs	Area of work
	<p>SUPPORT DISASTER RESPONSE AND HUMANITARIAN ACTION</p>

## INDONESIA FINANCIAL ACCESS MAP



Interactive geospatial mapping of regions in Indonesia visualising financial service provision and existing gaps

SDGs	Area of work

The Secretariat of The National Council of Financial Inclusion in Indonesia (SNKI) together with Pulse Lab Jakarta and Women’s World Banking developed a Financial Access Map dashboard, an interactive geospatial map of regions in Indonesia, that visualises financial service provision and existing gaps. The prototype covers Yogyakarta City and Bima districts and is based on socio-economic, infrastructure and financial services data. The dashboard highlights financial access points alongside per capita analysis, network coverage analysis and proximity analysis of financial access point locations. The prototype was handed over and endorsed by the Council and installed on the server of the National Team for the Acceleration of Poverty Reduction. There are ongoing discussions within SNKI with regards to scaling the dashboard prototype up to the national level.



### SDG MONITORING DASHBOARD

Together with Bappenas’ Data and Information Centre (Pusdatin) and the SDGs Secretariat, Pulse Lab Jakarta developed an interactive map dashboard to analyse data relevant to the SDGs. The dashboard displays information on the 17 Sustainable Development Goals throughout the 34 provinces in Indonesia, based on 241 indicators. Users can select a particular SDG or a specific indicator from the list available to survey relevant statistical information and progress updates on all 34 provinces. The data used in the dashboard is streamed from the Satu Data portal in Bappenas. The dashboard is currently being utilised by the SDGs Secretariat in Bappenas in bridging data gaps and preparing programme strategies towards the achievement of SDGs in Indonesia.

SDGs	Area of work



the last rainfall and (ii) flood forecast which gives an idea of likely impact based on crop and population distribution overlays.

At WFP’s 2018 Innovation Accelerator Bootcamp in Munich, Germany, a joint team from PLJ and WFP put VAMPIRE through the paces of the bootcamp (focused on taking ideas and prototypes from an early to a mature stage) where VAMPIRE was ultimately pitched to an audience of investors, friends and partners of WFP. VAMPIRE received funding from WFP’s sprint programme which is intended to help scale up the tool into a practical solution for the region. In addition, the code for VAMPIRE will be made open source, allowing interested stakeholders to conveniently apply the code and integrate the tool into their operations.

### SCALING UP VAMPIRE ACROSS THE REGION

The Executive Office of the President of the Republic of Indonesia welcomed the latest additions to VAMPIRE, a data tool developed jointly by World Food Programme and Pulse Lab Jakarta to measure the impact of weather anomalies (floods and droughts) on food security. The new features include tabular and graph data visualisation for selected timelines, enabling enhanced monitoring and early warning of weather extremes. More specifically, it includes new layers that show (i) days since

SDGs	Area of work
	<p>SUPPORT DISASTER RESPONSE AND HUMANITARIAN ACTION</p>

# Uncovering Behavioural Insights to Complement Data Analytics



Peer-to-peer lending transaction between agent and customer

## BANKING ON FINTECH

With the support of the Australian Department of Foreign Affairs and Trade (DFAT) and in collaboration with the Indonesia Fintech Association (AFTECH), Pulse Lab Jakarta conducted research called *Banking on Fintech: Financial Inclusion for Micro Enterprises in Indonesia* which aimed to 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.

Roughly 99 per cent of all businesses in Indonesia are micro enterprises, according to the Ministry of Cooperatives and SMEs. These include small shop owners, street food vendors, and merchants who earn a maximum of IDR 300 million per year -



SDGs	Area of work
   	

many of whom are unbanked and are unable to expand their business in part due to a lack of access to formal financial services. Despite this challenge, we took note of several digital financial service providers in the country that have started to reach previously unbanked micro enterprises. The main research question therefore was: *Why, and how, despite the same obstacles and behavioural barriers, have some micro enterprises made the leap and began to use these services?*

Our emphasis on behavioural insights stemmed from the realisation that: while financial inclusion efforts should be pioneered by higher-level policymaking, it must also be supported with a clear understanding of the realities of the target users. We employed a human centred design methodology in our research in partnership with three fintech companies that are targeting the micro enterprise segment, namely: BTPN Wow! (mobile savings account), Go-Pay (mobile payment), and Amarta (group peer to peer lending). We interviewed more than 100 respondents across Jakarta, Bekasi, Sukabumi, Ciseeng, and Banyumas, most of whom are micro merchants who are either users or agents of mobile savings accounts, mobile payments and peer to peer group lending. Throughout the research, we uncovered various mental barriers that hamper micro merchants' access to financial services; the fintech adoption journey of several micro

“  
*the way in which fintech services are introduced and implemented is more influential than details of the technology itself in micro merchants' decision to adopt a digital financial service*”



Regulators, development agencies and fintech companies attending the launch of the *Banking on Fintech* report

merchants; and the enabling factors that have encouraged these micro merchants to use fintech.

Beyond understanding the users' realities, we learned that, for micro merchants, *the way in which fintech services are introduced and implemented is more influential than details of the technology itself in micro merchants' decision to adopt a digital financial service*. Therefore, rather than recommending products or service ideas, for which there are many latent needs, we chose to translate our insights into a set of practical design principles. These design principles embody our understanding of the finance and technology-related attitudes and behaviours of micro merchants, particularly the enabling factors that have helped them to adopt digital financial services. These principles can be applied by fintech companies as design directives in developing and testing a variety of solutions for micro enterprises in Indonesia.

The findings from the research report were used to design a Challenge Fund (implemented by the United Nations Capital Development Fund - Shaping Inclusive Finance Transformations programme) aimed at promoting and accelerating the use of fintech for the financial inclusion of micro enterprises in Indonesia. Since its publication in September 2018, the digital version of the report has been accessed more than 1000 times by regulators, development agencies, fintech companies, and other entities working in the fintech and financial inclusion space. The report has also catalysed a collaboration with the Behavioral Insights Team, a UK-based behavioral science specialist firm, to follow up on the research by developing and running a trial for interventions to encourage active usage of mobile savings account. These activities are expected to commence in the first half of 2019.



Mockup images showing a traffic light with (right) and without (left) the minitron prototype

## URBAN PLANNING & FLOOD MITIGATION

Useful data that can be used to inform flood mitigation efforts in urban areas are often scattered across different government units. In addition, it's not uncommon for these data sets to be out-of-date, creating a challenge for the Government and citizens to effectively prepare and respond to flooding events. Pulse Lab Jakarta teamed up with the Department of Communication and Informatics of Bandung City Government and Labtek Indie (a design research company based in Bandung) to test the usability of a map-based flood information dashboard. To do so, we adopted human centered design to understand the behaviours and needs of those who produce and use the data.

We arrived at these design principles: i) a dashboard should not only rely on conventional data sets that may be difficult for city officials to get their hands on, but should also integrate other available data such as citizen-generated data; ii) a dashboard needs to harness the local 'instinct' to be relevant for users in a local context; iii) a dashboard does not need to be the



development of a technology from scratch - governments can repurpose existing technology and infrastructure to achieve similar goals; and iv) a dashboard should have practical application that can enable inter-agency cooperation.

