



## IMDA'S USE CASES ON THE USE OF CROWDSOURCED DATA COLLECTION

20 AUGUST 2019  
ITU WORKSHOP ON  
TELECOMMUNICATION SERVICE  
QUALITY AS AN ENABLER OF THE  
DIGITAL ECONOMY

# AGENDA

- Introduction to IMDA's IMconnected programme
- What does the IMconnected mobile app do?
- How does IMconnected work?
- Understanding consumers' mobile network experience
- Broad Use Cases
- Published Results and Engagement with Operators
- Conclusion

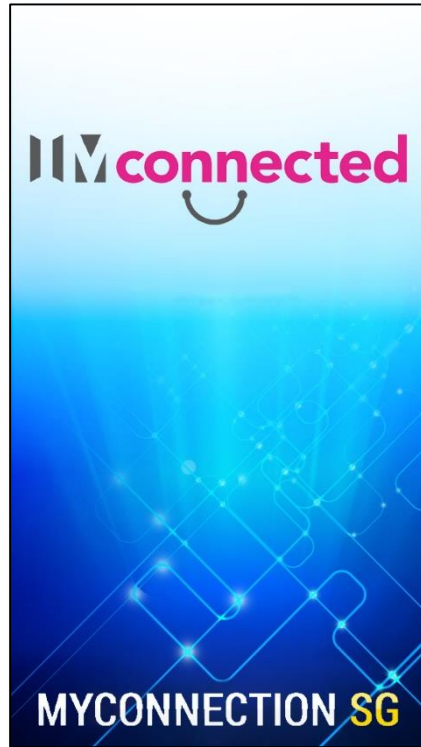


- IMconnected (previously known as MyConnection SG)
- Officially launched in July 2015 (Launch as a Pilot in Oct 2014)
- Passive gathering of data that are representative of true users' experience:
  - Throughput
  - Latency
  - Signal Strength (used to represent coverage)
  - Five biannual reports published since and moving towards interactive reports
- Nationwide and 24/7 collection
- New insights and assisted MNOs
- Adopts voluntary crowdsourcing approach
  - Gather **anonymised** user experience indicators on the mobile network passively

# WHAT DOES THE APP DO?

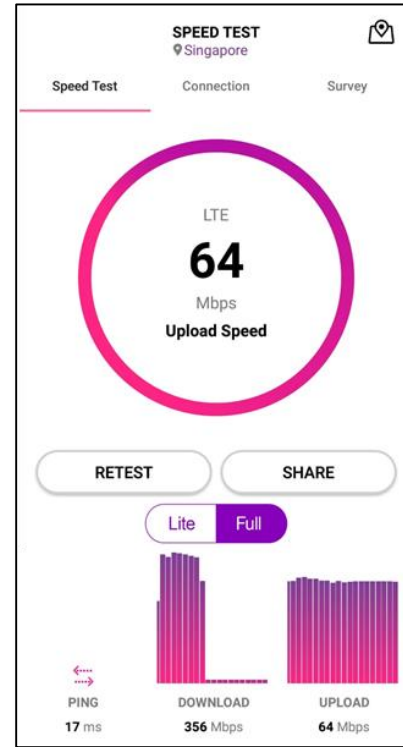


## Splash Screen



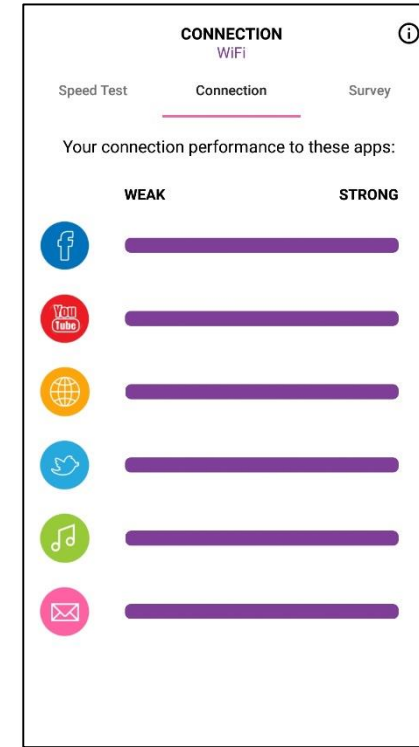
Passive data collection in the background

