



LIFE18 ENV/IT/000201
With the contribution of the LIFE programme of the European Union

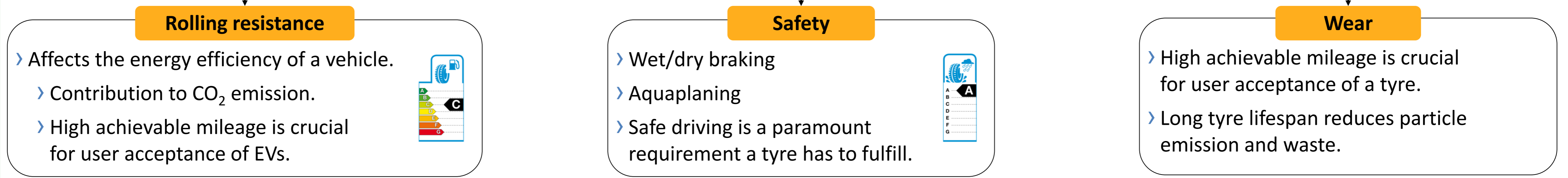
LIFE E-VIA

Electric Vehicle noise control by Assessment and optimisation of tyre/road interaction



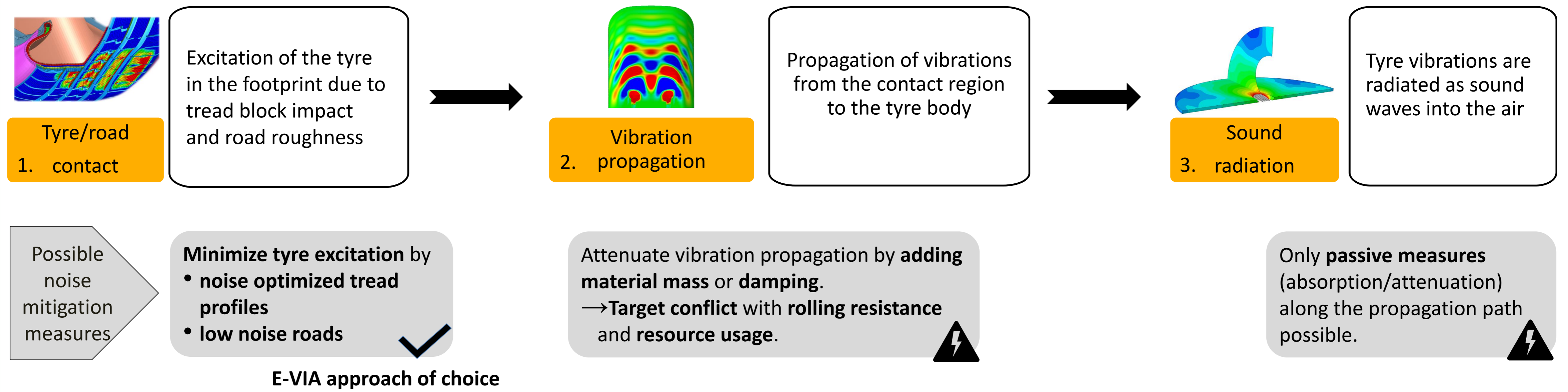
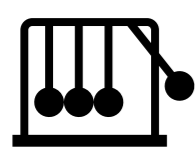
Holistic low noise tyres for electric vehicles

Within action B7 [...] EV tyres [are developed and build] which are designed to give an optimal holistic relation between low exterior noise and other key performances.

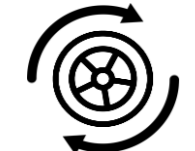


The sustainability of a low noise tyre is only given when a holistic performance is assured.

