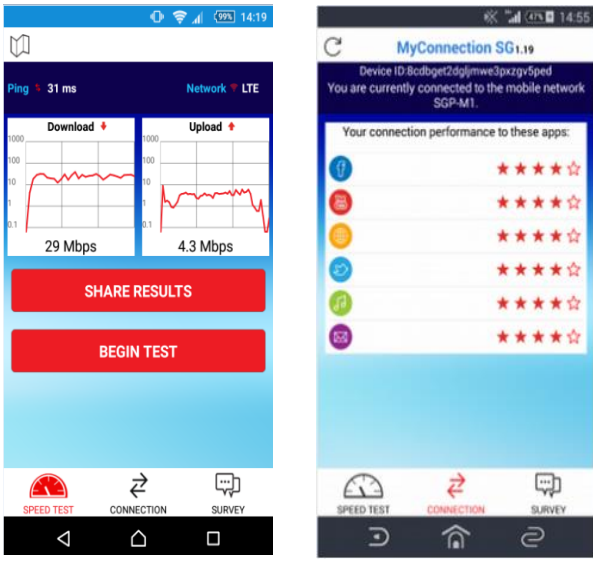
MyConnection SG

July 2015 – December 2015
Highlights

CROWDSOURCING: MYCONNECTION SG

IDA launched the MyConnection SG mobile application (“App”) in October 2014. The App utilises voluntary crowdsourcing to anonymously gather relevant, non-personal data relating to mobile users’ quality of experience. Information collected include data relating to broadband speed, latency, and coverage on 3G and 4G mobile cellular networks, and usage experiences on WiFi networks.

Figure 1: Interface of MyConnection SG App



PARTICIPATION FROM THE PUBLIC

IDA encourages mobile users to download the MyConnection SG App and share your usage experiences with us. This will help IDA better understand mobile broadband performance and take measures to improve mobile service experience for consumers.

MyConnection SG is available on both the Apple App store for iPhone users, and the Google Play store for Android users.

PUBLICATION OF RESULTS

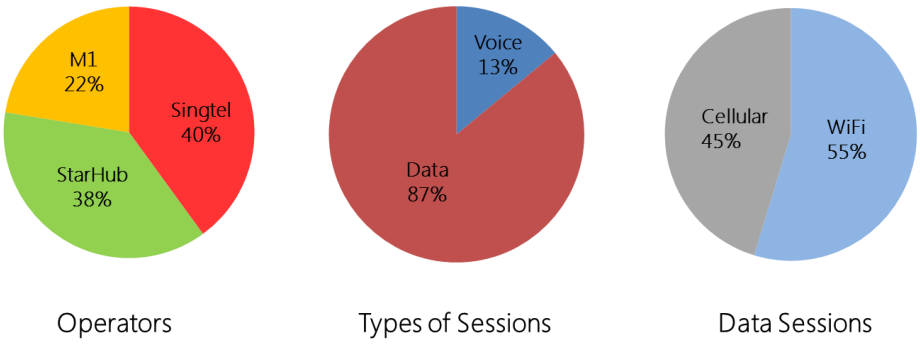
IDA will publish indicators relating to users' service experiences on the mobile cellular and Wireless@SG networks every 6 months. These indicators include mobile signal strength (indicating mobile coverage experience); throughput (indicating data transmission speed) and latency (indicating time lag). The survey results reflect the mobile service experience of users at different locations, at different times of the day, and over a 6-month period. The results will allow IDA to work with the mobile operators to enhance the quality of service experience for consumers on the mobile networks.

IDA publishes the survey results to facilitate greater information transparency to allow consumers to make informed choices on their mobile broadband plans and encourage mobile operators to improve mobile usage experience for consumers.

PROFILE OF PARTICIPANTS

For the period of July to December 2015, MyConnection SG has garnered more than 3,000 participants, obtaining more than 38 million data points across different parameters that relate to user experience. The results presented in this report are based on values collected from the MyConnection SG App.

Figure 2: Overview of Distributions



There is a good distribution of data points from subscribers of 3 operators

App recorded markedly more sessions on data than on voice

WiFi data sessions form a slightly larger proportion of data than cellular sessions

OPERATING SYSTEMS & HANDSET MODELS

From the data collected during this period, we see a variety of mobile handset models used by participants, with Samsung and Apple handsets forming the majority.