## Speed Test



Capped data size for speed test

## Connection

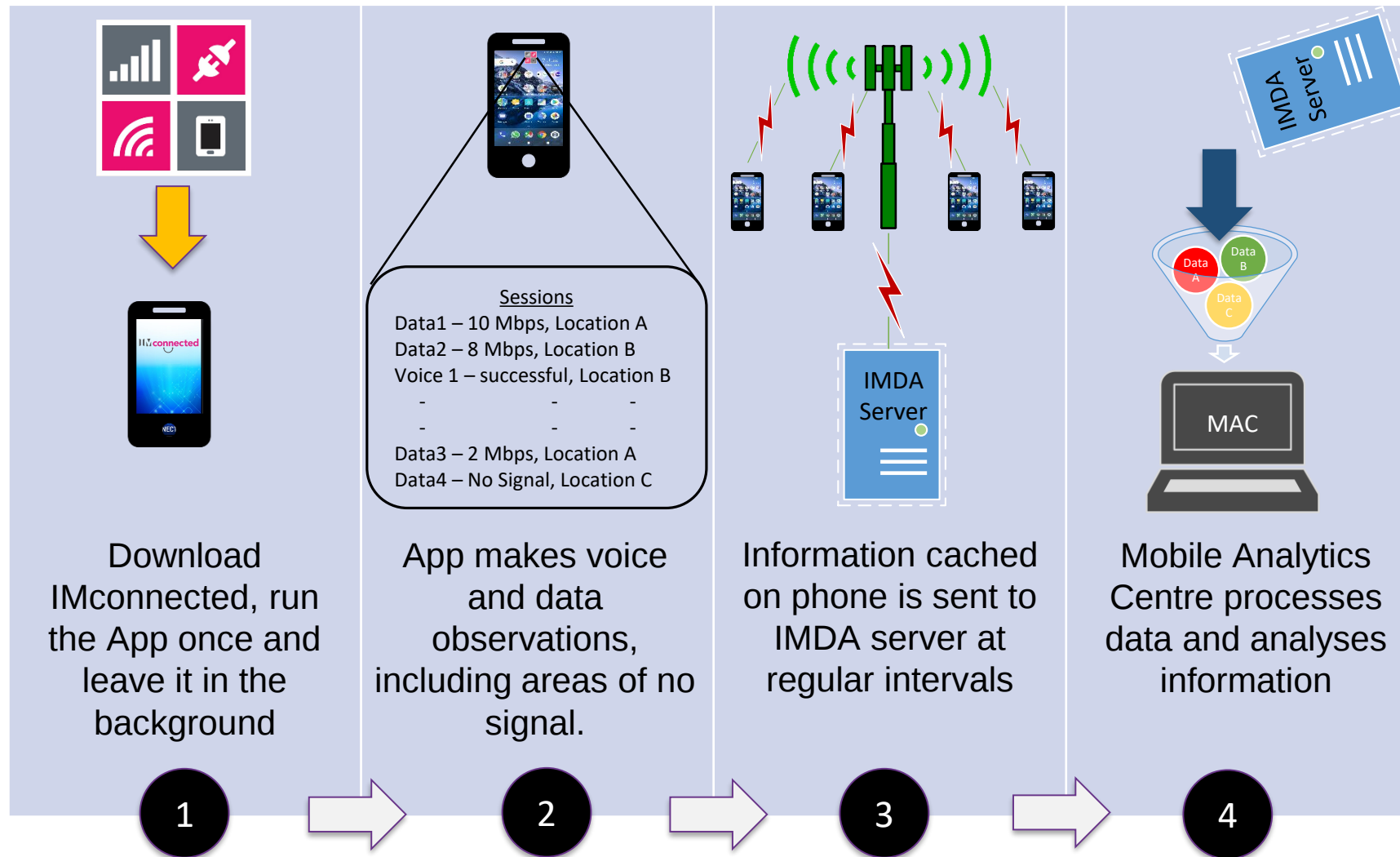


Connection performance to popular websites

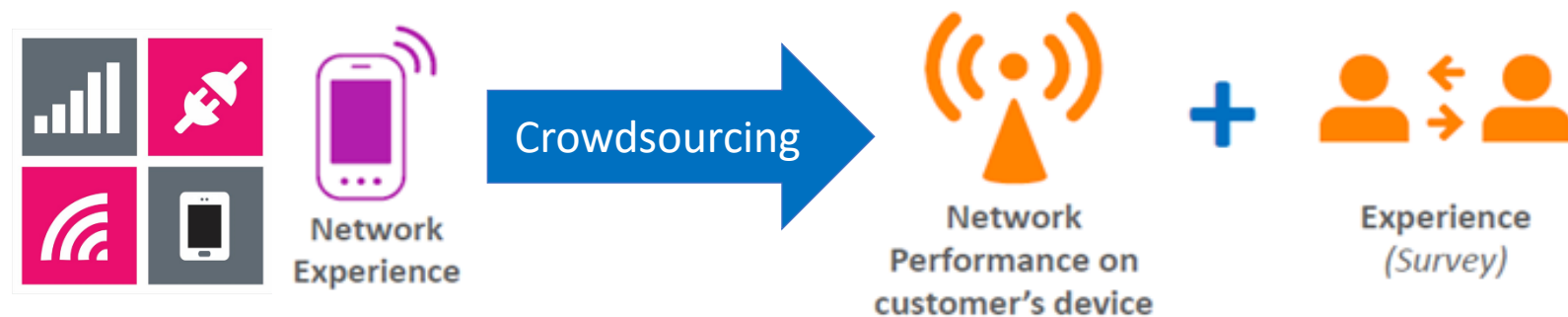
## Survey

Users' experience review

# HOW IT WORKS?

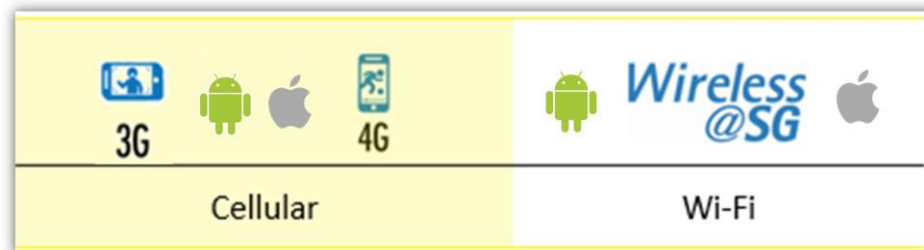


# UNDERSTANDING CONSUMERS' MOBILE NETWORK EXPERIENCE



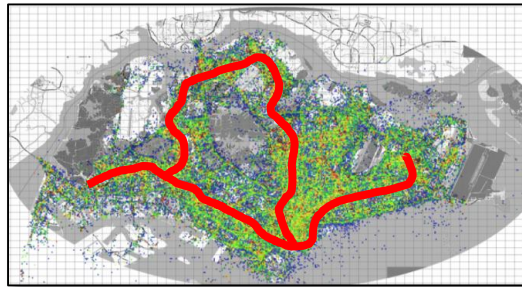
| Data Performance                                                                                                                                            | Voice Performance                                                               | Device Identifiers                