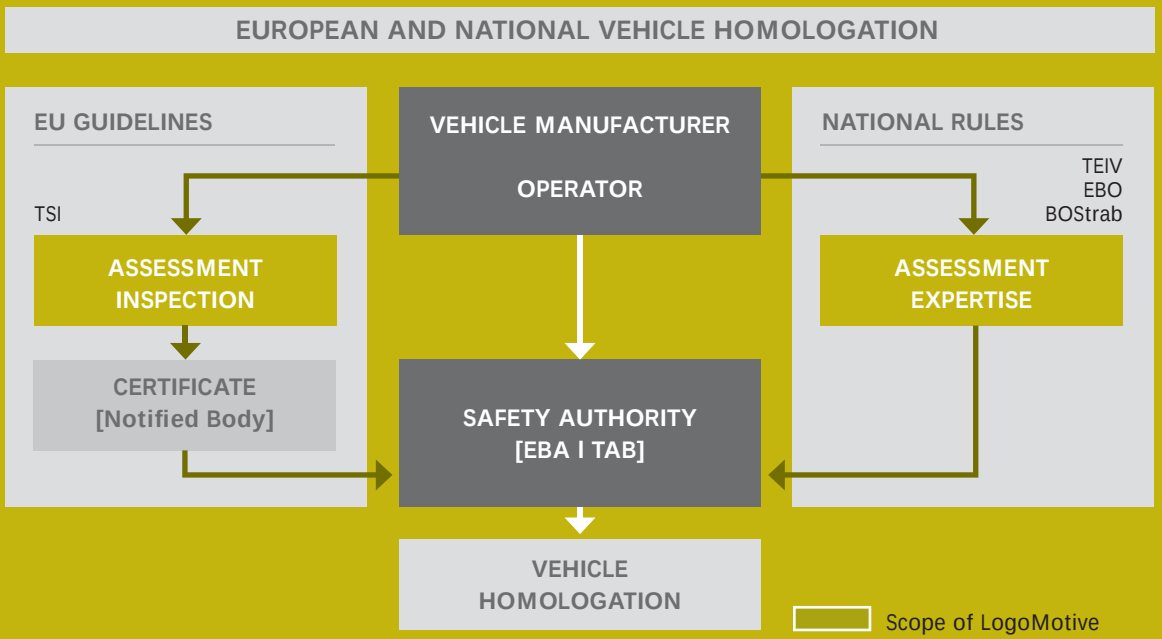
LOGOMOTIVE.

Integral Solutions for Total Systems

Certifications

Assessment of Rolling Stock

An assessment is required? We are on the spot!
We are accredited by the German Deutsche Akkreditierungsstelle DAkkS as a testing body for the execution of typical tests of railway vehicles. Furthermore we are familiar with the assessment and testing according to the BOStrab procedures.



The vehicle homologation
LogoMotive offers its customers full support during the vehicle homologation process meeting the requirements of the national as well as European rules.

Test schedule

What a luck, an expertise is available.

Based on our huge expert knowledge, we prepare the expertise for you. The technical issues and the safety requirements are taken into account on a well balanced basis. We evaluate your system with high professional competence and are going to convince, together with you, the safety authorities.

The German Eisenbahn-Bundesamt approves experts from LogoMotive for the following specialized areas:

- **STRENGTH** of vehicle and components with focus on the car body shell and the bogie frame
- **VEHICLE GAUGE** with focus on vehicles with and without tilting technology
- **VEHICLE RUNNING DYNAMICS** of all types of vehicles including the evaluation of high speed trains and tilting trains
- **AERODYNAMICS/CROSS WIND** including the assessment of wind channel tests as well as the evaluation of vehicle wind curve characteristics

Considering the operation of metros and trams, the local technical safety authorities accept the expertise prepared by LogoMotive as well. We compile single expertise or assess the vehicle reference documentation as well as execute type and routine tests of newly built or modernized vehicles.
LogoMotive prepares the vehicle reference documentation and testing scope in consultation with you and the authorities to obtain the homologation of your vehicle. Further on LogoMotive assesses the relevant evidence documentation of the infrastructure to evaluate the compatibility of vehicle, infrastructure and operational conditions. For example based on BOStrab, BOStrab clearance guidelines, TR tracking, TR brakes as well as the VDV 152 (strength), VDV 154 (noise) and other VDV recommendations.

