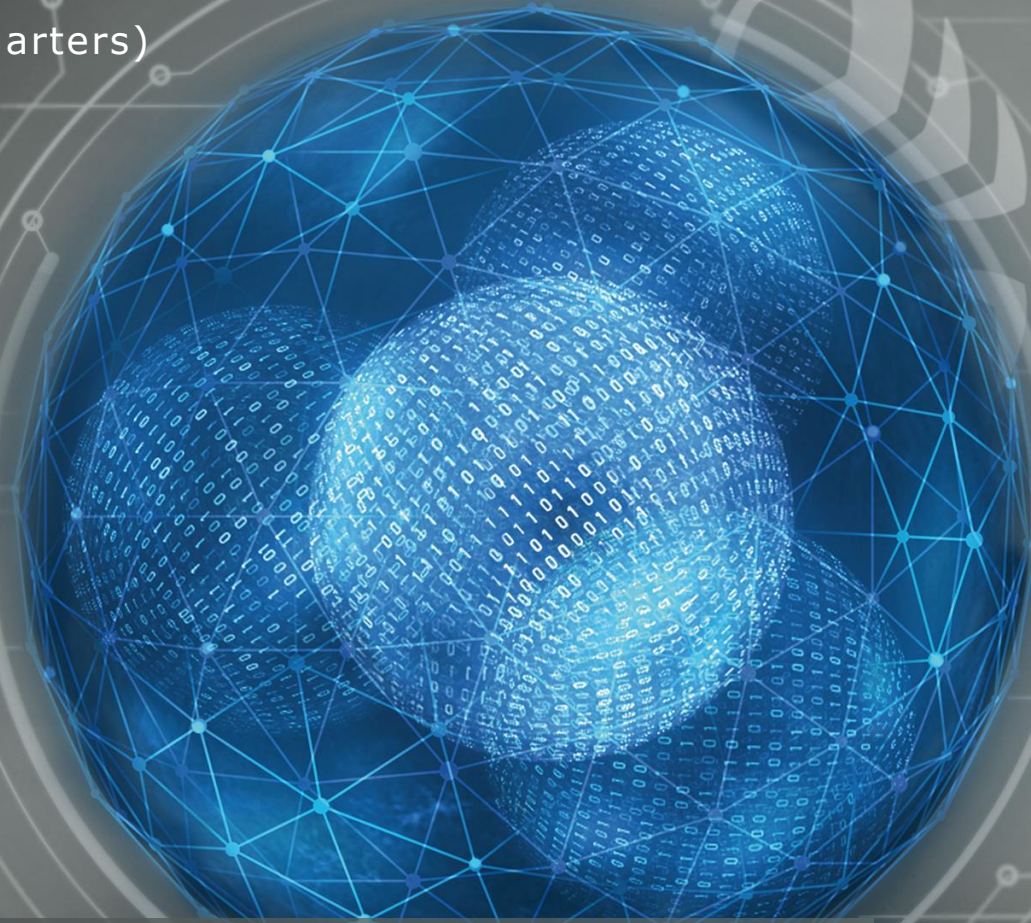


AVL



AVL List GmbH (Headquarters)