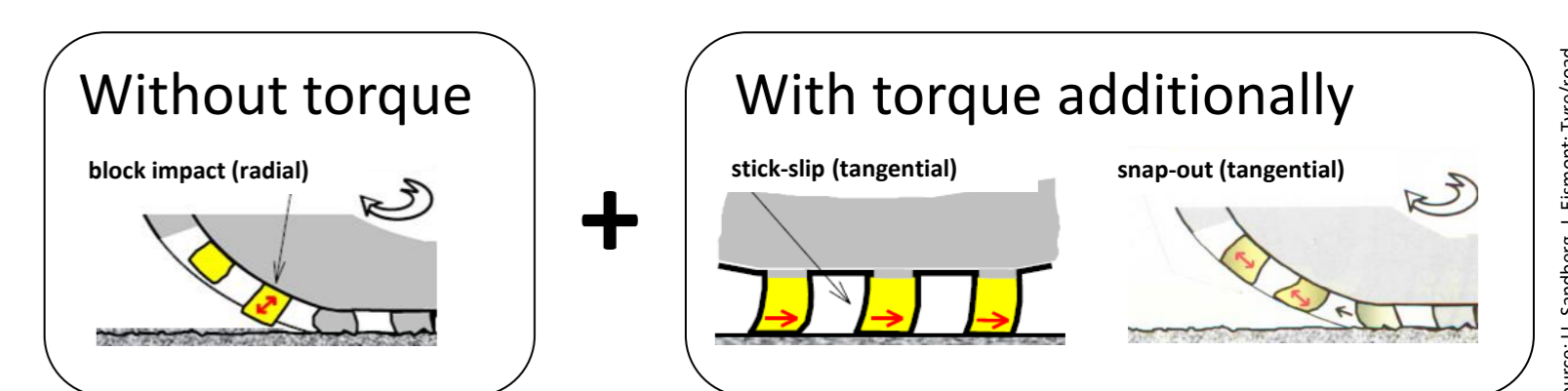
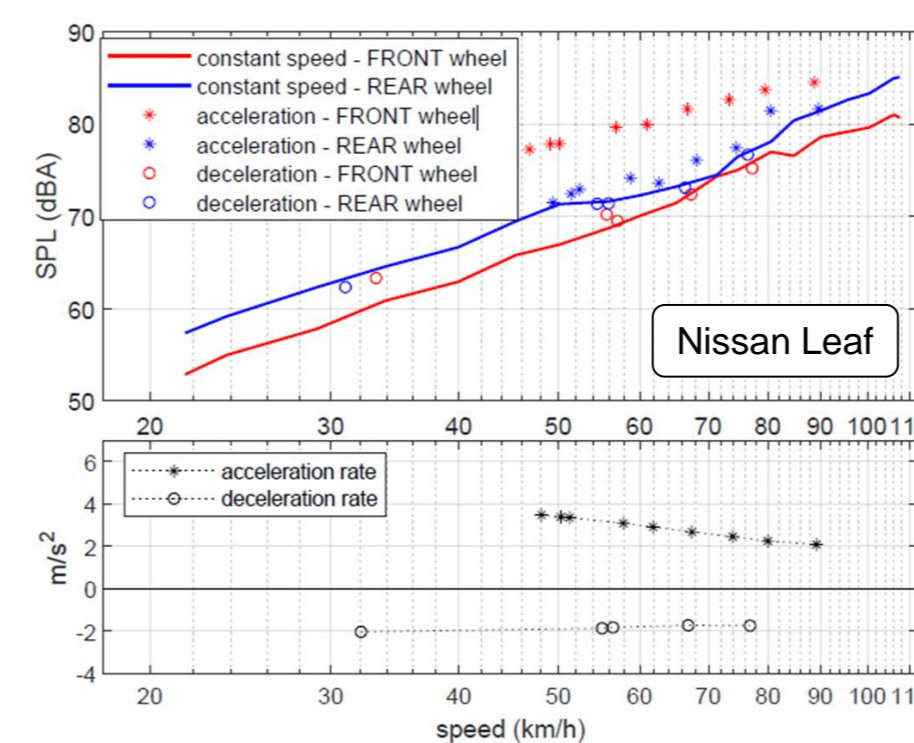
Physics based mitigation approach



Importance of torque for EVs



- Compared to internal combustion engine vehicles (ICE), EVs are typically characterized by...
 - ...considerably wider RPM ranges at which maximum torque is (instantaneously) available, and
 - ...a higher-power-to-mass ratio.
- Higher tire torque (acceleration) is known to increase rolling noise.
- This is believed to be caused by the increased importance of tangential tread block vibrations (*stick-slip* und *snap-out*).