Based on feedback from the usability testing, the map-based flood information dashboard eventually evolved into a more pragmatic idea of a traffic light minitron\* system that can inform citizens of alternative routes to take during a flood. A prototype brief has been submitted to Diskominfo Bandung.

\*minitron: an electronic message board

SDGs	Area of work



## AFTER DARK: SAFE TRANSIT FOR WOMEN TRAVELLING AT NIGHT



A recent scoping study conducted by UN Women in Jakarta found that women are more vulnerable when travelling after dusk, especially in less crowded areas. This finding inspired a research collaboration between Pulse Lab Jakarta and UN Women to gather insights on women's mobility and travel choices in urban areas, in order to design practical interventions that can improve their safety at night. Insights from the field research conducted in Semarang, Surabaya and Medan challenged the notion that a woman's safety is solely dependent on adequate infrastructure and public facilities.

The research team spoke with 37 women who shared their experiences and perspectives. Four types of personas emerged:

- [•] The Anxious Newcomer**  
who recently migrated to the city;
- [•] The Female Warrior**  
who puts her work above her own safety;
- [•] The Moonlighter**  
who juggles multiple jobs to stay afloat; and
- [•] The Overprepared Strategist**  
who spends a lot of time coming up with defence strategies.

All these personas have different travel routines but their anxiety about travelling at night is a commonality.



Afterdark Co-Design Workshop

With a view to complementing insights gathered from the After Dark field research, PLJ invited individuals across different sectors to participate in a co-design workshop in December 2018. The workshop was a unique opportunity for these individuals to offer inputs to support the analysis and synthesis phase of the research. The design challenge was narrowed into three areas of intervention, namely: the role of bystanders, improving public transportation services and bolstering law enforcement. Since the design workshop was not so much about the details of each prototype, the emphasis was placed on unearthing new insights and understanding the rationale behind the design ideas. The team is currently synthesising insights from the field research and co-design workshop, which will be published into a Pulse Story research report in 2019.

SDGs

Area of work





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**A JOURNEY TOOL**

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TRACK 2  
**ECOSYSTEM  
CATALYST**

- ▶ Building Knowledge and Reducing Barriers to Adoption
- ▶ Supporting Communities of Practice

# Building Knowledge and Reducing Barriers to Adoption



## INTERNATIONAL SEMINAR ON DIGITAL DIPLOMACY

With the internet and digital technologies now introducing new dimensions to diplomacy, these changes have not only presented new opportunities but also several challenges. How can governments leverage these opportunities? Do diplomats have the “digital know-how” to address these challenges tactically?

Pulse Lab Jakarta co-hosted the International Seminar on Digital Diplomacy with the Indonesian Ministry of Foreign Affairs and DiploFoundation, which served as a roundtable for diplomats, development practitioners, social media enthusiasts



*The Indonesian Minister of Foreign Affairs, Retno Marsudi, speaking at the seminar*

and civil society members to exchange fresh ideas and approaches on how to both adopt and adapt to digital diplomacy.

The keynote address was given by Retno Marsudi, the Indonesian Minister of Foreign Affairs, who set the tone for the event by highlighting one of the Government's ambitions: "We want to use our digital strength to transform our economy, to connect with positive energy, and to empower our people."

The seminar was packed with rich, in-depth discussions. As underscored in several of the presentations —digital diplomacy goes beyond social media. PLJ shared some of its data innovation research projects for development and humanitarian action, results of which indicated that social media does not only function as a savvy communication tool, but the digital footprints of the millions of users may be useful for improving consular services related to the security and

mobility of citizens abroad and other areas, informing multilateral strategic negotiations, and monitoring the effectiveness of development aid programmes.

However, for governments and diplomats to adjust their mindsets and tactically perform their roles in world diplomacy, capacity building, training and an openness to new approaches must be prioritised. The digital revolution has unapologetically disrupted the ways in which the global community interacts, communicates and even exists. Diplomacy, in particular, is one area that has been clearly impacted and will continue to transform as diplomats embrace emerging tools and approaches. Beyond the takeaways from the seminar, it was clear that it is important for diplomats and governments to gear up for the new digital transformations.

We hope the international seminar has inspired fresh ideas and will inform future approaches within Indonesia and the international diplomatic community.



## WAWASAN SATU DATA TOOLKIT

Data governance has many facets to it, ranging from how data is collected to how it is used. Pulse Lab Jakarta and the Executive Office of the President of the Republic of Indonesia have been applying human centred design to model a data governance framework at the local government level. Materialised in a resource known as the *Wawasan Satu Data* toolkit, its objective is to help data stewards within the public sector to holistically understand data governance policies and framework, which are aligned with the draft Presidential Regulation on Satu Data Indonesia.

Several versions of the toolkit were developed in a co-creation process with public sector representatives, each version modified to meet the needs of its users throughout the data lifecycle. The toolkit was tested in four district/city governments (Kulon Progo, Makassar, Pontianak and Mojokerto) and two provincial governments (Yogyakarta and South Sulawesi) in Indonesia. More than 200 users took part in the testing of the toolkit. Since participating in the toolkit testing, several public officials from Kulon Progo, Pontianak and Mojokerto have built on inspirations and insights from the workshop to finalise a set of data governance regulations for their respective regions. The Government of Indonesia is planning to release the toolkits on their data portal when the Presidential Regulation is formalised.



*A public official participating in the toolkit testing workshop*



SDGs	Area of work
	



Research Dive participants sharing their preliminary results during closing presentations held at Bappenas

## POLICY RELEVANT COLLABORATIVE RESEARCH

SDGs	Area of work

Building on previous research collaborations between Pulse Lab Jakarta and directorates within the Ministry of National Development Planning (Bappenas), in 2018 the Lab welcomed a new batch of proposals from several working units. Together with Bappenas’ Pusdatinrenbang unit, PLJ assessed the proposals and outlined a list of prioritised projects. The Lab began working on these projects when the list was endorsed in mid-2018, many of which have been completed and the results have been submitted to respective directorates. The remaining projects are expected to be completed in the first quarter of 2019.

### Completed Research

#### 1. Analysis of social media data to understand the public’s perception of:

##### a. Foreign debt for development funding

Proposed by the Directorate of Planning and Development Funding, this research sought to gain insights about the public’s attitude towards foreign loans and grants received by the Indonesian Government. Using Crimson Hexagon’s analytics platform to analyse public tweets with related keywords, the Government was able to glean useful, macro level policy insights on the topic in question. The results will be used to examine any correlation between the public’s attitude towards foreign debt and the progress of national development programmes. The results of the analysis have been submitted.