AVL & University of Bath

June 2019

G. Schagerl

AVL List GmbH

The world's largest independent Engineering Service Provider



RESEARCH 10%

of turnover in-house R&D

INNOVATION 1500

granted patents

STAFF

>10.000 employees

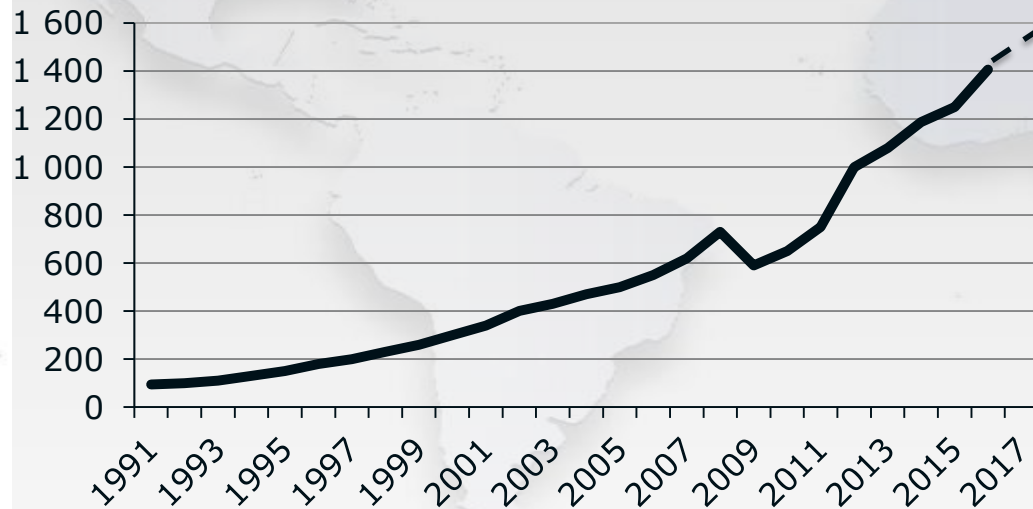
65% engineers and scientists

GLOBAL FOOTPRINT

30 engineering locations

- >220 testbeds
- Global customer support network

GROWTH



SALES

1995:
0.15 billion €

2016:
1.40 billion €

Plan 2017:
1.52 billion €

EXPERIENCE

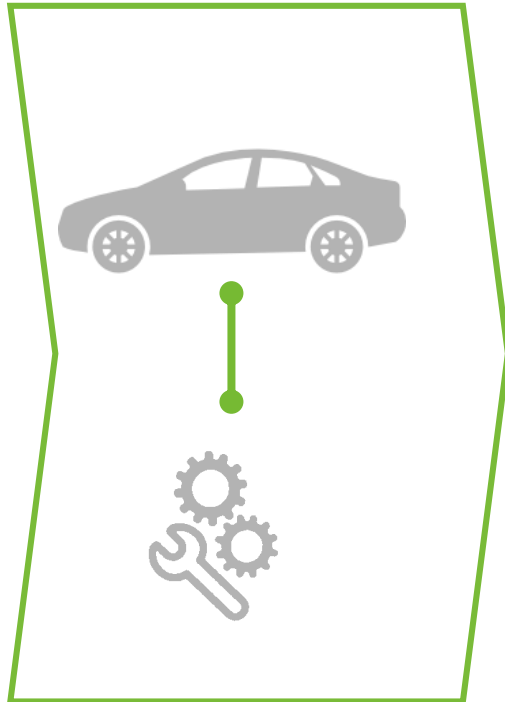
65 years !