Final results LIFE E-VIA tyre and summary

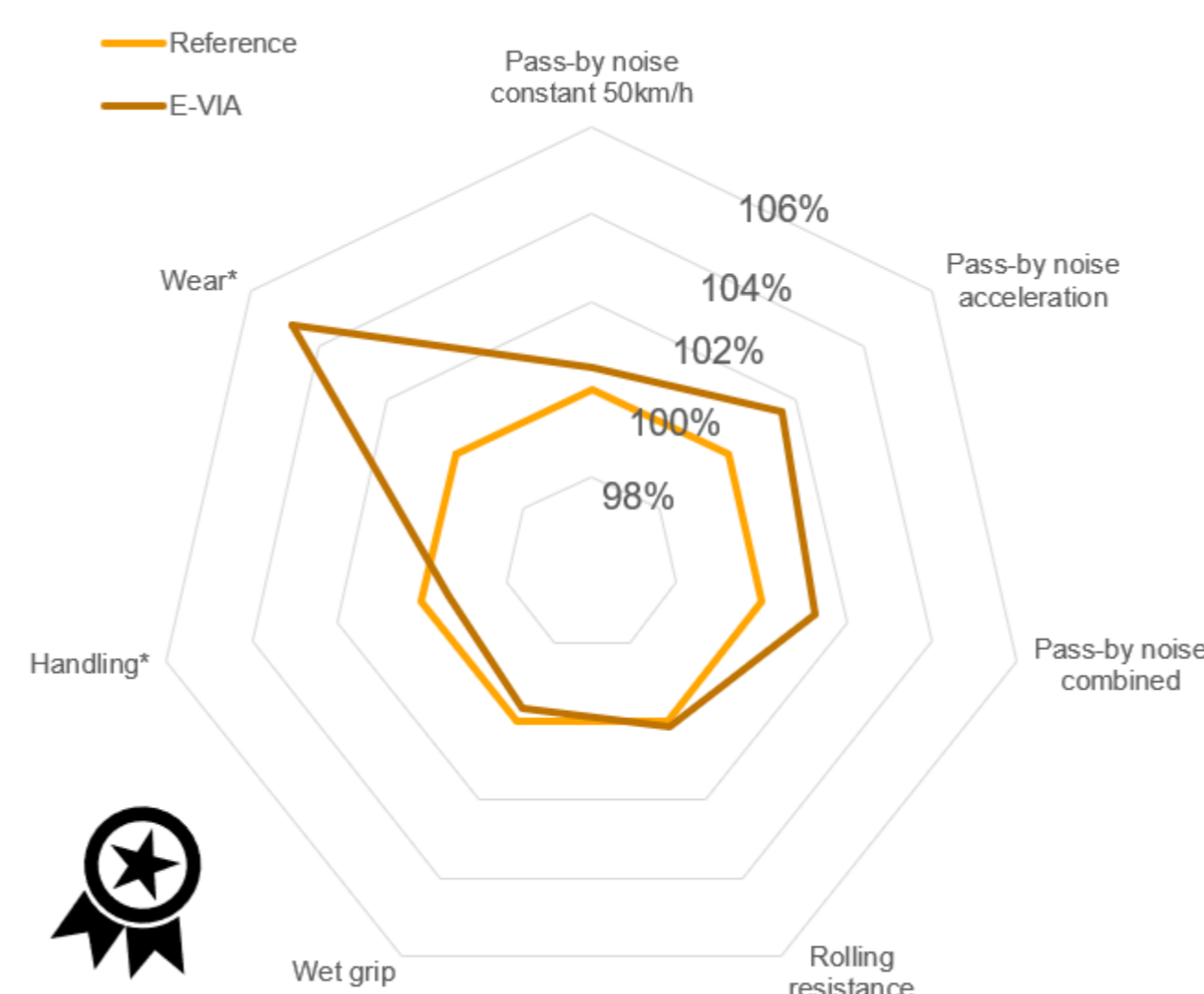


Pass-by noise performance

Difference in pass-by noise level Of LIFE E-VIA tyre compared to reference premium summer tyre

50 km/h constant	acceleration	combined
-0.3 dB(A)	-1.0 dB(A)	-0.8 dB(A)

Target conflict analysis



- Within LIFE E-VIA existing, validated technologies were combined in a smart and novel way to develop a **holistic noise optimized EV tyre**.
- Compared to the reference tyre a **reduction in pass-by noise of up to 1.0 dB(A)** was observed.
- The **performance level** of the reference tyre could be **maintained** for important areas of **target conflicts**.
- In addition, the project created **valuable insight** into the **interaction of vehicle, road surface and tyre design**, especially under **torque conditions**.

Web site: <https://life-evin.eu/>

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