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"><li>1. Session throughput</li><li>2. Latency</li><li>3. Packet loss per session</li><li>4. Data volume utilised</li></ol> | <ol style="list-style-type: none"><li>1. Experienced network coverage</li></ol> | <ol style="list-style-type: none"><li>1. Manufacturer and model</li><li>2. Operating System</li><li>3. Location Information</li></ol> |

**6-monthly  
Publication  
since July 15**

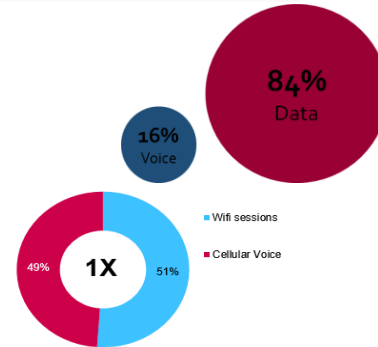


# BROAD USE CASES

## Notable Consumer Trends



Data usage

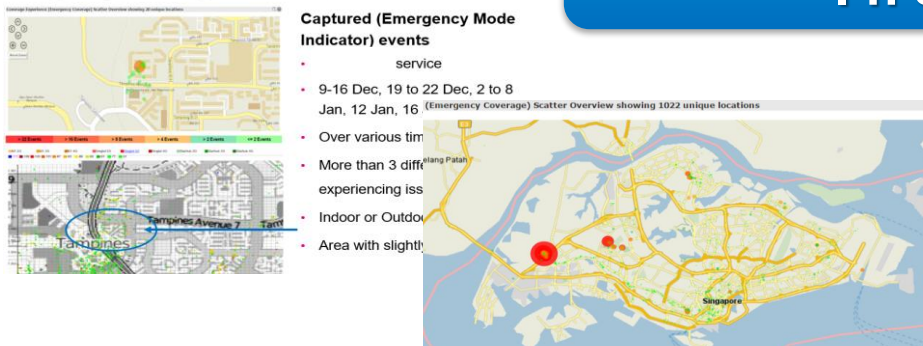


## Post-event Validation



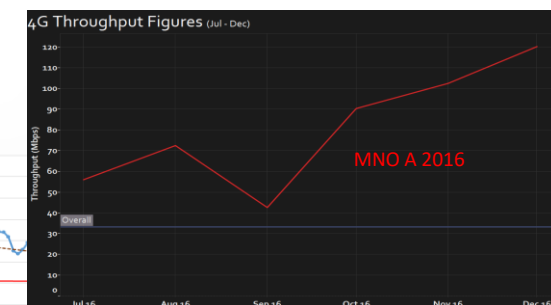
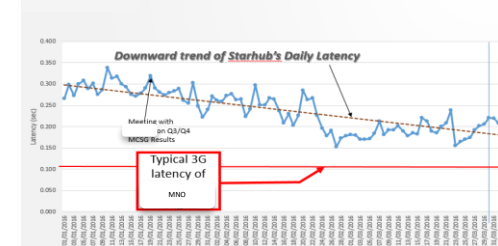
## Creating Actionable Insights

