Lime Scooter-ing around Auckland

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Launched Auckland beginning Oct-2018

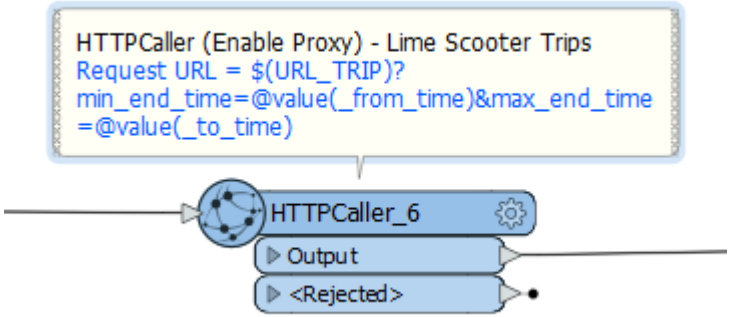
Mobility Data Specification (MDS)

Lime provide a Trip API compliant with the MDS

- MDS is a set of data specifications and data sharing requirements focused on dockless e-scooters and bicycles.

- MDS provides an API and data standards for municipalities to ingest, compare and analyse *mobility as a service* provider data.

Lime Trip API (delta requests) …

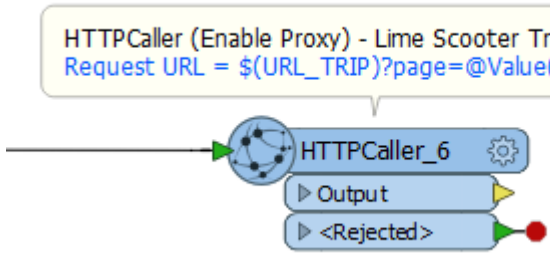


https://data.lime.bike/api/partners/v1/mds/auckland/trips?
min_end_time=@value(_from_time)
&max_end_time=@value(_to_time)

Time is encoded as "Epoch" time (seconds since 1-Jan-1970)


```
"data": {
    "trips": [{
            "provider_id": "63f13c48-34ff-49d2-aca7-cf6a5b6171c3",
            "provider_name": "Lime",
            "device_id": "7fef0127-052c-4366-b4d1-320ad87324b0",
            "vehicle_id": "275481",
            "vehicle_type": "scooter",
            "propulsion_type": ["human", "electric"],
            "trip_id": "3fde2d10-84d8-4802-b95f-044e91e97537",
            "trip_duration": 25,
            "trip_distance": 0,
            "route": {
                "type": "FeatureCollection",
                "features": [{
                        "type": "Feature",
                        "geometry": {
                            "type": "Point",
                            "coordinates": [174.758582, -36.878467]
                        },
                        "properties": {
                            "timestamp": 1537308721
                        }
                    }, {
                        "type": "Feature",
                        "geometry": {
                            "type": "Point",
                            "coordinates": [174.758732, -36.878487]
                        },
                        "properties": {
                            "timestamp": 1537308746
                        }
                    }
                ]
            },
```

Lime Trip API (paginated requests) …

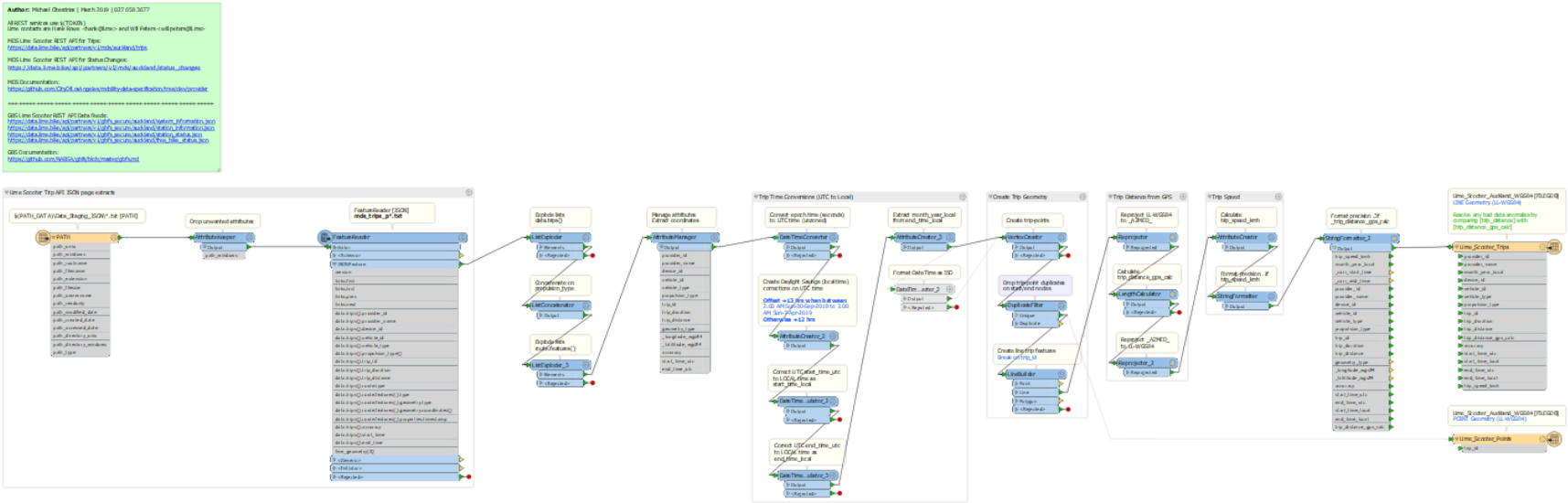


https://data.lime.bike/api/partners/v1/mds/auckland/trips?page=@value(page_next)

