Measuring Broadband America

February 23, 2018

Presented to:
MBA Collaborative
Washington DC

London
135 Park Street, London, SE1 9EA

Washington DC
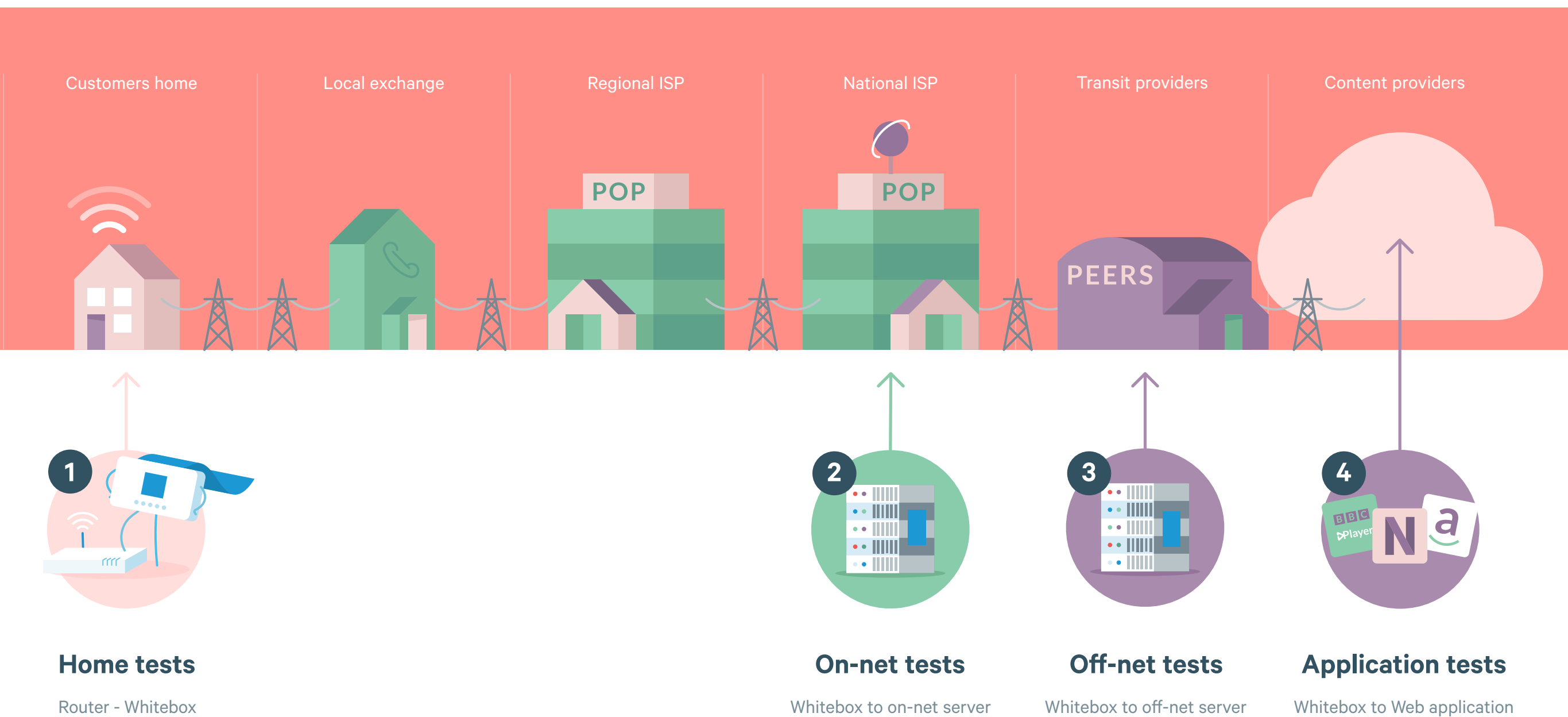1775 Tysons Boulevard, Virginia, VA 22102