### On-going Investigation with



## Pre-emptive Approach

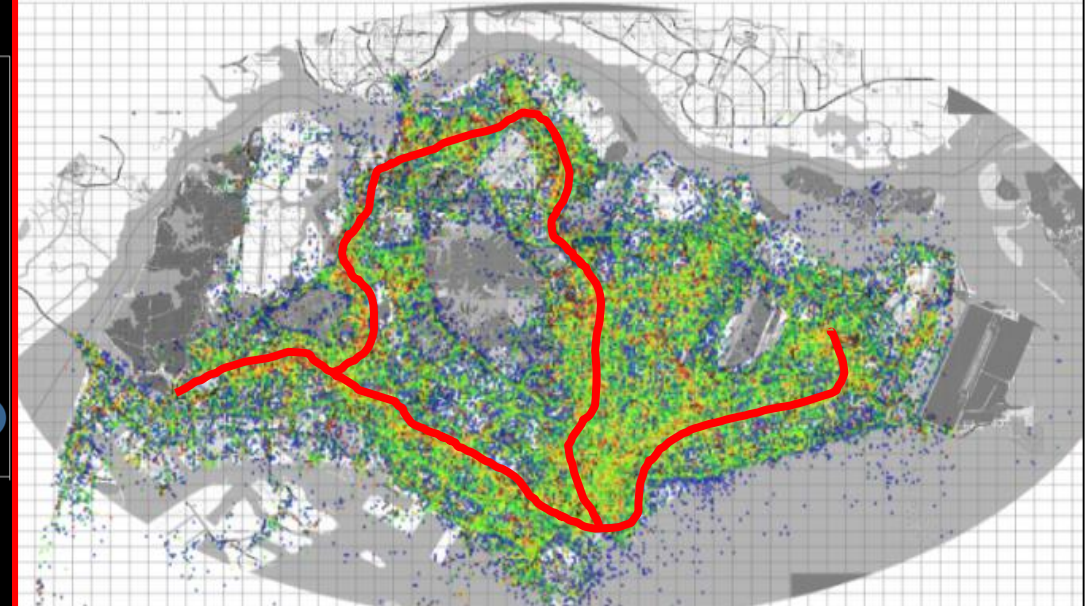
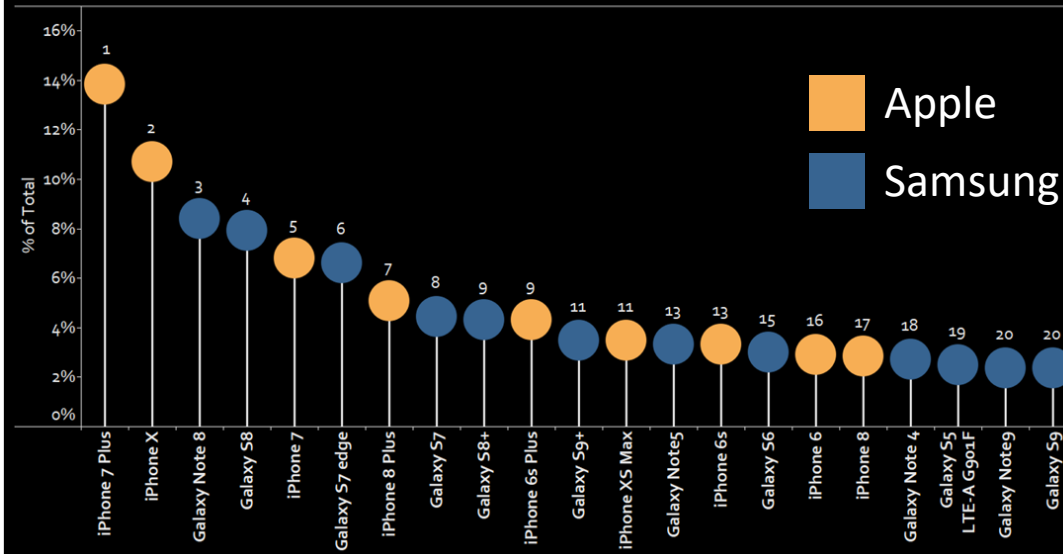
### Daily Latency Jan – Apr 16