An API request returns a single "page" of data (~1000 trips) – loop pages using a CLONER


```
"data": {
    "trips": [{
            "provider_id": "63f13c48-34ff-49d2-aca7-cf6a5b6171c3",
            "provider_name": "Lime",
            "device_id": "7fef0127-052c-4366-b4d1-320ad87324b0",
            "vehicle_id": "275481",
            "vehicle_type": "scooter",
            "propulsion_type": ["human", "electric"],
            "trip_id": "3fde2d10-84d8-4802-b95f-044e91e97537",
            "trip_duration": 25,
            "trip_distance": 0,
            "route": {
                "type": "FeatureCollection",
                "features": [{
                        "type": "Feature",
                        "geometry": {
                            "type": "Point",
                            "coordinates": [174.758582, -36.878467]
                        },
                        "properties": {
                            "timestamp": 1537308721
                        }
                    }, {
                        "type": "Feature",
                        "geometry": {
                            "type": "Point",
                            "coordinates": [174.758732, -36.878487]
                        },
                        "properties": {
                            "timestamp": 1537308746
                        }
                    }
                ]
            },
```

Build Trip Geometry | Flatten JSON …



Harvest Trip Statistics ...

month_year_local	trip_id_count	vehicle_id_unique_count
Jul-19	98,745	1,191
Jun-19	104,926	1,221
May-19	157,513	1,283
Apr-19	158,181	1,458
Mar-19	123,763	1,692
Feb-19	149,694	1,381
Jan-19	199,462	1,349
Dec-18	195,779	1,431
Nov-18	181,753	1,302
Oct-18	76,305	1,182

Trip Counts

month_year_local	trip_duration_minutes_min	trip_duration_minutes_max	trip_duration_minutes_sum	trip_duration_minutes_mean
Jul-19	0.05	136.07	1,035,020.10	10.48
Jun-19	0.03	455.10	1,105,172.90	10.53
May-19	0.05	144.67	1,670,674.25	10.61
Apr-19	0.10	138.97	1,877,458.47	11.87
Mar-19	0.12	168.55	1,419,406.47	11.47
Feb-19	0.13	133.28	1,738,339.08	11.61
Jan-19	0.13	469.07	2,666,513.40	13.37
Dec-18	0.13	1,355.77	2,640,045.00	13.49
Nov-18	0.15	471.73	2,706,713.58	14.89
Oct-18	0.15	425.00	1,364,246.75	17.88

Trip Duration

Harvest Trip Statistics ...

month_year_local	trip_distance_km_min	trip_distance_km_max	trip_distance_km_sum	trip_distance_km_mean
Jul-19	0.00	55.22	131,150.55	1.33
Jun-19	0.00	48.26	129,930.80	1.24
May-19	0.00	36.97	205,985.78	1.31
Apr-19	0.00	28.88	220,378.57	1.39
Mar-19	0.00	51.35	174,272.82	1.41
Feb-19	0.00	40.78	215,942.84	1.44
Jan-19	0.00	50.01	310,035.94	1.55
Dec-18	0.00	58.85	296,925.70	1.52
Nov-18	0.00	39.53	299,949.51	1.65
Oct-18	0.00	39.31	139,671.38	1.83

Trip Distance

month_year_local	trip_speed_kmh_min	trip_speed_kmh_max	trip_speed_kmh_mean
Jul-19	0.10	54.50	8.40
Jun-19	0.10	54.50	7.89
May-19	0.10	54.30	8.30
Apr-19	0.10	53.90	7.98
Mar-19	0.10	54.30	8.27
Feb-19	0.10	51.50	8.24
Jan-19	0.10	54.30	7.89
Dec-18	0.10	53.90	7.71
Nov-18	0.10	53.20	7.62
Oct-18	0.10	48.70	7.16

Trip Speed
Trip Hire Rates

Visualize via Maps …

Better to visualize data re-aggregated by Road Name segment

Road Name	Scooter Count
QUAY STREET	92,823
TE WERO WALKWAY	85,029
QUEEN STREET	74,684
CUSTOMS STREET WEST	60,604
BEACH ROAD	59,574
QUAY STREET	56,454
VICTORIA STREET WEST	48,444
GALWAY STREET	45,294
JELLICOE STREET	40,035
FEDERAL STREET	38,534
SHORTLAND STREET	37,176
COMMERCE STREET	36,638

Visualize via Animations …

Third-Party MDS Integrators

Ride Report

https://www.ridereport.com/

Populus

https://www.populus.ai/

Remix

https://www.remix.com/

Lime

THANK YOU!

Michael Oberdries | https://at.govt.nz/