Figure 3: Top 10 Mobile Handsets

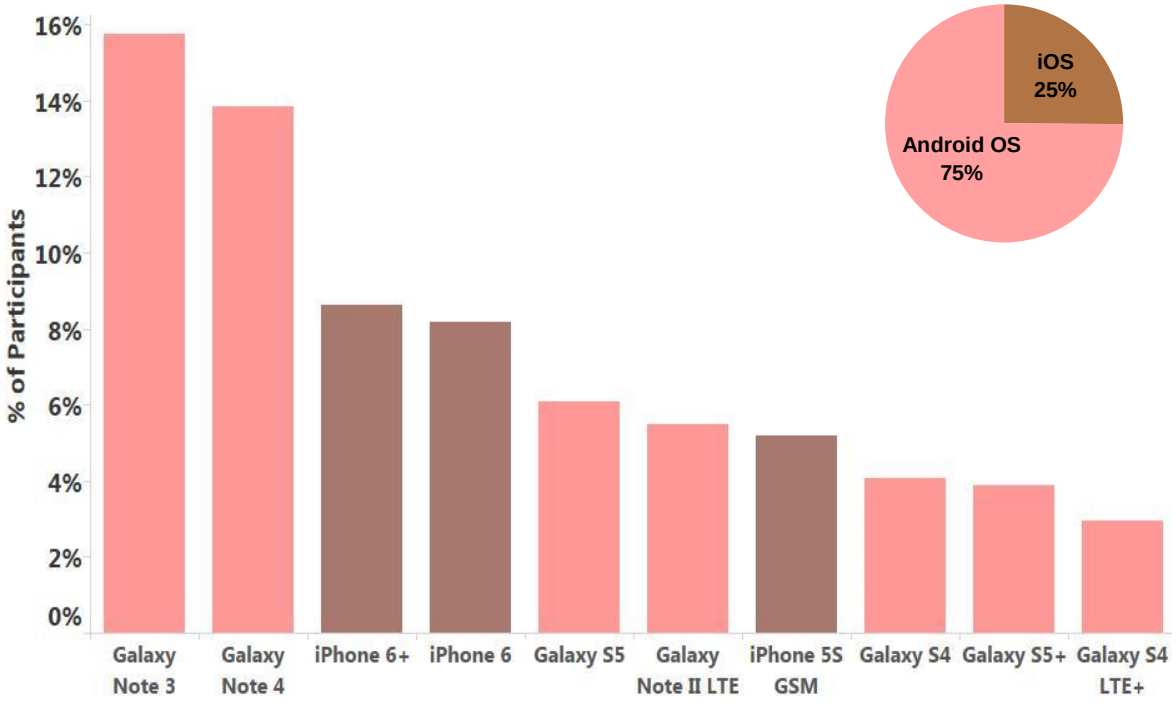


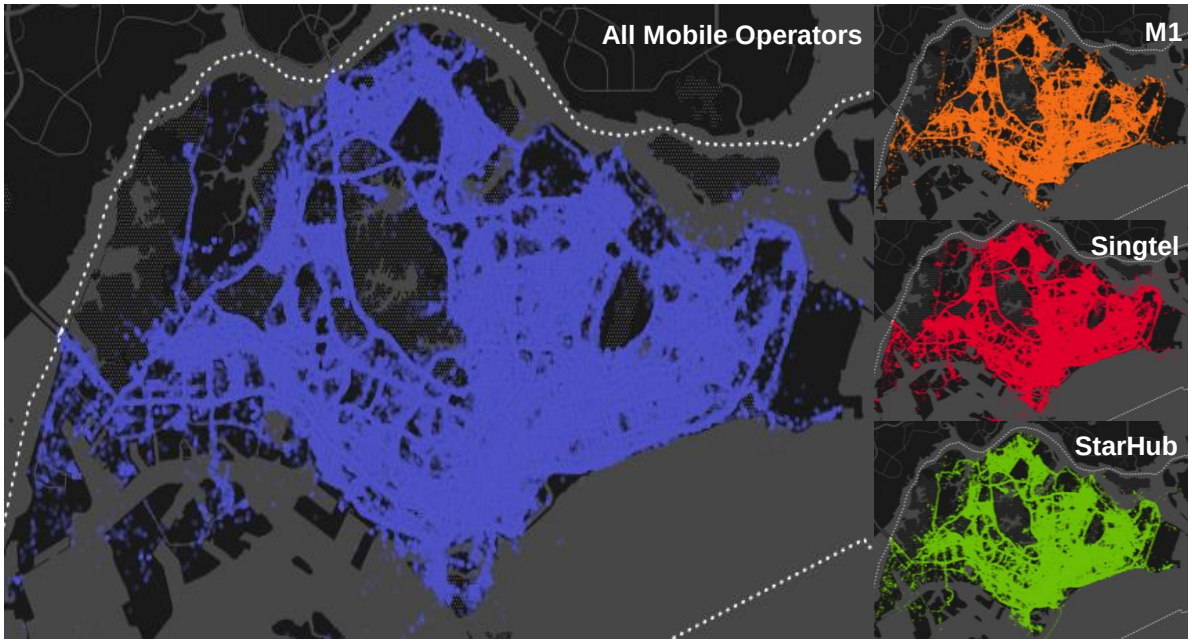
Figure 4: iOS vs Android OS

There is a notable trend towards phones with bigger screen sizes, with newer and more recent handset models making the top 10.

DISTRIBUTION OF DATA POINTS

MyConnection SG is able to locate the position of a device with reasonable accuracy where the measurement is taken.

Figure 4: Heat map of Singapore showing data points taken in the past 6 months



Data points collected were well distributed across Singapore. Results from MyConnection SG are representative of the wider public experience.

MOBILE DATA USAGE EXPERIENCE

Results from MyConnection SG are reflective of actual consumers' experience. Multiple factors such as consumers' data usage pattern, subscription plans, as well as the models of mobile devices do influence the results of consumer experience.

