Business plan for a DIN DKE SPEC project according to the PAS procedure on **"Terminology – AI in railway applications"**

Status:
For the development of DIN DKE SPEC 99002 after adoption on 25.09.2023

Recipients of this business plan are requested to name **all patent rights** known to them to be relevant to the project and to make available all supporting documents.

Berlin, 17.10.2023 (Version 2)

Table of contents

1. Status/version of the business plan

- **For public commenting (Version 1)**

  This business plan is intended to inform the public of a new DIN DKE SPEC project. Any interested party can take part in this project and/or comment on this business plan. Please send any requests to participate or comments by e-mail to syad.akkoub@din.de.

  Once this business plan is published, the Chairman of DIN's Executive Board decides whether or not the project is to be carried out.

  If the project is accepted, all those who have applied for participation or have commented on the business plan by the deadline will be invited to the kick-off meeting of the project consortium.

- **For developing the DIN DKE SPEC after adoption on 25.09.2023**

  Changes to the previous version 01:
  - Cover sheet updated
  - Section 2: Table of participating organizations added
  - Section 4: Kick-off date fixed from 26.09.23 to 25.09.23
  - Section 7: Information on consortium leader added
  - Annex: year fixed from 2022/2023 to 2023/2024

2. Initiator and other consortium members

- Initiator:

Person/Organization	Short description
Meike Meller / Siemens Mobility GmbH	Meike Meller is SMO's project manager for the BMWK-funded development project safe.trAIn. Siemens Moblity is a leading provider of sustainable and efficient transportation solutions.

- Other potential participants:

This DIN DKE SPEC will be developed in a consortium (temporary body) that is open to any interested party. The participation of other experts would be helpful and is desired. It is recommended that

– Train operator

– Train manufacturer
– Train manufacturer suppliers
– Research and development services
– Testing organizations
– Software developers
– Standards organizations
– etc.

take part in the development of this DIN DKE SPEC.

- Organizations[2] that have registered for participation:

Person	Organization
Meike Meller	Siemens Mobility GmbH
Alicia Brutsche	Siemens Mobility GmbH
Cornel Klein	Siemens AG
Christian Kolf	TÜV Nord - TÜViT
Claus Bahlmann	Siemens Mobility GmbH
Michael Hennig	Siemens Mobility GmbH
Michael Karner	SETLabs GmbH
Muhammad Saeed Ur Rehmann	Siemens Mobility GmbH
Carmen Carlan	Edge Case Research GmbH
Syad Akkoub, Deniz Serifsoy	DIN e.V., VDE e.V.

- Organisations that have adopted this business plan (consortium members):

Person	Organization
Dagmar Gesmann-Nuissl	Technische Universität Chemnitz (TUC)
Claus Bahlmann	Siemens
Erik Bochinski	Deutsche Bahn
Christian Breuckmann	Siemens Mobility
Carmen Carlan	Edge Case Research GmbH (ECR)

Person	Organization
Abderraouf Boussif	Railenium
Volker Eiselein	Digitale Schiene Deutschland
Simon Geerkens	Hochschule Düsseldorf (HSD)
Alex Haag	Futurail
Peter Haering	Verband Deutscher Verkehrsunternehmen e. V. (VDV)
Rachel Hegemann	Deutsche Bahn
Juergen Heiles	Siemens
Michael Hennig	Siemens Mobility
Yi Huang	Siemens
Michael Karner	SetLabs GmbH
Hubert B. Keller	ci-tec GmbH
Konstantin Kirchheim	Otto-von-Guericke-Universität Magdeburg (OVGU)
Cornel Klein	Siemens
Gernot Krage	TÜV Nord
Meike Meller	Siemens Mobility
Birgit Milius	Technische Universität Berlin
Balint Nemeth	Siemens
Frank Poignée	Infoteam Software GmbH
Ralf Röhrig	TÜV Rheinland
Stefan Rothbauer	Siemens
Martin Rothfelder	Siemens
Ruben Schilling	Deutsche Bahn
Christoph Schulz	Informatik Consulting Systems GmbH
Annegrit Seyerlein-Klug	neurocat GmbH
Timo Strobel	GTS Deutschland GmbH (Thales)
Rustam Tagiew	Deutsches Zentrum für Schienenverkehrsforschung (DZSF)
Venkatesh Thirugnana	Otto-von-Guericke-Universität Magdeburg (OVGU)
Robert Walter	TÜV Rheinland
Thomas Waschulzik	Siemens Mobility
Gregor Wautsicher	Frauscher Sensortechnik GmbH
Gereon Weiß	Fraunhofer IKS
Irem Uslu	GTS Deutschland GmbH (Thales)

Person	Organization
Syad Akkoub	DIN e.V
Claudia Reinel	DIN e.V.
Deniz Serifsoy	VDE
Marco Kesic	VDE

3. Objectives of the project

3.1. General

Since the use of artificial intelligence is also increasing more and more in the railway sector, especially in the area of driverless railway operation, there is a need for a uniform and unambiguous "language" / terminology in order to have a common understanding in this cross-sectional topic. In this DIN DKE SPEC, these terms, which have not yet been defined either in the AI landscape or in the railway environment, are to be recorded and defined in a coordinated manner in the consortium.