##### b. Restorative justice for criminal law

In light of Indonesia’s crime rate and strain on the country’s criminal justice system and correctional

facilities, the Government is considering proper steps to address current and impending issues. To explore the public's perception towards a restorative justice approach, the Directorate of Law and Regulation saw the benefits of analysing public discourse among Indonesians on Twitter with the goal of uncovering insights to inform policy discussions. PLJ submitted the results of the analysis, which are being appraised by the Directorate for future course of action.



### c. *Electricity as a public service*

As one of the most vital public services provided, conversations around electricity tend to be pervasive on social media channels. By also employing Crimson Hexagon's analytics platform to analyse tweets, the broad objective of this research was to get a sense of the public's sentiment towards electricity services in order to effectively conduct policy and service reviews with the needs of the citizens in mind. The results were presented to the Directorate of Energy, Telecommunication and Informatics, and will be showcased in 2019 at Bappenas' internal seminar on big data analysis for policy making.

## 2. Analysing International events

Both the Asian Games and the Annual Meetings of the International Monetary Fund and the World Bank Group were held in Indonesia in 2018. The Expert Staff for Economic Synergy and Funding within Bappenas expressed interest in monitoring the public's reaction towards these events by examining conversations on social media. The expected

output was the development of an assessment template that the Government can utilise when evaluating the impact of hosting future international events that are similar in scale. In addition, the Asian Games in particular provided an opportunity to understand mobility patterns during the Games by analysing Grab's transportation data on people going to and leaving the event venues. The results have been submitted to the working unit for internal use.

## 3. Developing an inflation monitoring dashboard

Reports on measures of inflation tend to be released with a few weeks lag, which means activating any intervention strategy to reconcile major peaks would also be delayed. Using price data for a set of commodities that influence inflation (both volatile and administered commodities), social media data and mass media data, this dashboard seeks to provide updates on inflation in a near real-time manner. This research recognises the merits of social media data and mass media data as useful information sources, as they provide context for understanding conditions on the ground that may be influencing the inflation dynamics. The monitoring dashboard is expected to be integrated as part of an early warning inflation system. The prototype of the dashboard has been handed over to the Directorate of State Finance and Monetary Analysis.

## Research In Progress

### 1. Correlation between popular university majors and the labour market

Proposed by the Directorate of Higher Education, Science, Technology and Culture, this analysis is being conducted to investigate the relationship between trending university majors and the Indonesian labour market to anticipate the supply and demand dynamics within the Indonesian workforce. For the purposes of this analysis, available data on public university applicants and graduation rates were categorised as supply data, relying on the application rate per major as a proxy to determine favourite majors. On the other hand, data related to the needs of the labour market and current labour market trends from Statistics Indonesia (BPS) (including salary rate, number of job vacancies per profession, etc.) served as proxies for the demand. The results of the analysis which will be visualised in a dashboard are expected to inform the Government's decisions on education curricula design and policies.



## 2. Data overlays and visualisation to generate new insights on:

### a. Agriculture sector

The Directorate of Cooperatives and SMEs requested assistance with developing a visualisation dashboard to highlight available commodities per region, overlaid with visuals of the legal status of the land space being used. The dashboard will use agriculture census data from Statistics Indonesia (BPS) and Government data on land ownership. This project is expected to help inform agriculture-related policy discourse among local governments.

### b. Maritime and fisheries

Information that is needed by the Government for effective fisheries management tends to be incomplete, therefore affecting among other things, fishermen's level of productivity. To evaluate the sector's economic performance, there's a demand for real-time and accurate data. The possibility of overlaying maritime and fisheries-related data from the Directorate of Maritime and Fisheries and Ministry of Maritime and Fisheries, in conjunction with satellite imagery and climate data from the National Institute of Aeronautics and Space (Lapan) and the Meteorology, Climatology, and Geophysical Agency (BMKG) is currently being explored.

## 3. Assessing inter-provincial trade intensity using e-commerce data

Utilising e-commerce data, this research is focused on assessing trade intensity at the provincial level which is of

interest to the Directorate of Regional Development. The datasets that are being considered include aggregated data on goods/commodities, seller/buyer location, and price/value of trade as proxy indicators for inter-provincial trade intensity, completed with Automatic Identification System data on shipping vessels. The goal is to develop a real-time monitoring system for inter-regional trade activities that can be used to identify and assess economically strategic areas, to further accelerate regional economic development. This system would be useful as trade data is typically only available from the Ministry of Trade a few times a year.



## 4. Utilising mobile network data to identify emerging metropolitan areas and using social media data to explore the public's perception of public services via housing infrastructure

The Directorate of Urban Studies and Housing proposed two research projects on urban dynamics: 1) leveraging Telkomsel's mobile network data to identify emerging metropolitan areas, in particular by looking at commuting flows at morning and nighttime as a determinant; 2) surveying the public's perception of public services via housing infrastructure, in particular by using Crimson Hexagon to analyse a subset of tweets that has been culled based on selected keywords. These two studies are expected to complement traditional survey methods on these subject matters to help the Government formulate inclusive and efficient policies.



The Lab continued its Research Dive tradition throughout the year and based on priority areas identified by the Government of Indonesia, the UN Country Team in Indonesia and other stakeholders, three data dives were held:

## RESEARCH DIVE FOR DEVELOPMENT

SDGs	Area of work
	

Research Dive was conceptualised to broaden research engagement within the big data ecosystem, particularly among analysts, academics and practitioners. By the start of 2018, more than 100 participants from 85 universities, 12 government institutions and five research institutions/NGOs had taken part since the Lab first started organising the event in 2016. In February 2018, dozens of alumni met up for a four-city reunion in Jakarta, Bandung, Yogyakarta and Surabaya to share updates on past and ongoing research.



## URBAN AND REGIONAL DEVELOPMENT

This data dive was part of a series of events leading up to the Indonesia Development Forum organised by Knowledge Sector Initiative. Participants were tasked with designing regional development policies, by analysing social events, news media data and its network based on GDELT (a global news media monitoring platform); assessing the accessibility to (emergency) health facilities in Sumatra; monitoring water access for water supply infrastructure planning, by analysing several datasets including municipal waterworks customer distribution data; and inferring energy consumption towards urban development, by combining data on social media activity density and socio-economics statistics.



### ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING FOR ESTIMATING POVERTY

Thanks to sponsorship and support from the Knowledge Sector Initiative (KSI) and the Artificial Intelligence Journal, this data dive brought together a full house of researchers and data analysts from academia, development partners, the United Nations and the Government of Indonesia to: measure vulnerability to poverty using satellite imagery; estimate city-level poverty rates based on e-commerce data; use Twitter data to estimate district-level poverty in Greater Jakarta; and explore the connection between social media activities and poverty.



### FINANCIAL INCLUSION

Examining the various dimensions of financial inclusion, the significance of financial inclusion for Indonesian society, as well as the progress made and challenges that are ahead, four research areas were outlined to help answer pressing policy and development questions: measuring financial awareness and financial literacy through social media; measuring financial access based on information from financial institutions and non-financial institutions; modelling gender-based differences in financial inclusion; and assessing the digital opportunity impact on financial inclusion.