2017 Review

2017 MBA new updates

- 2017 report status

- Service/modem upgrades policy

- Increase number of Whiteboxes, per speed tier to 40

- Extend the reporting period by 14 days to account for hurricane

- New sign-up page URL with country, ISP and speed tier pre-populated

- Volunteer accepts the EULA when signing up to be part of the project

- Started to automate the validation process for some ISPs

- New lightweight test

2018 Review

End-to-end measurement

Home tests

Router - Whitebox

On-net tests

Whitebox to on-net server

Off-net tests

Whitebox to off-net server

Application tests

Whitebox to Web application

New developments

New analytics system

New test suite

New router integrations
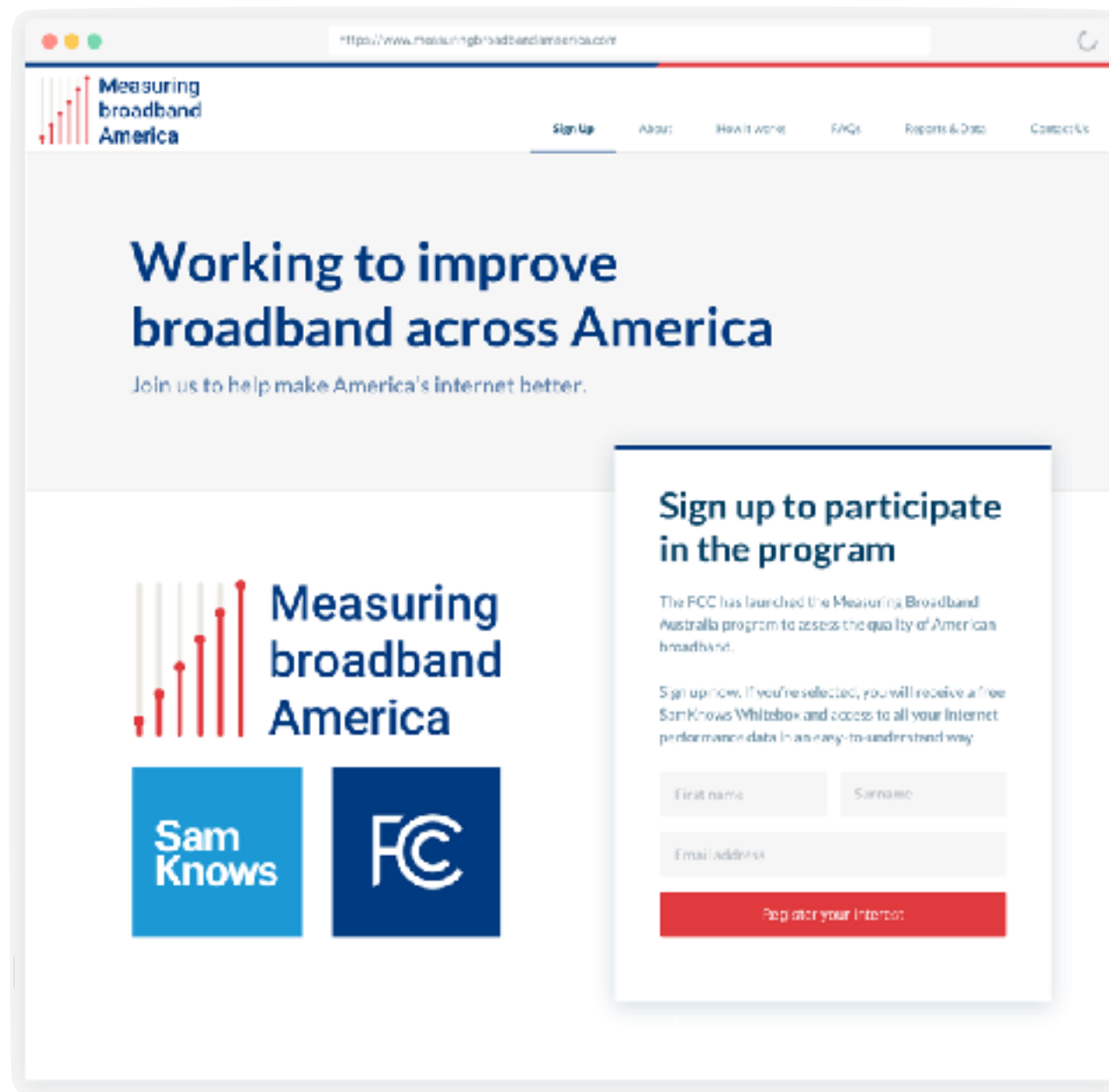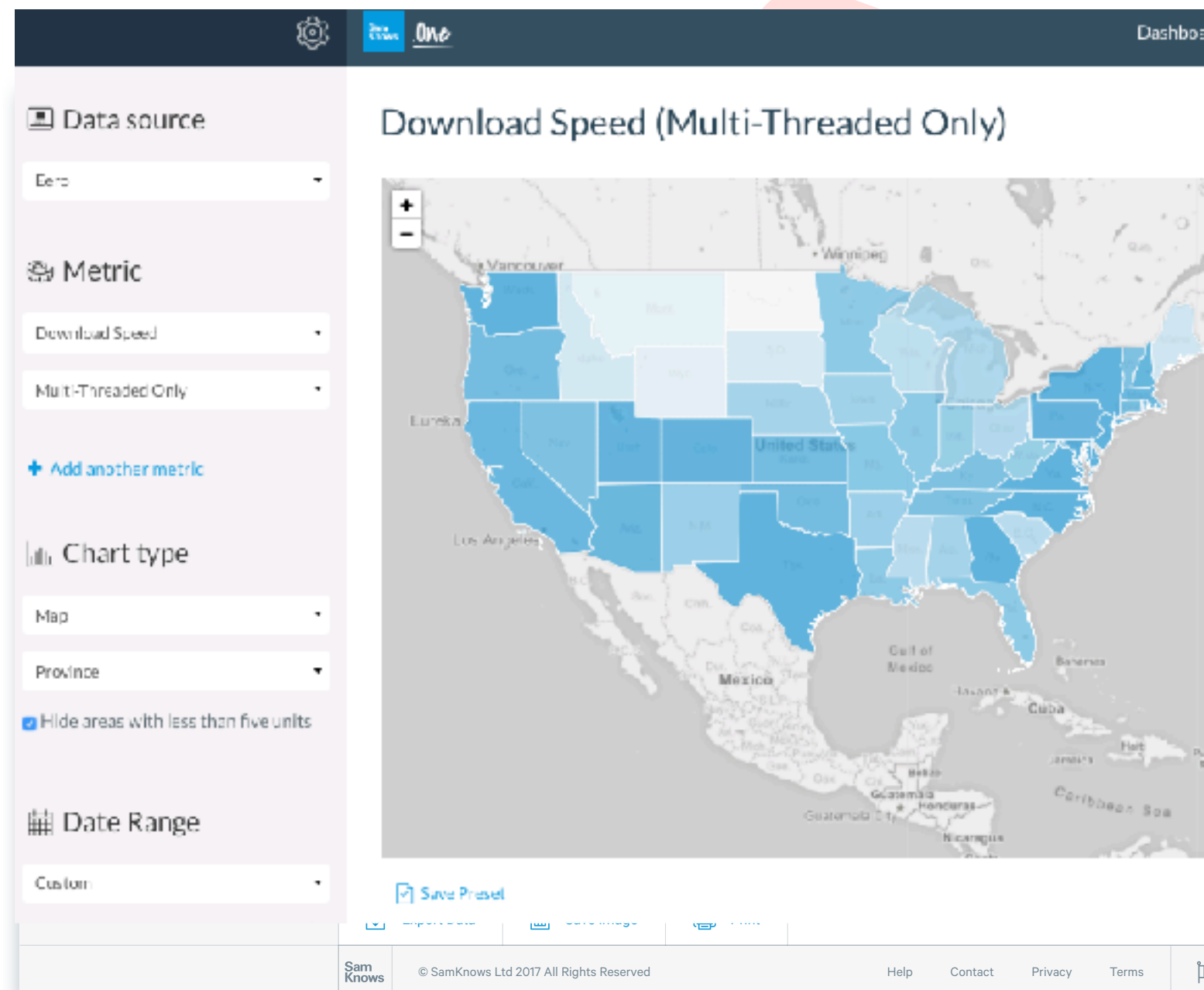
New mobile apps with Wi-Fi measurements