The assessment of the quality of end users' service experience on the 3G and 4G mobile networks was made from data points taken from the Android operating system. Android OS allows for differentiation between 3G and 4G networks. Nevertheless, the results are deemed to be representative of user experiences in Singapore.

COVERAGE EXPERIENCE – MOBILE SIGNAL STRENGTH

The results show the mobile signal strength or service coverage experience reported on both the 3G and 4G networks. The data is represented in a signal strength heat map, aggregated across all 3 mobile operators.

4G

Coverage experience on 4G network has been improving. Mobile operators continue to make enhancements to provide better service coverage to consumers.

Majority of participants enjoyed good signal strength of 3 to 4 signal bars across Singapore.

Figure 5: 4G Signal Strength Heat Map of Singapore

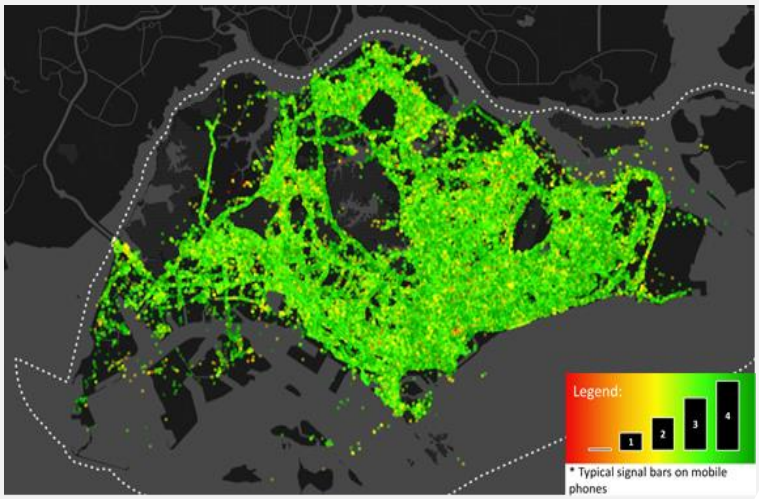
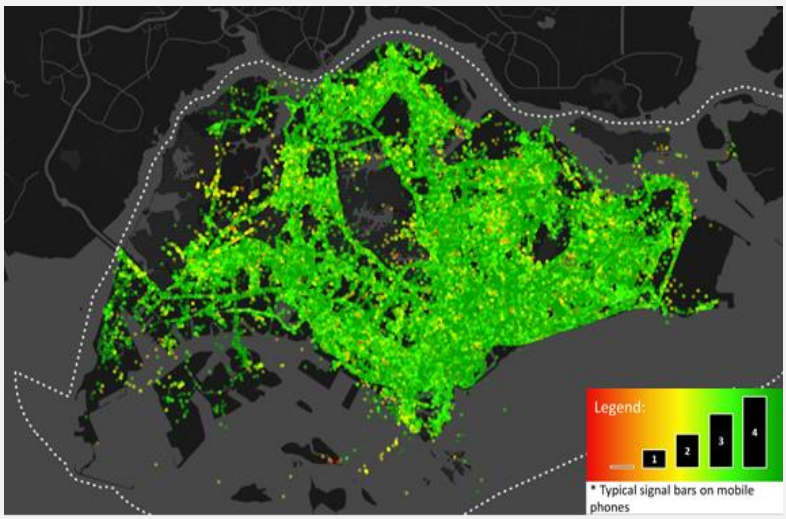