Being able to receive on-the-spot peer review from fellow research divers and experts is one of the many benefits of participating in these events. Furthermore, the dives are designed with the awareness that three days of research are not sufficient to generate polished models and approaches that can be immediately replicated or applied, and so participants are encouraged to use the feedback received to inform and refine their research.

The Research Dives are also useful for Pulse Lab Jakarta in identifying domain experts across Indonesian academia who in turn can help Pulse Lab Jakarta with research projects. The technical reports produced after each event explain the findings in more detail, including how the methodologies used may be improved, how other datasets may help to corroborate the findings, and what steps may be needed for policy implementation.

# Supporting Communities of Practice



Winners of our Microenterprise Fintech Innovation Challenge Fund with UNCDF-SHIFT at the 2018 Singapore Fintech Festival

## MICROENTERPRISE FINTECH INNOVATION CHALLENGE FUND

As a follow up to our Banking on Fintech research project, Pulse Lab Jakarta teamed up with the United Nations Capital Development Fund—Shaping Inclusive Finance Transformations (UNCDF-SHIFT) programme to launch a fund which challenged fintech companies to come up with innovative ideas on how to get micro enterprises digitally included. The fund is designed to provide financial grants to incentivise the adoption and use of digital business solutions for micro enterprises operating in Indonesia. The expectation is that these pilot-ready innovations that are funded will help to increase micro enterprises' use of digital business solutions, as well as encourage safe and formal usage of available solutions, products, services and business models to promote inclusive growth in Indonesia.

The challenge was laid out to fintech companies to create or adapt a product or service for the unique needs of micro

enterprises in Indonesia. Overall, we received 33 applications. A review team made up of industry experts selected 12 projects from 11 fintech companies. The projects shortlisted were invited to a pitching session, where they presented their proposed solutions to an evaluation committee, comprising of representatives from the Indonesian Government (the Financial Services Authority/OJK), development partners (Better than Cash Alliance and Pulse Lab Jakarta), and industry experts (Indonesia Fintech Association and investor representatives). VISA was instrumental in the process and offered an intensive mentoring session for the shortlisted candidates prior to their presentations.

The evaluation committee selected the top six pitches based on a mix of criteria, including originality, impact and scale, relevance to challenge and pitch quality. At the 2018 Singapore Fintech Festival, the six winners had an opportunity to present their proposed solutions to an audience of representatives from various financial institutions, associations and regulators.

## The Winners

**1. Amartha: Youth-Led Digital Literacy Scheme**

Amartha proposes to train young people among its existing loan customers (predominantly older female micro entrepreneurs) to maximise cellphone use, such as for loan repayments.

**2. AwanTunai: Mobile app platform for providing micro enterprise loans**

AwanTunai aims to develop a digital system for fast moving consumer goods suppliers that can be used to deliver working capital loans to micro merchants. This credit would replace and formalise the informal kasboncredit that micro merchants provide to customers.

**3. Duihthape: Cashless payment system for distributors**

Duihthape plans to develop a cashless payment system that will allow distributors to collect payments from micro enterprises without the inefficiency and risks associated with physical cash pickup, therefore enabling micro enterprises to perform transactions with greater ease and security.

**4. Gandengtangan: Digital inventory management and cashless payment app for micro enterprises**

Gandengtangan proposes to develop a mobile platform that connects distributors and micro enterprises, as well as offering digital inventory management, cashless payments and credit products. This project is an enhancement of the distributors' traditional loan schemes.

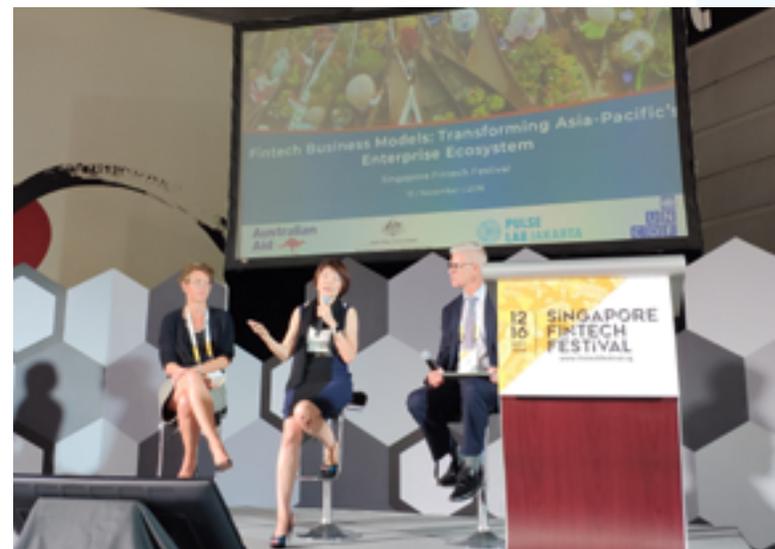
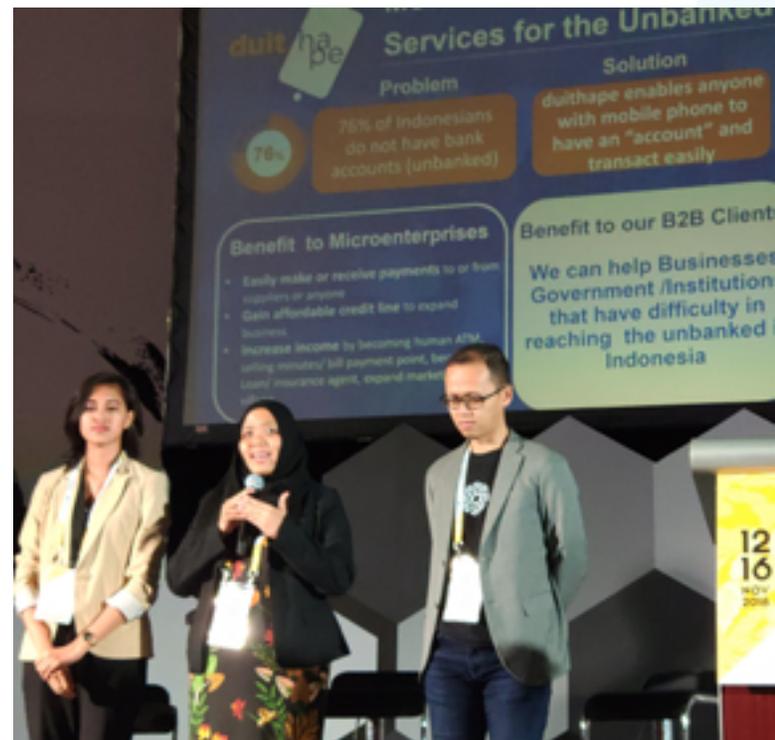
**5. JULO: Digital loan product for female micro entrepreneurs**

JULO intends to launch a new loan product specifically for female micro entrepreneurs, using its existing app and proprietary data-driven credit scoring algorithm.