Live data

APIs

New mapping tools

Project re-branding

Over 100,000 active probes

✓ AT&T, Brighthouse, CableONE, CenturyLink, Charter, Cincinnati Bell, Comcast, Cox, EarthLink, EnTouch, Frontier, Hargray Communications, Hawaiian Telcom, Hughes, Mediacom, Online, Optimum, PenTeleData, RCN, Skyline, T-mobile USA, Tarr, Time Warner Cable, Verizon, Verizon Business, Verizon Wireless, WideOpenWest (WOW),Wildblue/ViaSat, Windstream
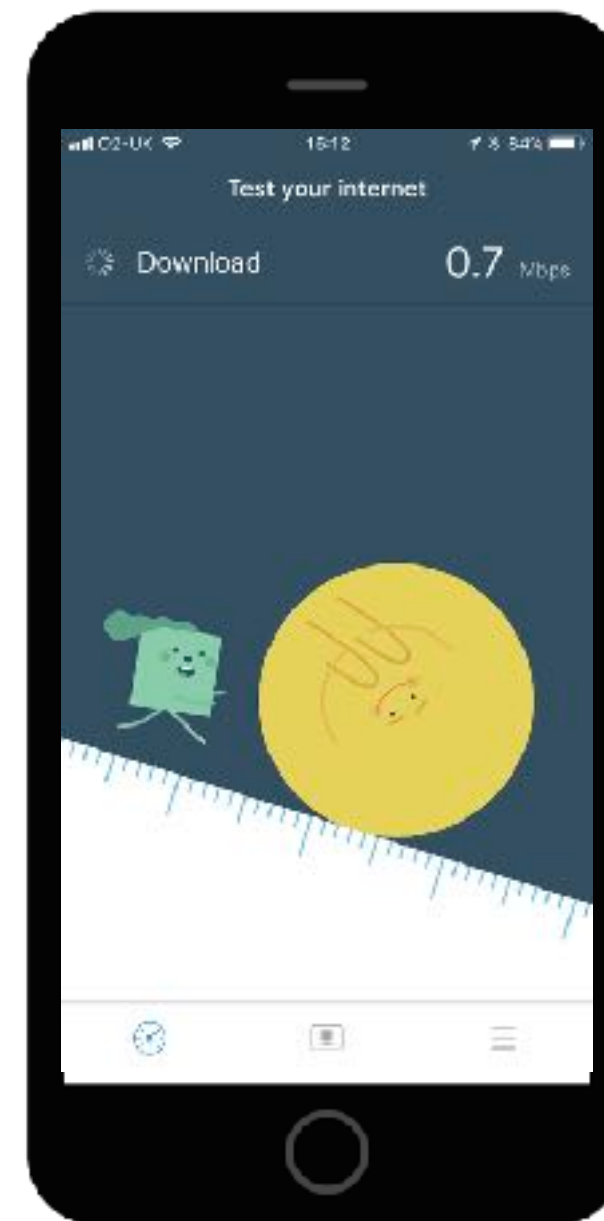
Home Wi-Fi and data usage

✓ Measures mobile and Wi-Fi performance from the handset

✓ Key metrics: download speed, upload speed, latency, packet loss, jitter, web browsing performance, and YouTube

✓ Configured to run tests to pre-defined measurement schedule
(only available on Android)