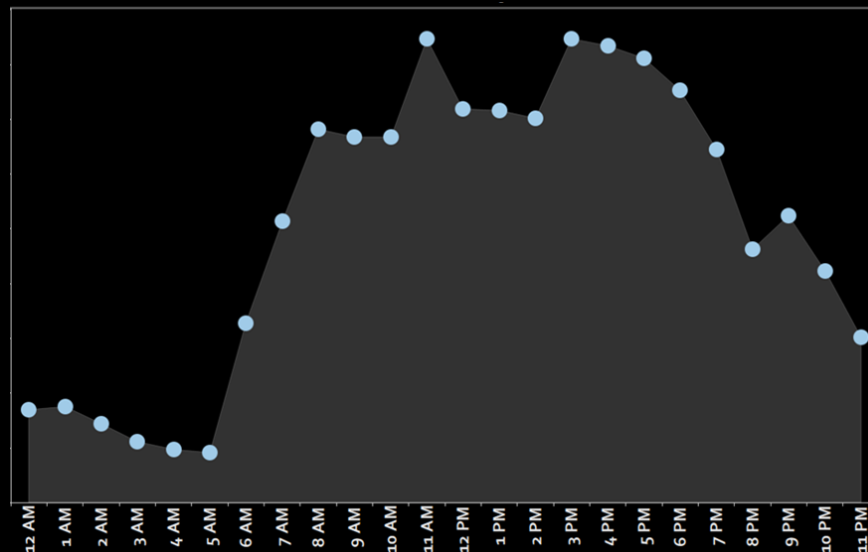
## Virtuous Cycle

# NOTABLE CONSUMER TRENDS

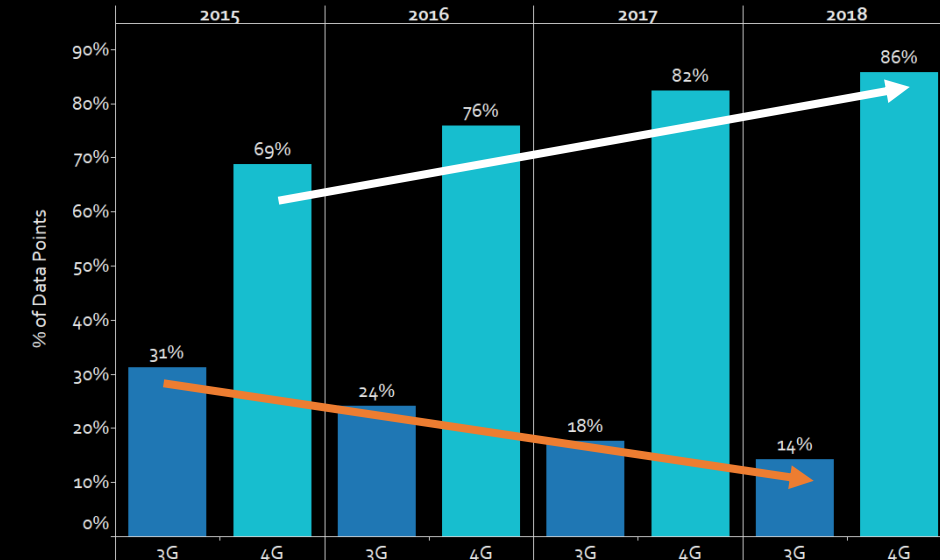
## Handsets Distribution



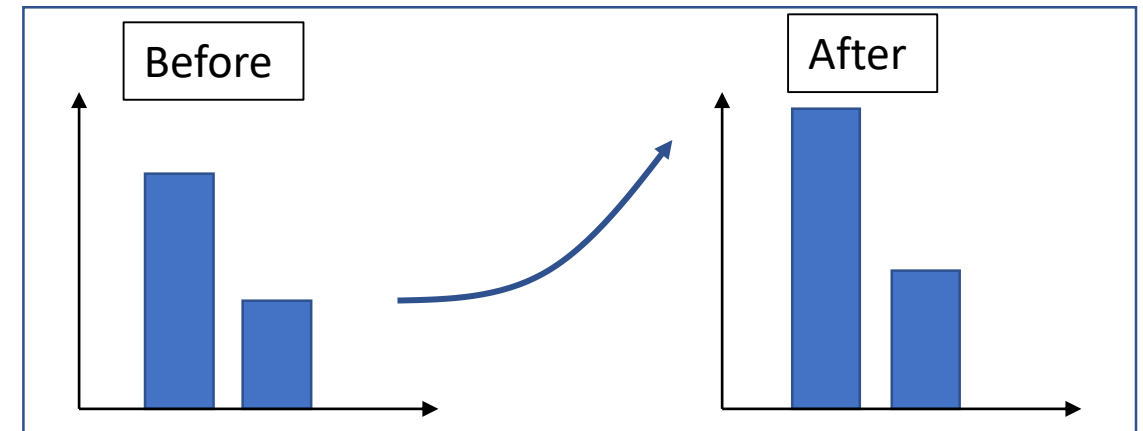
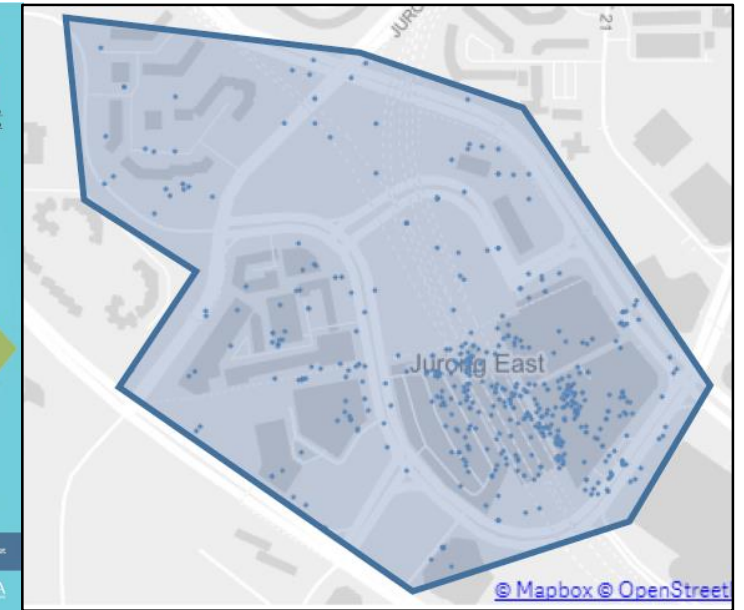
## Mobile Data Download Trend by Hour