5 powertrain elements

ONE PARTNER

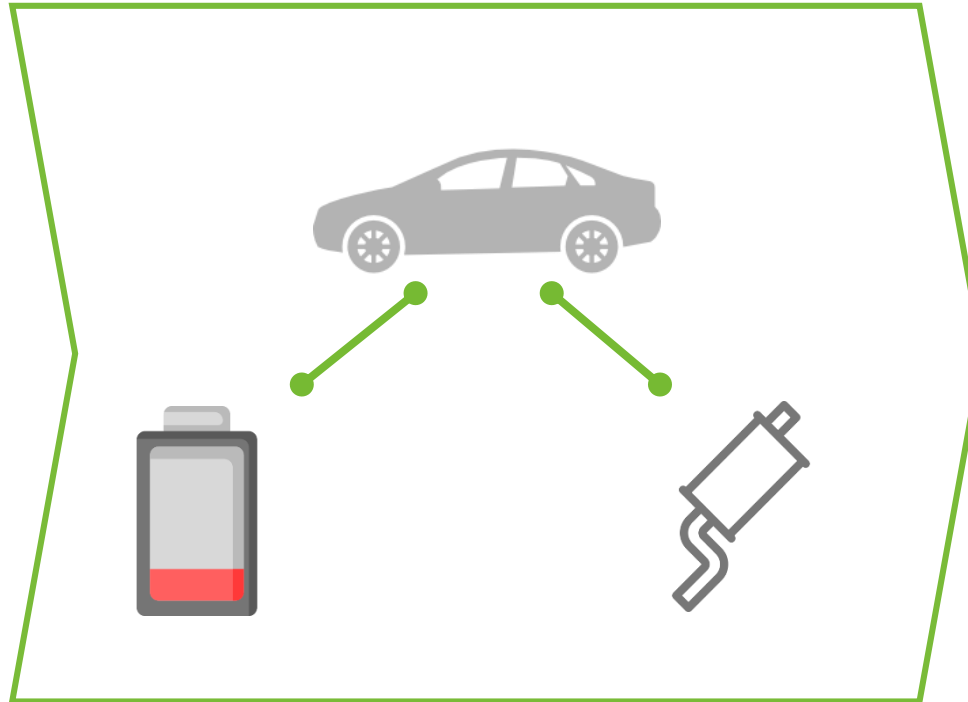
Our Mission - Affordable CO₂ Reduction

Engineering



Testbench Failure Classification

Vehicle Emission