✓ Allows the user to configure a data cap for the mobile and Wi-Fi measurements

✓ A real-time continuous measurement

✓ Granular visibility of all historical results
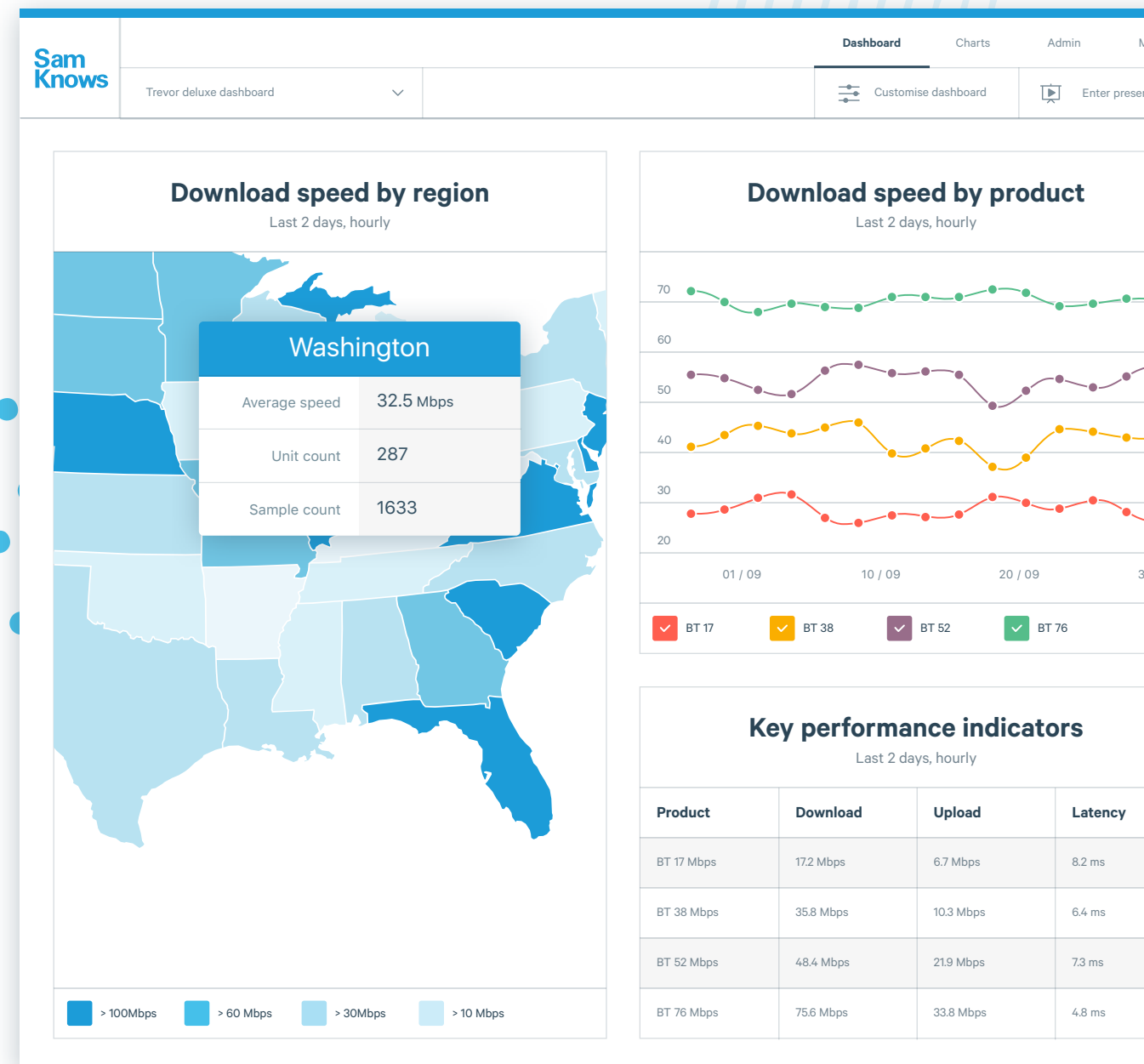
✓ Environmental capture