**6. Modalku: Mobile agent network for micro-financing of micro enterprises**

Modalku plans to develop a network of agents to offer micro-loans to underserved or unserved micro enterprises. The loans can be used for a variety of purposes, such as investing in opportunities or to bridge short-term cash flow gaps.

These six projects will embark on the piloting phase in 2019. They will incorporate a number of insights drawn from our Banking on Fintech research to tap into the micro merchant and micro enterprise market. Apart from seed funding, the winners will also receive mentoring from industry experts to help shape and refine their ideas.



SDGs	Area of work



Guest speakers leading a discussion on how big data and technology can help to fight fake news

## 2018 COLLOQUOTION SERIES

Colloquotion is a monthly sharing session series organised by Pulse Lab Jakarta. It features academics, analysts and a host of other domain experts interested in development issues, data science, human intelligence, as well as their crossovers. In 2018, our series covered a range of topics. The line up of speakers discussed how new types of data sources can help to address and tackle issues related to their selected topic of interest and expertise. Originally organised as a capacity building mechanism for the UN staff in Indonesia, based on a number of external requests from the public and other interested stakeholders, Colloquotion evolved into a public event that encourages an open knowledge and learning dialogue between the speakers and attendees. Twelve sessions were held throughout the year and the video recording of each session is available for learning purposes.

SDGs	Area of work
	

## DATA INNOVATION CLINIC

Data innovation offers unprecedented opportunities for evidence-based policy-making, and has been changing the way policymakers and development practitioners address development challenges. But for many who have never been part of this process, ‘data innovation’ often comes off as ambiguous. As part of a big data for monitoring and evaluation workshop organised by the Development CAFÉ, our team at the Lab ran a data innovation clinic with participants from different professional backgrounds. We approached the clinic with an understanding that data innovation means embracing new and unconventional data sources to better understand challenges and identify opportunity areas—in this case to monitor and evaluate development programmes.

Arming ourselves with UN Global Pulse’s Data Innovation for Development toolkit—a practical walkthrough of how development practitioners and organisations can go from idea to implementation—we spent a full day with the participants offering step-by-step guidance on how to go about designing their own data innovation project. Given the limited time, we decided to focus the clinic on three main areas: problem identification; understanding the context from which data is derived; and refining research questions. All three of these are key aspects in



scoping possibilities for the use of alternative data sources for any project. Having a mix of data science and social systems team members facilitating the clinic enabled us to give participants a more holistic view on how a data innovation project plays out in real life.

SDGs	Area of work
	

## LAB ON WHEELS OUTREACH

As evidenced by the increasing number of requests for guest lectures and workshop sessions in universities and research institutions across Indonesia, there is increasing appetite to know more about how to use advanced data analytics for decision-making across a range of sectors, as well as how to combine these approaches with more conventional forms of research. Lab on Wheels is a Pulse Lab Jakarta outreach initiative that involves organised visits to academic institutions and development-related organisations where targeted workshops are run to show the potential of these two aspects of our work to a broader audience.

OUR ROAD TRIPS IN 2018 TOOK US TO:



### Festagama organised by Gadjah Mada University

Exploring topics related to urban and regional dynamics, our team arranged a data innovation workshop, an exhibition showcasing some of our data analytics tools, and a knowledge sharing talkshow on the use of technology for urban planning, all under a broader aim of introducing new sources of data that can be used to understand urban behaviours and come up with ideas on how to address urban challenges, especially for the city of Yogyakarta.



### The Eighth Eastern Indonesia Forum Festival organised by Bursa Pengetahuan Kawasan Timur Indonesia (BaKTI) and Forum Kawasan Timur Indonesia (Forum KTI)

Following up on an invitation from BaKTI to host a side event at the Forum, our team decided to use the opportunity to run a rapid data clinic, focusing on familiarising the audience with the concept of big data, how it is produced, how the Lab analyses it, and its potential usage for social good. We divided the session into three main parts: an introduction to the lab, an interactive data journey exercise to map out how individuals produce digital footprints, and an explanation of how this data can be used by showing examples of our projects.

SDGs	Area of work

# MEASURING IMPACT

One recurring question that keeps us on our toes at Pulse Lab Jakarta is how we measure our impact. How do you measure impact in a lab that by design experiments, tests, prototypes, ditches failed prototypes ... and typically hands over to successful prototypes to partners for scaling up through their respective programmes.

Pulse Lab Jakarta was privileged to work with Clear Horizon and Solidaritas on a results measurement framework which has equipped us with a set of tools that helps us keep track of progress and identifies significant changes as a result of our work.

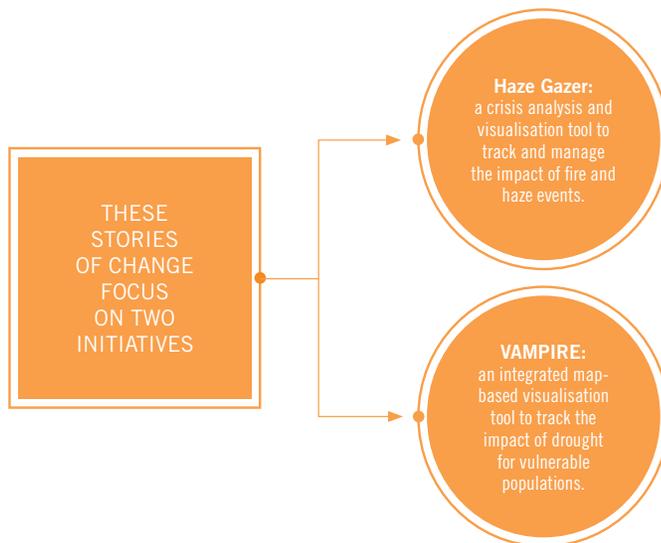
In 2018, we gathered evidence of the changes that were attributable to the prototypes that we developed and we commissioned Saraswati to write Stories of Change that document how certain prototypes and approaches developed by the Lab are being used by our government or development partners; what kind of behaviour or policy change they enabled; as well as the factors involved in helping or hindering progress. These Stories aim to complement other knowledge products, such as blogs, reports, policy briefs and other documents already published about these initiatives, by providing a thorough chronology, extensive first-hand testimony based on numerous interviews and analysis on a range of related results.

These Stories document two of our data analytics initiatives that were developed alongside our development partners and have since been adopted by the Indonesian Government, namely Haze Gazer and VAMPIRE.

The reflection on a broader scale was intended to help us identify what worked, what didn't, and—most importantly—what we should be doing differently. These Stories of Change confirm that change occurs on many levels and often in unanticipated ways. Therefore, it is appropriate that PLJ places more emphasis on its contributions towards—rather than its direct impact on—positive change.

Through its work and collaborations on VAMPIRE and Haze Gazer, PLJ has made key contributions which are in line with how the impact of its work is measured.

## OPERATIONAL IMPACT



Both Haze Gazer and VAMPIRE have supported positive change in the way the implementing partners and key stakeholder—the Government of Indonesia—work. The Executive Office of the



President of the Republic of Indonesia (KSP) adopted these platforms as key building blocks in developing the architecture for its Early Warning System, which is now a centerpiece of the President's Situation Room. PLJ has learned from and scaled these prototypes, including in developing multi-disaster platforms. The World Food Programme continues to partner with PLJ in improving the features and accessibility of VAMPIRE while expanding this concept across the Asia Pacific region.