Battery - Remaining Life Time Calculation

Modelling of Catalytic Reaction

Fleet Operation



Prediction of City Immissions

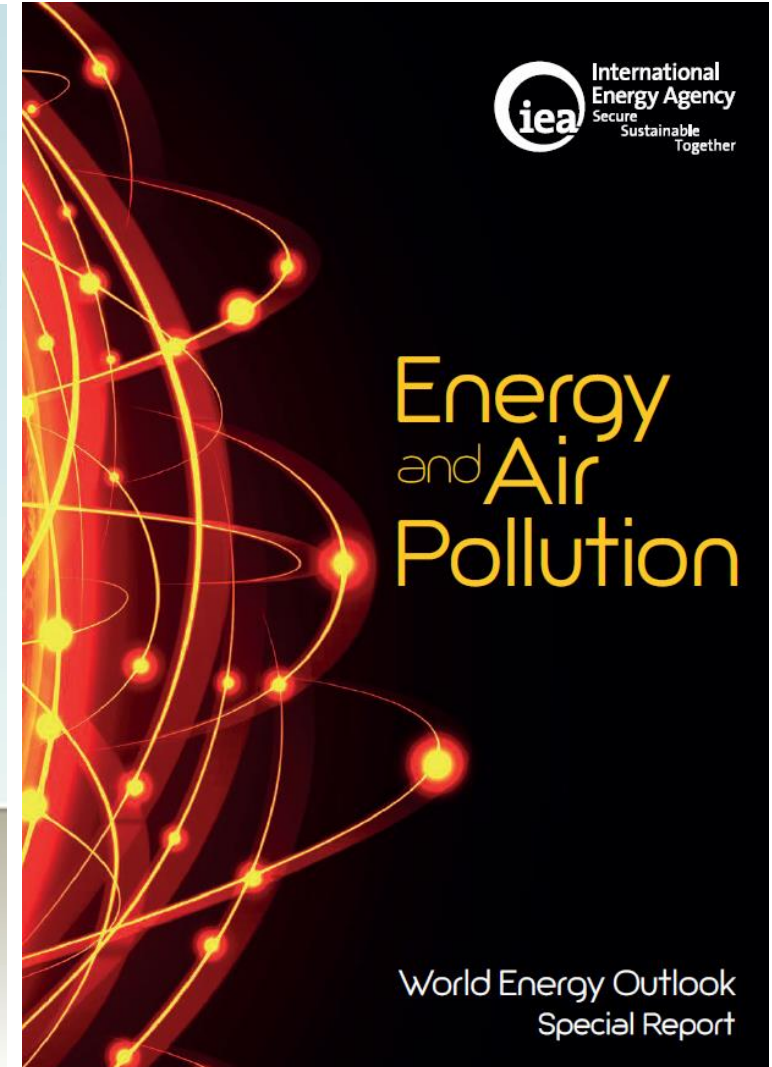
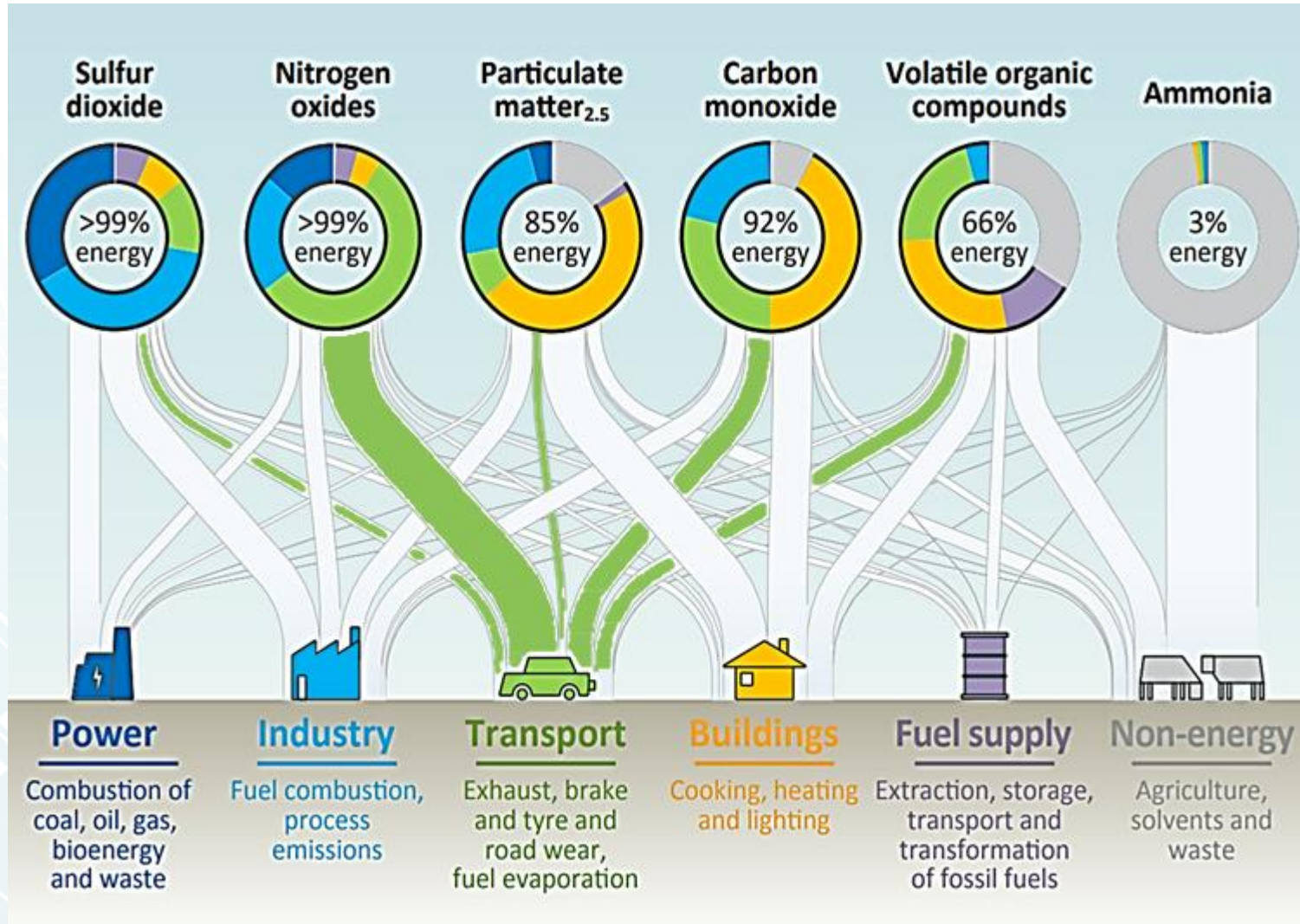
#nice