Current tests and metrics

Region	County/sub-region Postcode Geography Line length	**Environmental information (Wi-Fi)**	Associated SSID Link rate Encryption mode Channel Frequency (2.4Ghz vs 5Ghz) HT Mode RSSI Nearby APs Wi-Fi Standard	**Network**	LAN WiFi Cellular Fixed	**Upload test**	Upload speed Upload test duration Upload bytes Upload speed at different intervals during the test (optional)	**Packet loss**	Packets sent Packets received Average packet loss on an hourly basis	**DNS resolution test**	DNS server being used Name being queries Response time Success and failure rate
Probe Information	Unit ID Whitebox model Whitebox capabilities (max speeds) Whitebox OS & version	**Handset information (cellular/WiFi)**	App version Handset manufacturer Handset model Handset OS type Handset OS version IMEI IMSI	**Cross traffic Activity**	Timestamp of cross-traffic breach event Cause of cross-traffic (wired or Wi-Fi) Volume of cross-traffic in bytes per second	**Download test**	Download speed Download test duration Downloaded bytes Download speed at different intervals during the test (optional)	**Web browsing test**	Website being tested Number of elements on the web page Page load time TCP connection establishment time DNS resolution time	**Generic information available with all tests:**	Unit ID that ran the test Timestamp in UTC Test server hostname Test server IP address
Environmental Information	Public IPv4 addressPublic IPv6 address LAN IPv4 address LAN IPv4 gateway Link speed and duplex CPE MAC address CPE brand CPE model (available in most cases via UPnP) CPE sync speed (available in most cases via UPnP) IP-geolocated ISP name IP-geolocated country, city & state	**Environmental information (cellular)**	SIM operator name SIM operator code Network operator name Network operator code Roaming status Active network type Network bearer (2G/3G/4G/LTE) Signal strength (RSSI) LAC Cell tower ID Other visible cell towers Physical longitude Physical latitude Location accuracy Location provider (GPS/network/WiFi)	**YouTube test**	Google Global Cache (GGC) content server hostname GGC IP addressVideo ID being measured Codec and container Bitrate being measured Bitrate that could be reliably streamed Stall count (available in non-BRS mode) Stall duration (available in non-BRS mode) TCP connection establishment time Video startup delay Video resolution	**Latency test**	Mean latency, on an hourly basis Maximum latency, on an hourly basis Minimum latency, on an hourly basis Standard deviation of hourly latency Packets sent Packets received	**Netflix test**	Netflix Open Connect Appliance (OCA) content server hostnameOCA IP address Bitrate being measured Bitrate that could be reliably streamed Stall count (available in non-BRS mode) Stall duration (available in non-BRS mode) TCP connection establishment time Video startup delay	**VoIP test**	Round-trip latency Upstream packet loss Downstream packet loss Upstream jitter Downstream jitter MoS Packet Loss Rate Packet Discard Rate Burst Density Gap Density Burst Duration Gap Duration Round Trip Delay End System Delay Signal Level Noise Level R-Factor MOS for listening quality MOS for conversation quality Current and maximum jitter delay

New tests and metrics (new SK test dev team)