## 3G vs 4G Usage

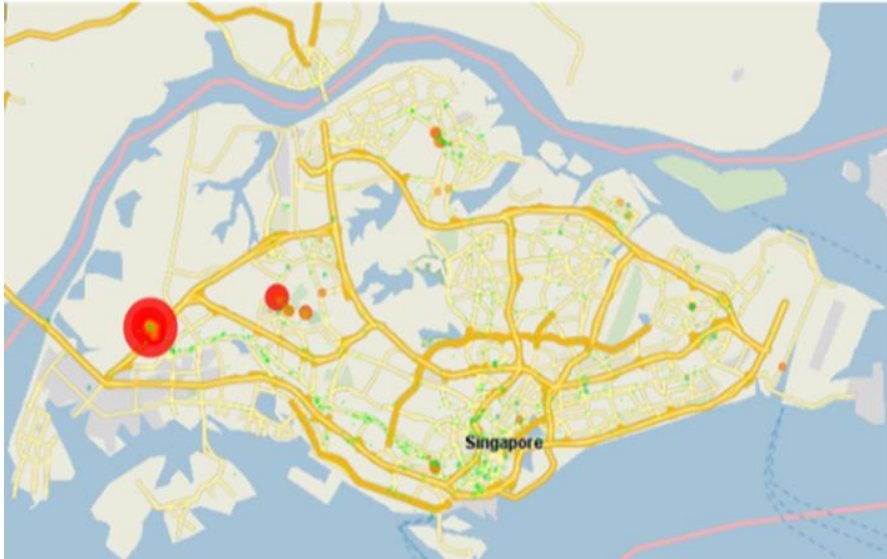


# POST EVENT VALIDATION

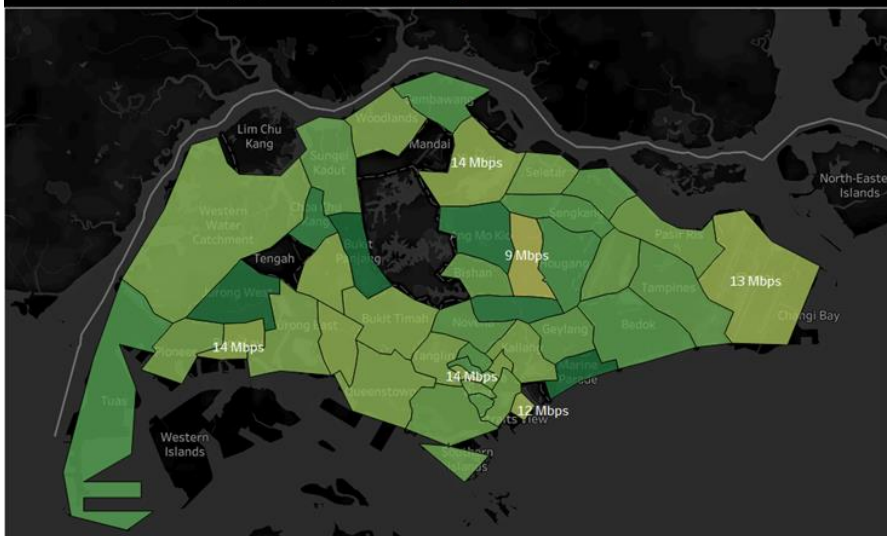


# PRE-EMPTIVE APPROACH

(Emergency Coverage) Scatter Overview showing 1022 unique locations

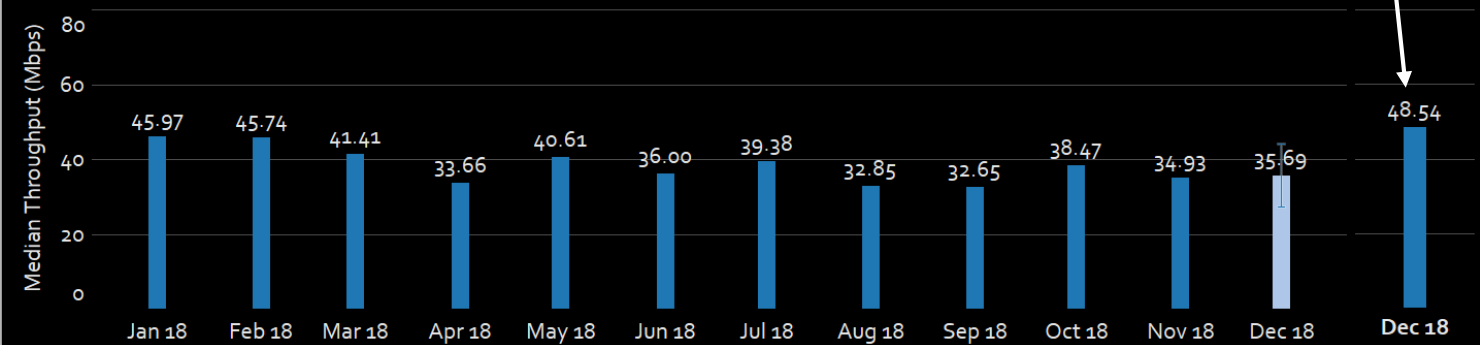


Download Throughput by Planning Areas

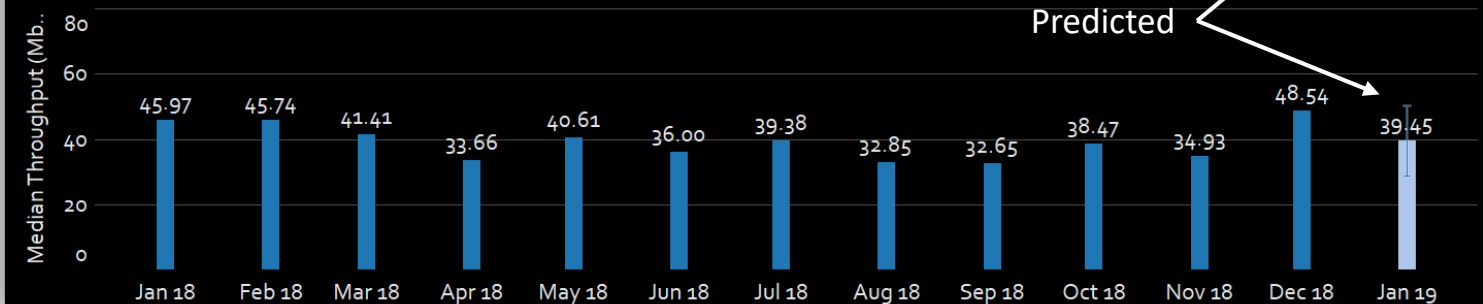