#maybetomorrowagain



Contribution to Emissions



City Immission Modelling

Data Platform



Modelling of air quality based on traffic patterns



Emission prediction for single vehicle



Data-driven Traffic modelling

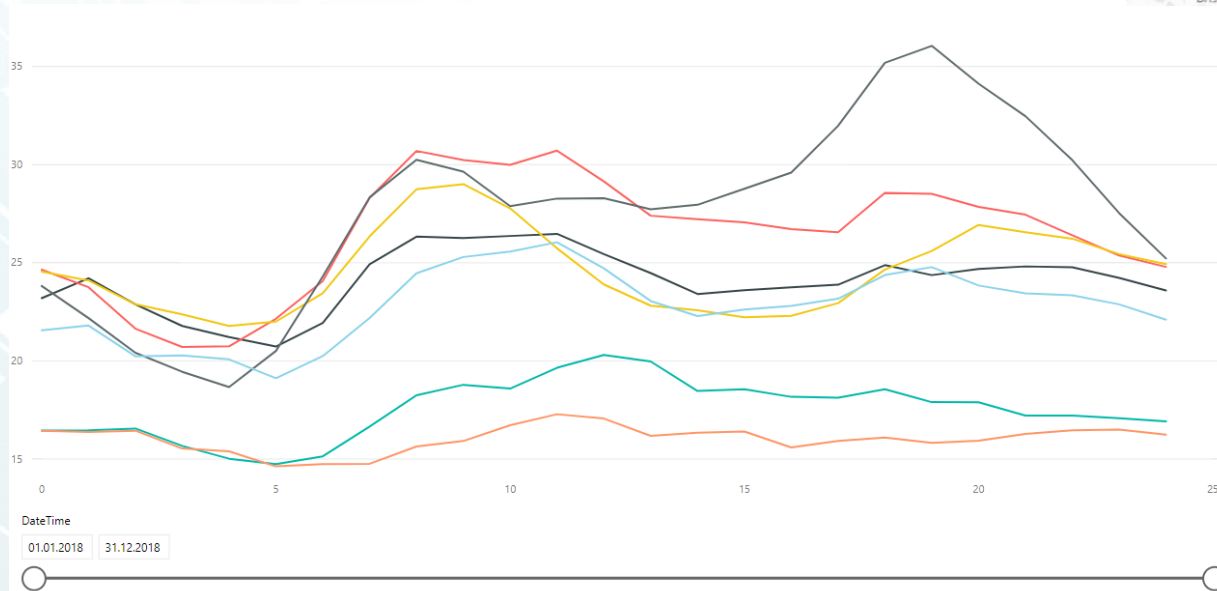
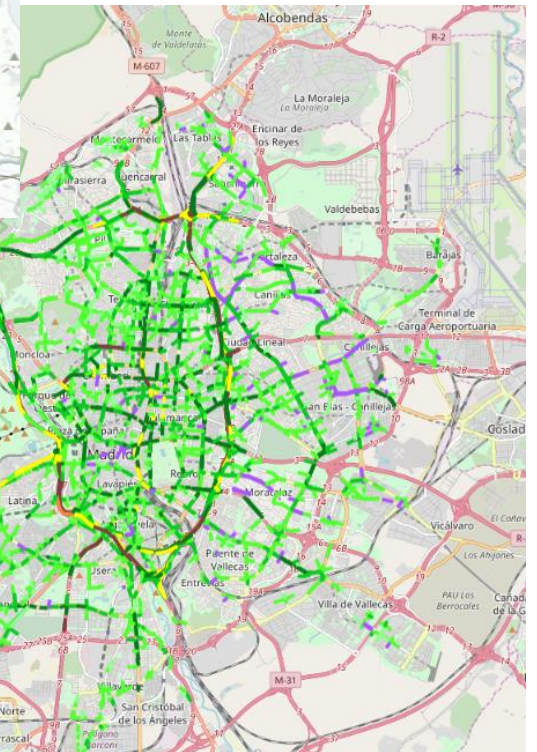
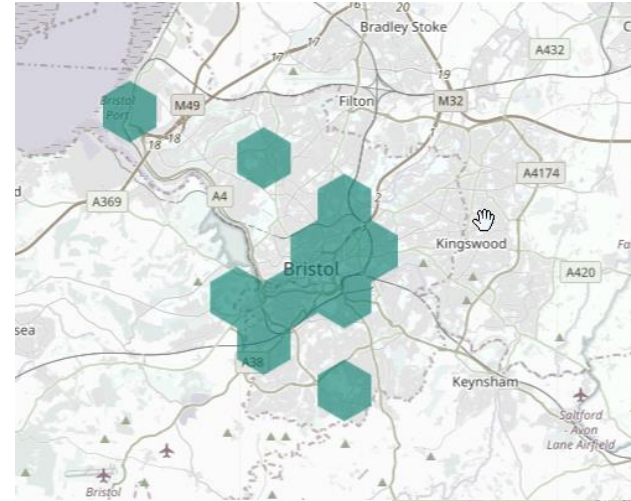
Modelling of fleet mix (how many EVs?)