✓ Dropbox

✓ Google Drive

✓ Microsoft OneDrive

✓ Amazon Drive

✓ Amazon Prime Video

✓ Twitch streaming

✓ World of Warcraft

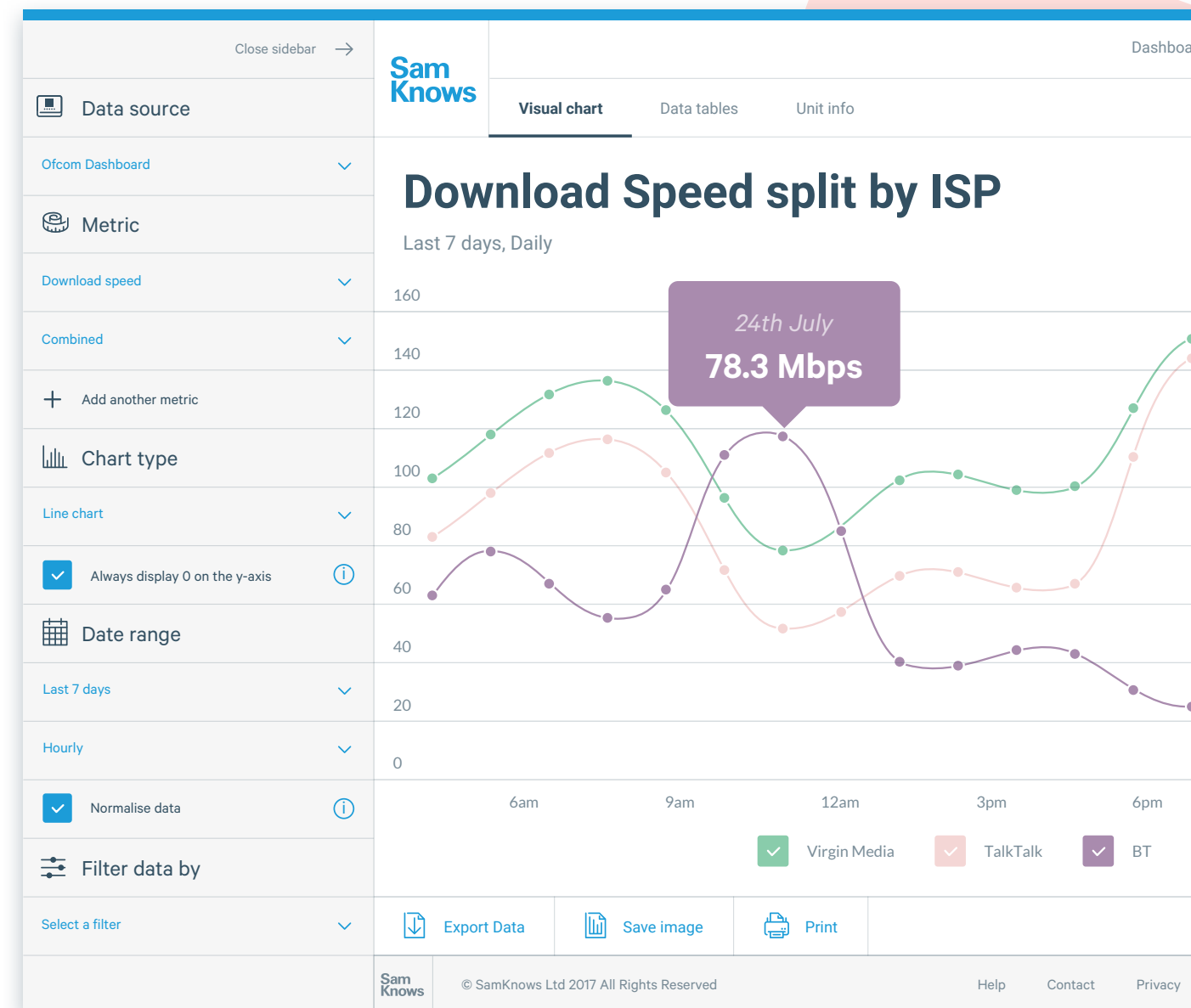✓ Spotify

✓ Box

✓ Facebook CDN (Facebook caches)