Dedicated Body [DeBo]
LogoMotive – A strong partner in international homologation processes!

We are approved by the German national safety authority Eisenbahn-Bundesamt (EBA) as a „project independent and non-bound organization for the approval of national regulations (Notified National Technical Rules – NNTR)". The approval follows appendix 2 of the memorandum of understanding (MoU) on the newly defined homologation process for railway vehicles.
Based on this approval we perform tests for you. These tests are following article 18. Article 18 is connected to appendix VII of the European legislation 2008/57/EG and the above mentioned MoU.
As our customer you have a substantial benefit out of our profound knowledge and the high commitment of our employees. Long standing experience in national homologation processes set the foundation for our service offer. Here we act as testing body and author of expert opinions as well as managers for homologation processes and applicants / producers.

EU GUIDELINES
ASSESSMENT
INSPECTION

On a quick, systematic and strong way to the target.

In cooperation with the Notified Bodies for interoperability and/or associated partners of the EBC, we prepare the information for the certification of your system. We assess your system on the basis of the Technical Specification for Interoperability requirements. Our huge expert knowledge and a well structured work environment enable you to achieve your target in a reliable manner.

Survey of the Technical Specifications for Interoperability:

LogoMotive uses the special knowledge concerning the vehicles.

HIGH-SPEED RAIL SYSTEM [HS]	CONVENTIONAL RAIL SYSTEM [CR]
Persons with reduced mobility [PRM]	Persons with reduced mobility [PRM]
Safety in railway tunnels [SRT]	Safety in railway tunnels [SRT]
Infrastructure [INS]	Infrastructure [INS]
Energy [ENE]	Energy [ENE]
Rolling stock [RST]	**Rolling stock – freight wagons [WAG]**
	Locomotives and passenger – rolling stock [LOC & PAS]
	Rolling stock – noise [NOI]
Control, command and signalling [CCS]	Control, command and signalling [CCS]

Scope of LogoMotive

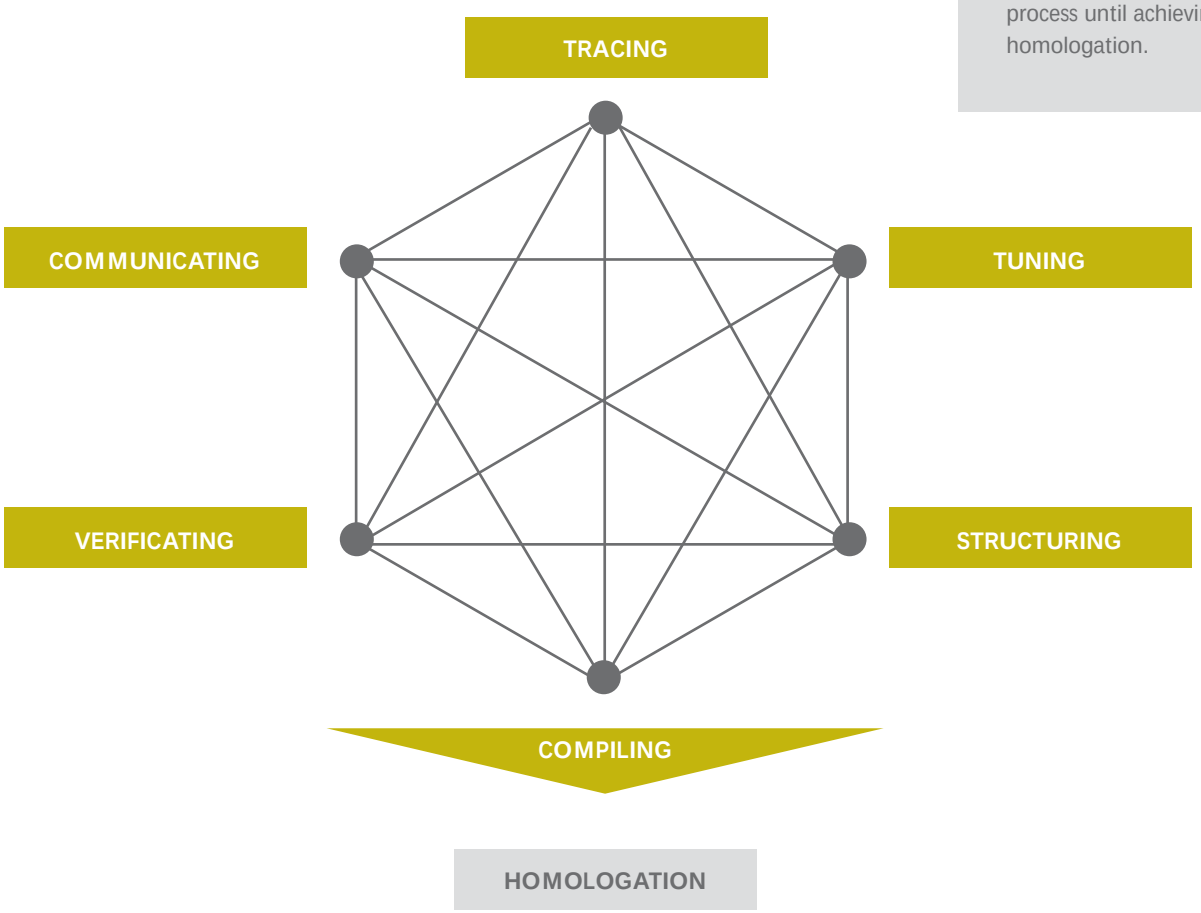
Who supports your vehicle certification? LogoMotive!