## METHODOLOGICAL IMPACT

Both platforms represent tailored and relevant applications of data science—and provide important lessons from the hits and misses in experimentation along the way. Most significantly, they have contributed to richer and more real-time data that is being used by the Government of Indonesia for emergency planning, response and evaluation.

## ECOSYSTEM IMPACT

Through collaboration on VAMPIRE, PLJ has benefited from The World Food Programme (WFP) technical collaboration and also supported WFP Indonesia's ability to integrate and promote data innovation.

As our friends and colleagues working on new tools for development in the innovation space know however, the showcase of the final prototype is often on the smoother side of things. These Stories describe the lessons we have learned while working with new data sources and collaborating with partners from different sectors. Furthermore, they serve as a source of inspiration for collaboration with other diverse stakeholders in the ecosystem and a reminder regarding the importance of having a dedicated team and motivated partners for developing and scaling data-driven innovations prototypes once they're ready.



The Stories of Change report can be downloaded here: [bit.ly/SOCHazeGazerVampire](https://bit.ly/SOCHazeGazerVampire)

# ▶ OUTREACH

## JANUARY



**GovPay Summit**  
Jakarta, Indonesia

PLJ co-hosted the Summit and in line with the event's theme on urban tech, also facilitated a roundtable with several governors to discuss innovation priorities for their respective regions.



**Data for Smart City**  
Bandung, Indonesia

PLJ talked about how emerging data sources can help to improve efficiency in public service delivery.



**Satu Data Workshop**  
Pontianak, Indonesia

PLJ, KSP and the Government of Pontianak organised a workshop to trial the Satu Data toolkit with public servants.



**Indonesia-Australia Digital Forum**  
Jakarta, Indonesia

PLJ presented on the merits of harnessing technology for smart, agile, and responsive government.



**United Nations ECOSOC Youth Forum**  
New York, USA

Our research assistant shared case studies to demonstrate how big data can improve youth development and engagement.



**Lab Visit: ITU Secretary-General Houlin Zhao**  
Jakarta, Indonesia

## FEBRUARY


**Harnessing Big Data in the Agriculture Sector Seminar**

Depok, Indonesia

PLJ presented some of its work focused on using big data analytics to improve food security.


**Lab Visit: DFAT's Chief Innovation Officer**

Jakarta, Indonesia


**Lab Visit: The UK's Office for National Statistics Data Science Campus**

Jakarta, Indonesia

Colleagues from the Campus presented its project portfolio and shared its experience in growing data science skills across government.

## MARCH


**#SDGDataLK**

Colombo, Sri Lanka

PLJ presented its work at the symposium to highlight the benefits of using big data for evidence-based policymaking.

**GPSDD Data for Development Festival**

Bristol, UK

PLJ co-hosted a session discussing the role of ethics and privacy in data mining.

**Regional Workshop on Strengthening Multi-Hazard Early Warning Systems for Pacific Island Countries**

Denpasar, Indonesia

PLJ showcased some of its data analytics and visualisation tools developed to strengthen humanitarian action.


**University Visit: Bandung Institute of Technology**

Bandung, Indonesia

PLJ presented some of its research projects leveraging big data for urban planning and development strategy.

## APRIL


**University Visit: University of Indonesia**

Depok, Indonesia

PLJ gave a lecture to students from the Faculty of Economics themed on big data integration for economic policymaking.


**Makassar Innovation Lab Design Thinking Workshop**

Makassar, Indonesia

PLJ assisted BaKTI to organise a design workshop for government officials involved in establishing the Makassar Innovation Lab.


**Lab Visit: Deputy Head of Mission at the Australian Embassy in Jakarta**

Jakarta, Indonesia

MAY



**UNLEASH Singapore**  
Singapore, Singapore

PLJ facilitated various design sessions aimed at transforming ideas into solutions related to SDG #11.



**UN Data Literacy Workshop**  
Bangkok, Thailand

PLJ spearheaded a three-day data literacy workshop organised for Resident Coordinators and Heads of Agencies from across the Asia Pacific region.



**Lab on Wheels: Festagama UGM**  
Yogyakarta, Indonesia

PLJ organised a data innovation workshop and data analytics exhibition to showcase its projects on big data for urban planning.



**International Telecommunication Union (ITU) Asia-Pacific Regional Development Forum 2018**  
Bangkok, Thailand

PLJ presented its work on big data for development to telecom regulators and government officials from information and communications ministries in the Asia-Pacific region.



**2nd Artificial Intelligence for Good Global Summit**  
Geneva, Switzerland

UN Global Pulse shared expertise from AI projects built with partners and engaged in conversations to support ongoing innovation efforts and partnerships.

JUNE



**WFP's Innovation Accelerator Bootcamp**  
Munich, Germany

PLJ stress tested the scaling model of VAMPIRE - our drought-monitoring prototype - as part of the accelerator, which culminated in a pitch to an audience of investors.

## JULY



### The 4th International Conference on Indonesian Architecture and Planning (ICIAP)

Yogyakarta, Indonesia

PLJ discussed how real-time data streams from new digital technology can improve urban and regional planning.



### Indonesia Development Forum

Jakarta, Indonesia

PLJ presented its Banking on Fintech research in a session focusing on unlocking the potential of digital economy for regional development.



### Launch: The Atlas of Innovation for Economic Stability

Jakarta, Indonesia

PLJ hosted the launch of the Atlas of Innovation for Economic Stability, which presents 63 examples of policy, programme and technology innovations.

### Datakali

Jakarta, Indonesia

PLJ talked about how big data and emerging technologies are revolutionising development practices.



### Coffee, Croissants & Prototypes - UN Country Team in Indonesia

Jakarta, Indonesia

PLJ provided updates on some of its recent and upcoming projects to colleagues from the UN Country Team in Indonesia.

### International Conference Series on Advances in Social Network Analysis and Mining (ASONAM)

Barcelona, Spain

PLJ presented the results of its nowcasting air quality research using social media, as well as on the quality of crowdsourced translations via TranslatorGator.

### International Conference on Population and Social Policy in a Disrupted World 2018.

Yogyakarta, Indonesia

PLJ presented an academic paper on big data for development indicators and social policies.

## AUGUST



### Data Innovation Clinic with Development CAFÉ

Jakarta, Indonesia

PLJ ran a data innovation clinic as part of a big data for monitoring and evaluation workshop organised by the Development CAFÉ

## SEPTEMBER



### Innovation Labs World

Singapore, Singapore

PLJ gave the keynote address for the summit and presented some of the Lab's ongoing projects related to the SDGs.



### Interministerial South-South and Triangular Cooperation (SSTC) Conference

Bali, Indonesia

PLJ discussed emerging issues on population and development, as well as how the 2020 census can benefit from big data.