✓ Steam

New ISP dashboard

✓ View key metrics in a glance

✓ Configure your own dashboard, with reports you have created and saved

✓ Monitor performance across a whole network

✓ See in realtime issues that might affect customer experience
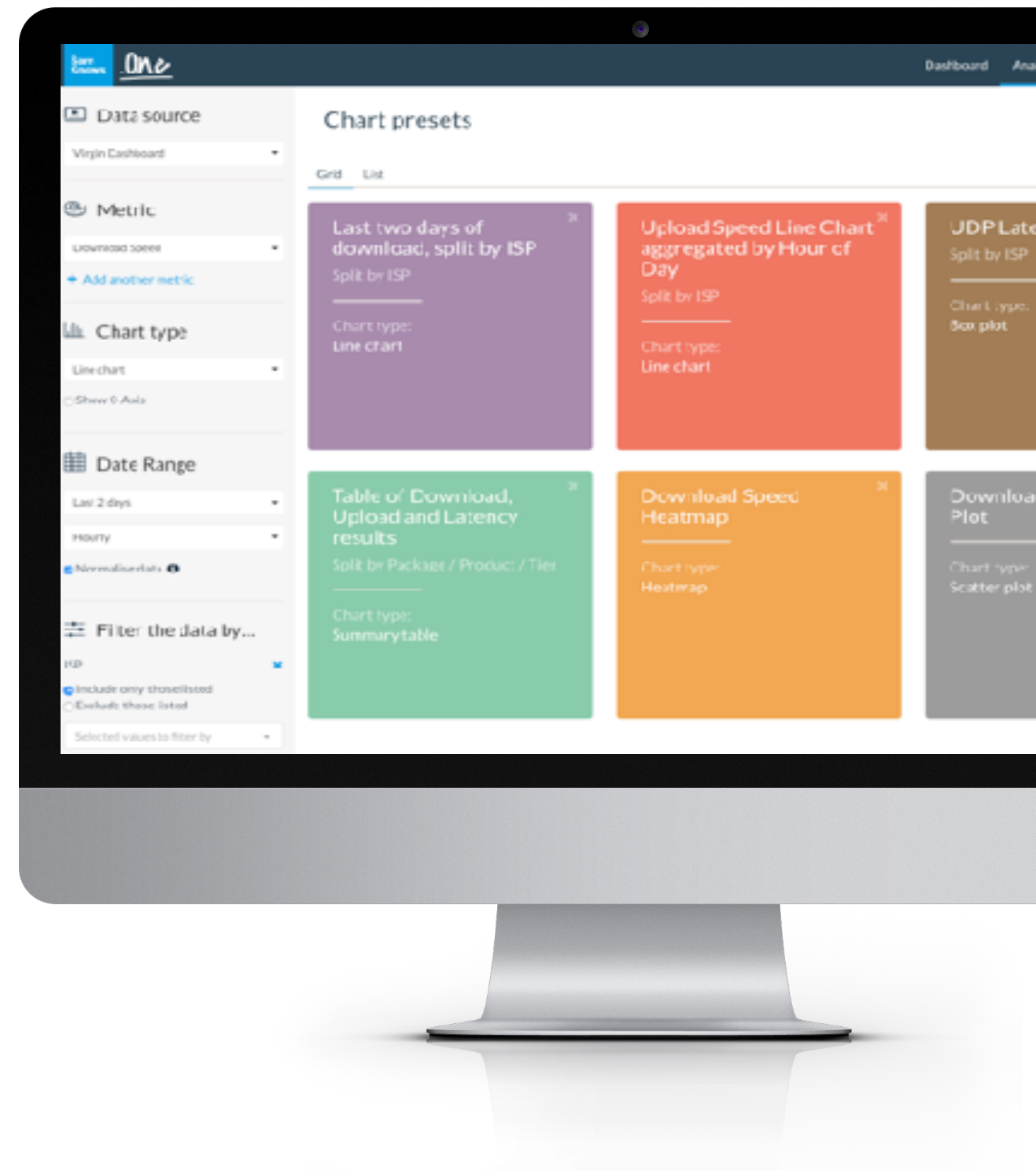
✓ See the MBA data being collected in realtime

Dashboard	Charts	Admin

Trevor deluxe dashboard

Customise dashboard   Enter prese

Download speed by region
Last 2 days, hourly

Washington

Average speed	32.5 Mbps
Unit count	287
Sample count	1633

> 100Mbps   > 60 Mbps   > 30Mbps   > 10 Mbps

Download speed by product
Last 2 days, hourly

BT 17   BT 38   BT 52   BT 76

Key performance indicators
Last 2 days, hourly

Product	Download	Upload	Latency
BT 17 Mbps	17.2 Mbps	6.7 Mbps	8.2 ms
BT 38 Mbps	35.8 Mbps	10.3 Mbps	6.4 ms
BT 52 Mbps	48.4 Mbps	21.9 Mbps	7.3 ms
BT 76 Mbps	75.6 Mbps	33.8 Mbps	4.8 ms

New charts

✓ Advanced analytics and reporting

✓ Multiple charts including all those used in the MBA program

✓ View measurement agents, users and metadata

✓ View test schedules

✓ Map data in realtime

✓ An advanced permissions and access control system

New reports

✓ Sam's favourites!

✓ View all of your saved reports
  in one place

✓ Quick and easy to use

✓ Click to load charts, save reports

✓ Import measurements from ISPs

MBA 2018 Consumer Report

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END