City Sensors:
- air quality
- moving patterns of citizens
- traffic info

Data-driven approach

- Air quality data
- Vehicle data
- Traffic information
- Weather conditions



Key Questions

Main Question:

- How does traffic influence local air quality?

Challenges:

- How far can we predict future scenarios?
- How to distinguish traffic from other influencers (eg. Industry)?

Thank You



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Links

Oxford Emissions Maps: <http://oem.eng.ox.ac.uk/>

Particulate Matter Data: <http://graz.maps.luftdaten.info/#13/51.4595/-2.6130>

Data Portal Madrid: <https://datos.madrid.es> (Air Pollution Data and Traffic Data)

Traffic intensity ZIP files for urban and M30 per 15min per ID? (Tráfico. Histórico de datos del tráfico desde 2013)

<https://datos.madrid.es/portal/site/egob/menuitem.c05c1f754a33a9fbe4b2e4b284f1a5a0/?vgnnextoid=33cb30c367e78410VgnVCM1000000b205a0aRCRD&vgnnextchannel=374512b9ace9f310VgnVCM100000171f5a0aRCRD&vgnnextfmt=default>

Position of measurement points (Tráfico. Ubicación de los puntos de medida del tráfico)

<https://datos.madrid.es/portal/site/egob/menuitem.c05c1f754a33a9fbe4b2e4b284f1a5a0/?vgnnextoid=ee941ce6ba6d3410VgnVCM1000000b205a0aRCRD&vgnnextchannel=374512b9ace9f310VgnVCM100000171f5a0aRCRD>

Openstreetmap infos (Tráfico. Mapa de tramas de intensidad del tráfico)

<https://datos.madrid.es/portal/site/egob/menuitem.c05c1f754a33a9fbe4b2e4b284f1a5a0/?vgnnextoid=23d57fa19bfa7410VgnVCM2000000c205a0aRCRD&vgnnextchannel=374512b9ace9f310VgnVCM100000171f5a0aRCRD>

Air quality hourly data (Calidad del aire)

<https://datos.madrid.es/portal/site/egob/menuitem.c05c1f754a33a9fbe4b2e4b284f1a5a0/?vgnnextoid=f3c0f7d512273410VgnVCM2000000c205a0aRCRD&vgnnextchannel=374512b9ace9f310VgnVCM100000171f5a0aRCRD&vgnnextfmt=default>

Air quality Measurement Stations (Calidad del aire. Estaciones de control)

<https://datos.madrid.es/portal/site/egob/menuitem.c05c1f754a33a9fbe4b2e4b284f1a5a0/?vgnnextoid=9e42c176313eb410VgnVCM1000000b205a0aRCRD&vgnnextchannel=374512b9ace9f310VgnVCM100000171f5a0aRCRD&vgnnextfmt=default>