### MRT Jakarta Cafe Talk

Jakarta, Indonesia

PLJ shared its research project on big data for commuting statistics with representatives from MRT Jakarta.

OCTOBER



**World Data Forum**  
Dubai, UAE

PLJ and Digicel talked about how mobile network data can strengthen humanitarian response.

**UN Data Literacy Workshop**  
New Delhi, India

PLJ facilitated discussions on emerging big data sources and their implications for the SDGs.



**Inter-regional Preparatory meeting for the Mid-Term Review of the SAMOA Pathway**  
Apia, Samoa

PLJ participated in the Interregional Preparatory Meeting for the Mid-term Review of the SAMOA Pathway that took place in Apia, Samoa in late October 2018. PLJ is contributing to the design of new and sustainable partnerships that address the key challenges of the Small Island Developing States (SIDS) particularly on climate change and resilience.

NOVEMBER



**Lab Visit: Buka Warung with MRT Jakarta**  
Jakarta, Indonesia

PLJ shared how advanced data analytics can support MRT Jakarta services to suit the needs of commuters.

**UN Data Literacy Workshop**  
Bangkok, Thailand

PLJ, together with the UN Development Group, conducted two Data Literacy workshops for senior UN leaders from across the Asia Pacific region in 2018. Topics such as demystifying alternative sources of data for decision making, big data and ethics and how private sector partnerships for data collaboratives were prioritised.



**International Conference on Informatics and Computational Science (ICICOS)**  
Semarang, Indonesia

PLJ presented its research on using mobile network data to predict evacuation destinations during natural disasters.

DECEMBER



**After Dark: Co-Design Workshop**  
Jakarta, Indonesia

To complement insights gathered from the After Dark field research, PLJ invited individuals across different sectors to offer inputs to support the synthesis phase of the research.

**Data Dive with OLX Indonesia**  
Jakarta, Indonesia

PLJ and OLX analytics team conducted exploratory analysis using OLX data to investigate the correlation between rising and falling real estate prices and Bank Indonesia's official data.



**UNCT Meeting with UNESCAP Executive Secretary**  
Jakarta, Indonesia

# PUBLICATIONS



6th Research Dive Technical Report  
- Urban and Regional Development



7th Research Dive Technical Report  
- Machine Learning and Artificial  
Intelligence for Estimating Poverty



8th Research Dive Technical Report  
- Financial Inclusion



Stories of Change: Haze  
Gazer and Vampire



Examining Customer Journeys  
at Financial Institutions in  
Cambodia



Banking on Fintech:  
Financial Inclusion for Micro  
Enterprises in Indonesia



2017 Annual Report



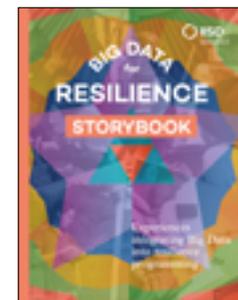
Chapter Contributed in:  
Knowledge, Politics and  
Policymaking in Indonesia



Chapter Contributed in: SDG  
Localization in ASEAN -  
UNDP



Chapter Contributed in:  
The Atlas of Innovation for  
Economic Stability



Chapter Contributed in:  
Big Data for Resilience  
Storybook

# ▶ ACADEMIC PAPERS

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**“Estimating the Quality of Crowdsourced Translations based on the Characteristics of Source and Target Words and Participants”**

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International Conference on Advances in Social Networks Analysis and Mining 2018

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**“Nowcasting Air Quality by Fusing Meteorological Data, Insights from Satellite Imagery and Photos Shared on Social Media using Deep Learning”**

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International Conference on Advances in Social Networks Analysis and Mining 2018

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**“Predicting Evacuation Destinations due to a Natural Hazard using Mobile Network Data”**

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International Conference on Informatics and Computational Sciences 2018

---

**“Big Data for Development Indicators and Social Policies”**

---

International Conference on Population and Social Policy in a Disrupted World 2018

---

**“Improving Traffic Safety Through Video Analysis in Jakarta, Indonesia”**

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Annual Conference on Neural Information Processing Systems 2018

# MEDIA COVERAGE

**01**  
JANUARY

## Research Collaboration with Pulse Lab Jakarta

Pulse Lab Jakarta discussed research collaboration with Pusat Unggulan Iptek (PUI)

Source: Pusat Unggulan Iptek (PUI), 23 January 2018



## Minister reveals priorities for Indonesia's One Data policy

"Every minister has his own data, they are quite resourceful; but the problem is, sometimes the data are not accessible to other ministries or agencies."

Source: GovInsider, 26 January 2018

**02**  
FEBRUARY



## Tackling Sri Lanka's climate change with data

"As countries grapple with climate change, emergency response and preparedness teams are put to the test. But in today's connected world, data analysis can be the most powerful tool of all."

Source: GovInsider, 6 February 2018

## Inovasi Pasikola Akan Terima Penghargaan Internasional

Pasikola receives an international award.

Source: Media Sulsel, 09 February 2018

## Bringing banking to Indonesia's Small Businesses

"There is great potential for fintech to transform small businesses, which account for 99% of all businesses in Indonesia."

Source: GovInsider, 13 February 2018

**03**  
MARCH

## Government of Indonesia Integrates Big Data into Economic Management

"... economic stability-enhancing innovations that empower the world's poor and vulnerable people in managing and investing with confidence in their future."

Source: Crowd360, 12 March 2018

## WFP Indonesia Country Brief, March 2018

"The new features of VAMPIRE developed jointly by WFP and Pulse Lab Jakarta include tabular and graph data visualization for selected timelines allowing for enhanced monitoring and early warning of weather extremes and their impact on food security across the country."

Source: ReliefWeb, 31 March 2018

04  
APRIL

**Social media insights for sustainable development and humanitarian action in Indonesia**

“We observe that the insights gained by using Twitter data... further our real-time understanding of the situation and user behavior changes.”

Source: IOP Science, 12 April 2018



**Planet analytics 1.0: From the UN lab to the globe**

“UNGP is also clear that at this point that the Pulse Labs are primarily innovation labs working on proofs of concept. This is a step in the right direction...”

Source: ZDNet, 20 April 2018

05  
MAY

**Big Data for Resilience: A New Approach to Strengthen Development Pathways?**

“The emergence of very large datasets is becoming particularly relevant for understanding the complex nature of vulnerability, as well as for improving the ability of systems to absorb, adapt, and potentially transform in the face of shocks and stressors.”

Source: IISD, 24 May 2018

06  
JUNE



**Kondisi Terumbu Karang Indonesia kini dan Betapa Bahaya Jika Ia Punah!**

“Colloquotion’s discussion session also evaluated how Big Data innovations can contribute to providing better information about the sustainability of coral reefs.”

Source: IDN Times 26 June 2018

07  
JULY



**Beyond Social Media: The Indonesian MFA To Address Challenges and Opportunities of Digital Diplomacy**

“The seminar involved a number of engaging discussions and provided real-life examples of everyday interactions and challenges.”