Figure 6: 3G Signal Strength Heat Map of Singapore



3G

3G coverage is comprehensive, indicating that mobile users experienced good 3G service coverage.

Majority of participants enjoyed very good signal strength (4 signal bars) across Singapore.

Overall, signal strengths for 3G and 4G networks have shown improvement since our first report in October 2014.

DATA DOWNLOAD SPEED –THROUGHPUT

In this section, we have provided the data download speed or throughput numbers averaged across all the 3 mobile operators to provide an overall sense of consumers' average mobile data usage experience. We have also provided throughput figures for the 10th, 50th, 90th percentile as well as the peak attainable speed.

Overall Median Throughput (Across 3 Operators)

On average, 50% of our participants experienced a median 4G speed of **17.4** *Mbps and 3G speed of* **3.5** *Mbps*

17.4 Mbps
Overall Median
4G Download Speed

3.5 Mbps
Overall Median
3G Download Speed

4G Throughput Indicators

OVERALL

10th PERCENTILE	50th PERCENTILE	90th PERCENTILE
4G **5.1** Mbps	4G **17.4** Mbps	4G **51.6** Mbps

M1

10th PERCENTILE	50th PERCENTILE	90th PERCENTILE
4G **5.1** Mbps	4G **16.7** Mbps	4G **47.3** Mbps

SINGTEL

10th PERCENTILE	50th PERCENTILE	90th PERCENTILE
4G **5.5** Mbps	4G **18.6** Mbps	4G **52.1** Mbps

STARHUB

10th PERCENTILE	50th PERCENTILE	90th PERCENTILE
4G **4.7** Mbps	4G **16.8** Mbps	4G **53.1** Mbps

3G Throughput Indicators

OVERALL

10th PERCENTILE	50th PERCENTILE	90th PERCENTILE
3G **1.0** Mbps	3G **3.5** Mbps	3G **11.4** Mbps

M1

10th PERCENTILE	50th PERCENTILE	90th PERCENTILE
3G **1.1** Mbps	3G **4.0** Mbps	3G **8.9** Mbps

SINGTEL

10th PERCENTILE	50th PERCENTILE	90th PERCENTILE
3G **1.1** Mbps	3G **3.7** Mbps	3G **13.2** Mbps

STARHUB

10th PERCENTILE	50th PERCENTILE	90th PERCENTILE
3G **0.9** Mbps	3G **3.1** Mbps	3G **11.8** Mbps

Peak Speeds

Peak speed reported is the median of all daily maximum speeds attained over the reporting period

4G PEAK SPEEDS

Overall (across 3 operators) **121.4** Mbps

M1 **75.7** Mbps

Singtel **130.8** Mbps

StarHub **125.4** Mbps

3G PEAK SPEEDS

Overall (across 3 operators) **26.0** Mbps

M1 **14.5** Mbps

Singtel **31.2** Mbps

StarHub **27.8** Mbps

LATENCY

Latency is measured in milliseconds and is defined as the time taken for a data packet to travel from one point to another and back. In MyConnection SG, this is the duration for the data packet from the end users' mobile device to a local server and back. (This is the responsiveness of the network, which could also be referred to as time lag)