## Overall Throughput Forecast

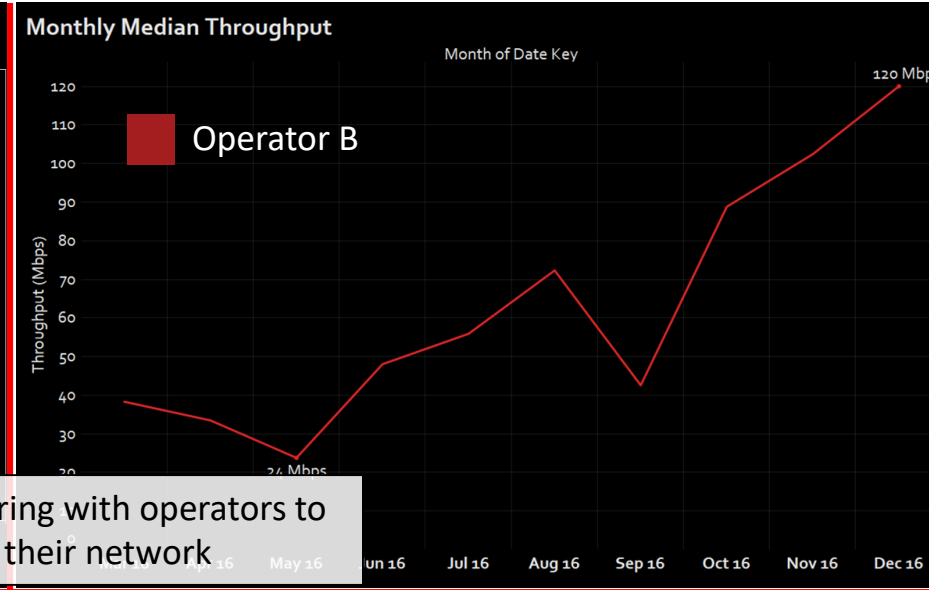
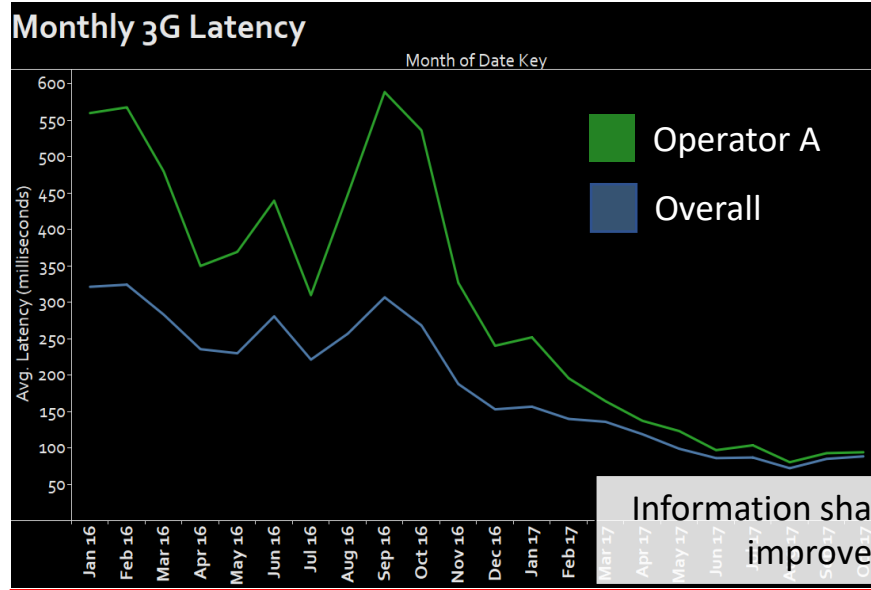
This Month's Forecast & Actual Median Throughput



Next Month's Forecast



# VIRTUOUS CYCLE



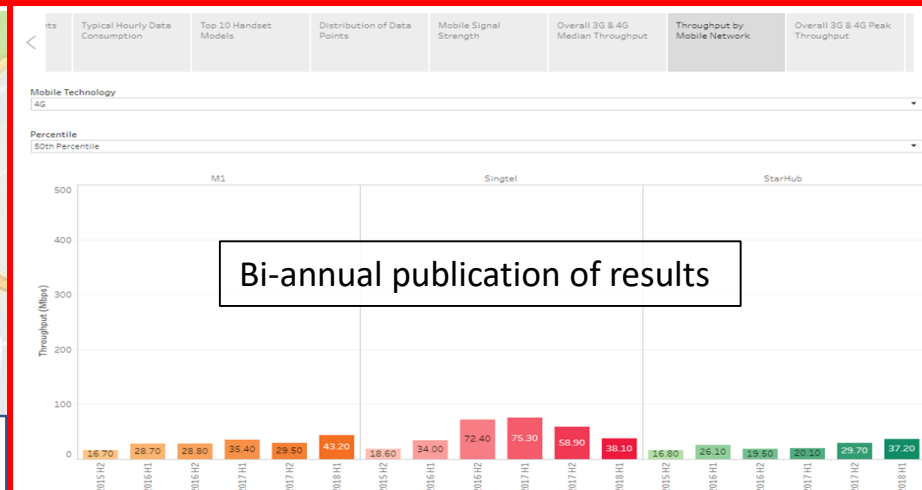
Information sharing with operators to improve their network

Data was shared with the operator and the issue was fixed.