Source: Kemenlu, 12 July 2018

**Tantangan dan Peluang Media Sosial dalam Diplomasi Digital**

“Digital diplomacy connects individuals, we call it grounded diplomacy, between humans and diplomacy...”

Source: Social Innovation Exchange, 12 July 2018

**Data for Social Good Case Study: VAMPIRE, Pulse Lab Jakarta**

“This was more than just a transfer of tech, but a contextualisation of the tool to the specific context, adding several improvements.”

Source: Social Innovation Exchange, 12 July 2018

10  
OCTOBER



**Lab looks at data to develop Small Island Developing States**

“Samoa has great potential to utilise Pulse Lab, and with a growing generation of digital natives it would be a missed opportunity not to take advantage...”

Source: Samoa Observer, 31 October 2018

11  
NOVEMBER

### Comprehensive Data Needed in SDGs Implementation

"The One Data Initiative is expected to be in line with the government's efforts to monitor the SDG... to design localized road maps and manage specific targets."

Source: DPR, 02 November 2018



### Big data sits at the table of sustainable development

"In a bid to better harness this rapidly changing new sector, governments, business, academia, international organizations and civil society groups discussed the data challenges of the 2030 Agenda."

Source: Global Landscape Forum, 05 November 2018



### Modalku Menangkan Tantangan dari UNCDF-UN Pulse Lab

Modalku wins challenge from UNCDF and UN Pulse Lab

Source: Warta Ekonomi, 14 November 2018

### Startup DuitHape dapat Pendanaan dari Badan PBB UNCDF

Indonesian startup, DuitHape, chosen as one of the best startups in the Micro Enterprise Fintech Innovation Challenge Fund

Source: Tempo, 21 November 2018

### GandengTangan Kembangkan Aplikasi Pinjaman Usaha Mikro

With funding from UNCDF and UN Pulse Lab Jakarta, *GandengTangan* is targeting 5,000 small shops to get loans via its services in 2019.

Source: Warta Ekonomi, 16 November 2018

### Julo Sabet Penghargaan Microenterprise Fintech Innovation Challenge

"Julo hopes that with the funding assistance from the UNCDF, this will help realize Julo's vision in supporting financial inclusion in Indonesia."

Source: Bisnis, 27 November 2018

12  
DECEMBER

### Kick Off Satu Data Kalimantan Barat

"Work and build West Kalimantan with Data."

Source: Kalbar Online, 03 December 2018

# PERSONAL DATA PROTECTION AND PRIVACY PRINCIPLES

Adopted by the UN High-Level Committee on Management (HLCM) at its 36th Meeting on 11 October 2018.

## INTRODUCTION: PURPOSE AND SCOPE

Purpose: These principles (the “Principles”) set out a basic framework for the processing of “personal data”, which is defined as information relating to an identified or identifiable natural person (“data subject”), by, or on behalf of, the United Nations System Organizations in carrying out their mandated activities.

These Principles aim to:

- (i) harmonize standards for the protection of personal data across the United Nations System Organizations;
- (ii) facilitate the accountable processing of personal data for the purposes of implementing the mandates of the United Nations System Organizations; and
- (iii) ensure respect for the human rights and fundamental freedoms of individuals, in particular the right to privacy.

Scope: These Principles apply to personal data, contained in any form, and processed in any manner.

The United Nations System Organizations are encouraged to adhere to these Principles and may issue detailed operational policies and guidelines on the processing of personal data in line with these Principles and each Organization’s mandate.

Personal data should be processed in a non-discriminatory, gender sensitive manner.

Where appropriate, these Principles may also be used as a benchmark for the processing of non-personal data, in a sensitive context that may put certain individuals or groups of individuals at risk of harms.

United Nations System Organizations should exercise caution when processing any data pertaining to vulnerable or marginalized individuals and groups of individuals, including children.

In adherence with these Principles, the United Nations System Organizations should conduct risk-benefit assessments or equivalent assessments throughout the personal data processing cycle.

**Implementation of these Principles is without prejudice to the privileges and immunities of the relevant United Nations System Organizations concerned.**

## PRINCIPLES

<b>1</b>	<b>FAIR AND LEGITIMATE PROCESSING</b>	The United Nations System Organizations should process personal data in a fair manner, in accordance with their mandates and governing instruments and on the basis of any of the following: (i) the consent of the data subject; (ii) the best interests of the data subject, consistent with the mandates of the United Nations System Organization concerned; (iii) the mandates and governing instruments of the United Nations System Organization concerned; or (iv) any other legal basis specifically identified by the United Nations System Organization concerned.
<b>2</b>	<b>PURPOSE SPECIFICATION</b>	Personal data should be processed for specified purposes, which are consistent with the mandates of the United Nations System Organization concerned and take into account the balancing of relevant rights, freedoms and interests. Personal data should not be processed in ways that are incompatible with such purposes.
<b>3</b>	<b>PROPORTIONALITY AND NECESSITY</b>	The processing of personal data should be relevant, limited and adequate to what is necessary in relation to the specified purposes of personal data processing.
<b>4</b>	<b>RETENTION</b>	Personal data should only be retained for the time that is necessary for the specified purposes.
<b>5</b>	<b>ACCURACY</b>	Personal data should be accurate and, where necessary, up to date to fulfill the specified purposes.
<b>6</b>	<b>CONFIDENTIALITY</b>	Personal data should be processed with due regard to confidentiality.
<b>7</b>	<b>SECURITY</b>	Appropriate organizational, administrative, physical and technical safeguards and procedures should be implemented to protect the security of personal data, including against or from unauthorized or accidental access, damage, loss or other risks presented by data processing.
<b>8</b>	<b>TRANSPARENCY</b>	Processing of personal data should be carried out with transparency to the data subjects, as appropriate and whenever possible. This should include, for example, provision of information about the processing of their personal data as well as information on how to request access, verification, rectification, and/or deletion of that personal data, insofar as the specified purpose for which personal data is processed is not frustrated.
<b>9</b>	<b>TRANSFERS</b>	In carrying out its mandated activities, a United Nations System Organization may transfer personal data to a third party, provided that, under the circumstances, the United Nations System Organization satisfies itself that the third party affords appropriate protection for the personal data.
<b>10</b>	<b>ACCOUNTABILITY</b>	United Nations System Organizations should have adequate policies and mechanisms in place to adhere to these Principles.

# PARTNERSHIPS

Our partners include players from the private and public sectors, such as the Government of Indonesia, UN agencies, foreign governments, data philanthropy partners, and civil society organisations. Pulse Lab Jakarta is grateful for the support of all our partners and wide range of stakeholders that enable us to experiment with new methods and seek creative solutions to complex problems.

## Development



## Government



### Private Sector



### Academia



### Civil Society



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## 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**

Our framework for joint innovation includes partnership engagements with organisations to secure data, tools and expertise. Pulse Lab Jakarta is keen on forming partnerships with organisations within the region and beyond. If you're interested, please get in touch with the team at [plj@un.or.id](mailto:plj@un.or.id)



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