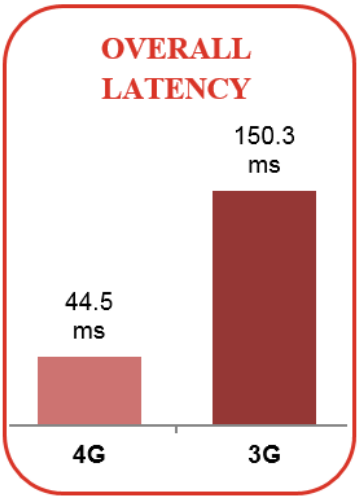
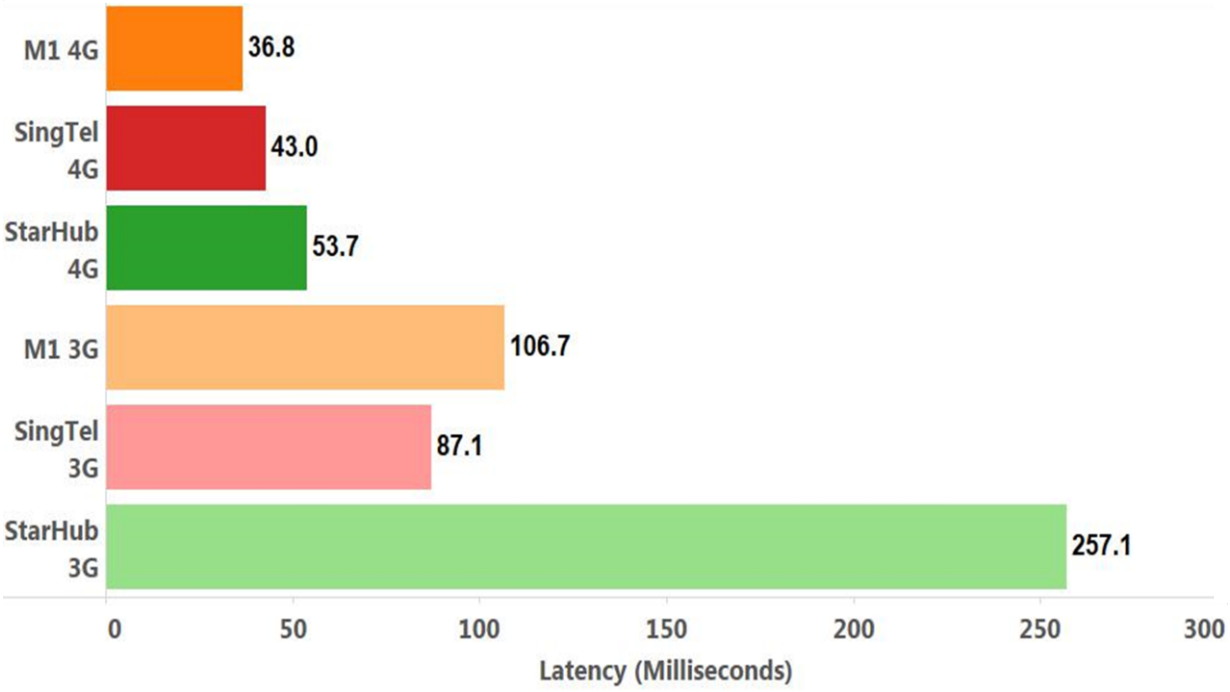


Figure 7: 6-month Average Latency



4G latency values do not deviate much amongst operators.
3G latency values show considerable differences in performance.

WIRELESS@SG EXPERIENCE

Wireless@SG users may experience faster access speeds due to operators and venue owners providing higher capacity or higher speed fixed-line or backhaul connectivity at each WiFi access point to allow users to enjoy better surfing experience.

0.8 – 4.7
Mbps

Typical data download speeds was 0.8 – 4.7 Mbps, with a peak speed of 7.3 Mbps.

55.8
Milliseconds

Average latency came in at 55.8 milliseconds

Wireless@SG is part of IDA's initiatives to facilitate the provision of free and seamless wireless broadband services in public places.