We structure the requirements of the homologation process and consider simultaneously the technical issues. Whether light rail, metro, regional EMU/DMU or high speed trains, whether freight cars or track construction machines – on a municipal, regional, national or international level – we manage your homologation.
With the technical knowledge, our experts identify the interacting relations between the technical subsystems and make sure, that technical changes of those subsystems are implemented in a smooth and compatible way.

- **TUNING** of the procedures and the evidence/reference document plans
- **STRUCTURING** of the requirements and the documentation
- **VERIFICATING** of the evidence method and the result
- **COMMUNICATING** with all involved partners
- **COMPILING** of the expertise documentation and the inspection reports
- **TRACING** of all tasks

The network homologation management

LogoMotive is fully aware of the process complexity from the planning stage to the finalisation of the railway vehicle homologation, leading and managing the overall process until achieving the successful homologation.



LOGOMOTIVE IS AN ACCREDITED TESTING BODY ACCORDING TO DIN EN ISO/IEC 17025:2005 FOR THE FOLLOWING TESTS

Survey of our test services.

The testing of railway vehicles and components listed below will be completed with modified testing procedures. LogoMotive has been authorized by the German accreditation body DAkkS to modify, to improve and to create new testing procedures within the flexible field of the accreditation.

1	**VEHICLE RUNNING TESTS**	**DIN EN 14363 2005-10**	**UIC 518 2009-10**	**DIN EN 14033-1 2011-05**
		Railway applications – Testing and simulation for the acceptance of running characteristics of railway vehicles – running behaviour and stationary tests	Testing and approval of railway vehicles from the point of view of their dynamic behaviour – Safety – Track fatigue – Running behaviour	Railway applications – Track – Rail bound construction and maintenance machines – Part 1: Technical requirements for running
2	**TESTING OF WHEEL UNLOADING** on twisted tracks	**DIN EN 14363 2005-10**	**ERRI B 55/RP8 1983-04**	**DIN EN 14033-2 2008-08**
		Railway applications – Testing and Simulation for the acceptance of running characteristics of railway vehicles – running behaviour and stationary tests	Safety against derailment of freight wagons on twisted tracks	Railway applications – Track – Rail bound construction and maintenance machines – Part 2: Technical requirements for working
3	**TESTS FOR VERIFICATION** of load assumptions in railway vehicles	**DIN EN 12663-1 2010-07**	**DIN EN 12663-2 2010-07**	**DIN EN 13749 2011-06**
		Railway applications – Structural requirements of railway vehicle bodies – Part 1: Locomotives and passenger rolling stock (and alternative method for freight wagons)	Railway applications – Structural requirements of railway vehicle bodies – Part 2: Freight wagons	Railway applications – Wheel sets and bogies – Method of specifying the structural requirements of bogie frames
4	**EXPERIMENTAL DETERMINATION** of the rolling centre, the inclination coefficient and the vehicle gauge limitation	**UIC 505-5 2010-08**	**DIN EN 14363 2005-10**	
		History, justification and commentaries on the elaboration and development of UIC leaflets of the series 505 and 506 on gauges	Railway applications – Testing and Simulation for the acceptance of running characteristics of railway vehicles – running behaviour and stationary tests	