Large number of feedback was received from every location



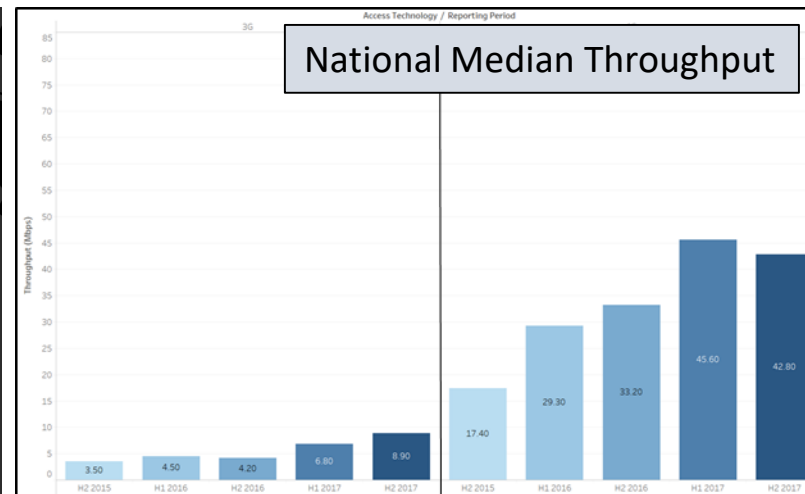
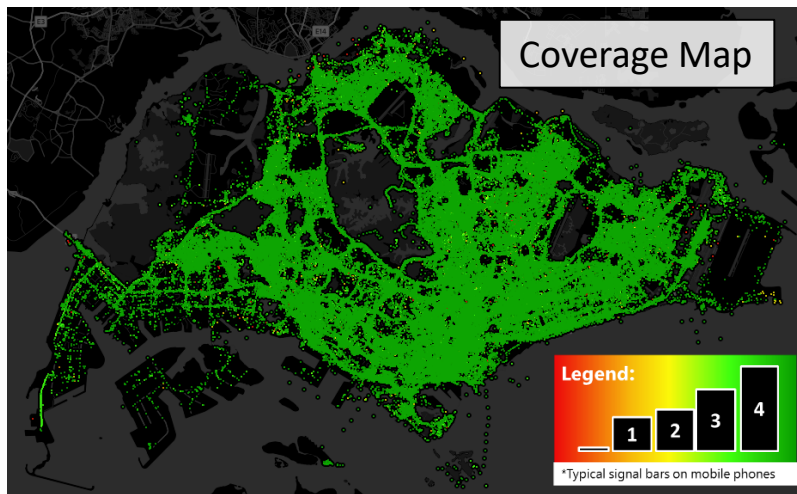
Data is slow or not reliable: ~3,900 feedback



\* This published results represent network speeds. In certain cases, it would reflect the blended speed of service plans offered and network management policies of the MNO and/or the MVNOs operating on their network.

# IMCONNECTED PUBLISHED REPORT

- National Median Throughput
- MNOs' 50<sup>th</sup> Percentile Throughput
- National and MNOs' Peak Throughput
- National Average Latency
- MNOs' Average Latency
- Coverage Map



# ENGAGEMENT WITH STAKEHOLDERS

## Quarterly Discussion with Operators

- Joint IMDA - MNOs improvement activities
- Enhancement of coverage
- Improve consumers' experience

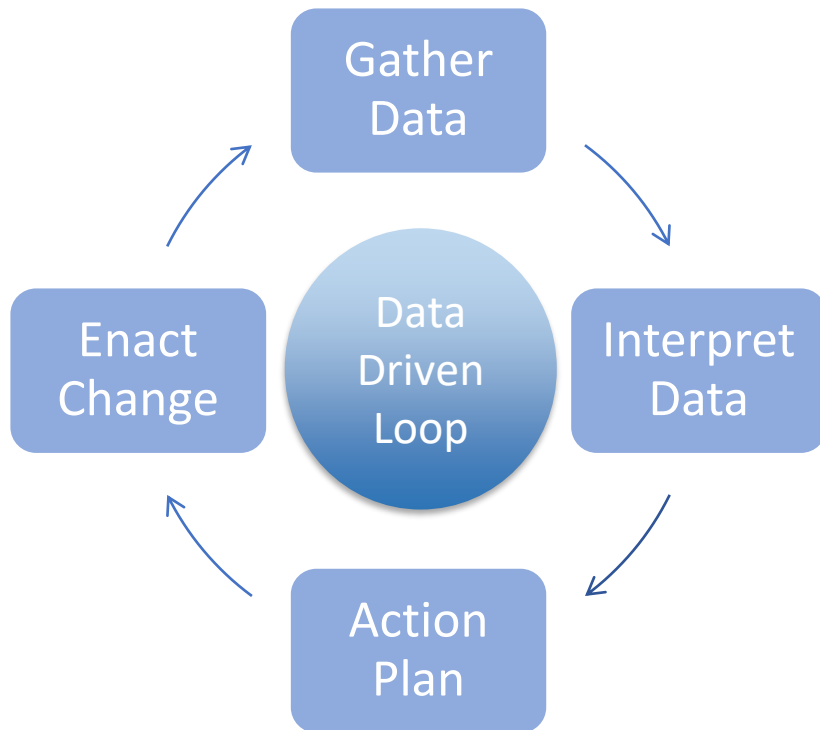
## Regular Publication of Results

- Spur competition amongst MNOs
- Increase transparency
- Incentivise users to participate

## Gearing towards Smart Nation

- Data analytics
- Explore possible joint collaboration with various agencies and mobile apps

# DATA-DRIVEN AND INNOVATIVE APPROACH



Flow of Data Driven  
Management Decision

- **Revolutionise** the new era of data collection and sampling
- **Challenge** several conventional norms
- **Feedback** loop on ground sentiments
- **Increasing relevance** with introduction of 5G
- **Basis** for formulation of policies and decision-making
- **Formalising** QoE methodology at ITU



# THANK YOU



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