5 VIBRATION TESTS

in railway vehicles

DIN EN 12299 2009-08	DIN EN 1032 2009-02	UIC 513 1994-07	DIN EN 14363 2005-10
Railway applications – Ride comfort for passengers – Measurement and evaluation	Mechanical vibration – Testing of mobile machinery in order to determine the vibration emission value	Guidelines for evaluating passenger comfort in relation to vibration in railway vehicles	Railway applications – Testing and Simulation for the acceptance of running characteristics of railway vehicles – running behaviour and stationary tests

DIN EN 14033-3 2010-04	ERRI B 153/RP8 1986-09	UIC 518 2009-10	DIN 45672-1 2009-12	DIN 45672-2 1995-07
Railway applications – Track – Railbound construction and maintenance machines – Part 3: General safety requirements	Mechanical vibration measurement and analysis of vibration to which passengers and the Drivers are exposed in railway vehicles	Testing and approval of railway vehicles from the point of view of their dynamic behaviour – Safety – Track fatigue – Running behaviour	Vibration measurement associated with railway traffic systems – Part 1: Measuring method	Vibration measurement associated with railway traffic systems – Part 2: Evaluation method

6 ACOUSTIC TESTS

in railway vehicles and railway components

TSI HGV RST rev. 2008-02	TSI Lärm 2006-02	DIN EN ISO 3095 2005-11	DIN EN ISO 3381 2005-11
COMMISSION DECISION of 21 February 2008 concerning a technical specification for interoperability relating to the 'rolling stock' sub-system of the trans-European high-speed rail system (2008/232/CE)	COMMISSION DECISION of 4 April 2011 concerning the technical specifications of interoperability relating to the subsystem 'rolling stock – noise' of the trans-European conventional rail system (2011/229/EU)	Railway applications – Acoustics – Measurement of noise emitted by rail bound vehicles (excluding Annex A)	Railway applications – Acoustics – Measurement of noise inside railbound vehicles

DIN EN ISO 3740 2001-03	DIN EN ISO 3744 1995-11	DIN EN ISO 3746 1995-12	DIN EN ISO 3747 2001-02
Acoustics – Determination of sound power levels of noise sources – Guidelines for the use of basic standards	Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Engineering methods for an essentially free field over a reflecting plane	Acoustics – Determination of sound power levels and sound energy levels of noise sources using sound pressure – Survey method using an enveloping measurement surface over a reflecting plane	Acoustics – Determination of sound power levels of noise sources using sound pressure – Comparison method for use in situ in a reverberant environment

DIN EN 15153-2 2007-08	DIN 45642 2004-06	UIC 644 1980-07	UIC 651 2002-07
Railway applications – External visible and audible warning devices for high speed trains – Part 1: Head, marker and tail lamps	Measurement of traffic noise	Acoustic signal device for traction railway vehicles operating in international traffic	Layout of driver's cab in locomotives, railcars, multiple unit trains and driving trailers

- TOTAL SYSTEM
- DEVELOPMENT & DESIGN
- ACOUSTICS
- DYNAMICS
- STRENGTH
- CRASHWORTHINESS
- TESTING
- CERTIFICATION

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