3.2. Planned scope

This document defines terms in the cross-cutting topics of artificial intelligence (AI) and railways with the aim of improving common understanding for AI applications in railways. The developed terminology serves as a tool to improve communication, it addresses for example both rail vehicle manufacturers and their component suppliers as well as transport companies/rail vehicle operators, certifiers/assessors/approval bodies and scientific communities (e.g. universities, colleges, institutes). This document does not touch any safety-related aspects in the AI landscape. Furthermore, this document does not specify requirements for algorithms, test data, validation procedures, and the use of AI applications in railways.

3.3. Related activities

The subject of the planned DIN DKE SPEC is not at present the subject of a standard. However, there are committees, standards and/or other technical rules that deal with related subjects and thus need to be taken into account - and involved or incorporated, where necessary - in this project:

- NA 043-01-42 GA DIN/DKE Gemeinschaftsarbeitsausschuss Künstliche Intelligenz
- NA 087 DIN Normenausschuss Fahrweg und Schienenfahrzeuge (FSF)
- NA 105 DIN-Normenausschuss Terminologie
- DKE/K 351 Elektrische Ausrüstungen für Bahnen
- DKE/K 351.1 Fahrzeuge
- DKE/K 351.3 Bahn-Signalanlagen

- DKE/K 801 System Komitee AAL
- DKE/AK 914.0.11 Funktionale Sicherheit und künstliche Intelligenz
- ISO/IEC 22989: 2022: Information technology — Artificial intelligence — Artificial intelligence concepts and terminology
- DIN SPEC 92001: 2020: Artificial Intelligence–Life Cycle Processes and Quality Requirements–Part 2: Robustness
- DIN EN 17343: 2021: Bahnanwendungen - Allgemeine Begriffe
- ETSI GR SAI 001 V 1.1.1: 2022: Securing Artificial Intelligence (SAI) - AI Threat Ontology
- DIN SPEC 2343: 2022: Transmission of language-based data between artificial intelligences - Specification of parameters and formats
- VDE Spec 90012: VCIO based description of systems for AI trustworthiness characterisation
- German Standardisation Roadmap Artificial Intelligence, 2nd Edition

4. Work programme

The aim of the project is to develop a DIN DKE SPEC according to the PAS procedure (see www.din.de/go/din-spec-en). The DIN DKE SPEC shall be consistent with the body of German standards and shall not be in conflict with any DIN Standard.

The kick-off meeting is planned to take place on 25.09.2023 virtual. The project duration will be about 6 months.

At this kick-off meeting, the consortium for developing the DIN DKE SPEC will be constituted, further organizational issues will be decided on and clarified, and, where possible, work on the subject matter will be begun.

A draft for public commenting will not be published.

A total of 1 project meetings (kick-off meeting and work meetings) and 9 web conferences will be held, during which the content of the DIN DKE SPEC will be presented, discussed and approved. The content of the DIN DKE SPEC can be drawn up by individual consortium members or in working groups.

Dates of further meetings and/or web conferences are to be agreed on within the consortium in consultation with DIN.

The DIN DKE SPEC will be drawn up in German and English (language of meetings, minutes, etc.). The DIN DKE SPEC will be written in English.

NOTE The calculation covers only one language version. Please keep in mind the fact that other language versions involve additional expenses; for this reason, they shall be agreed on separately. If another language version is desired, Beuth/DIN can provide a translation. Requests for translations are to be submitted after the DIN DKE SPEC manuscript has been approved for publication.

5. Resource planning

Each consortium member shall bear the expenses he/she incurs as a result of participation in the project.

If the DIN Executive Board approves the project, the initiator of the project will then conclude a contract with DIN.

Consortium membership and participation in the project meetings is free of charge, as the costs incurred by DIN throughout the performance of this project will be financed by funding from the research project "safe.trAIn – Safe AI using the example of driverless regional trains" funded by the European Union and the Bundesministerium für Wirtschaft und Klimaschutz (BMWK) as per the funding announcement Neue Fahrzeug- und Systemtechnologien (funding reference no.: 19I21039O).

6. Rules of cooperation in the DIN DKE SPEC consortium

This project is governed by the PAS procedural rules. All interested parties and consortium members are to inform themselves of these procedures by going to www.din.de/go/din-spec-en.

The consortium will be constituted during the course of the kick-off meeting. The kick-off meeting will not take place until the business plan has been published and approved by DIN's Management Board. The consortium shall comprise at least three members from different organizations[1]. It is not necessary that these members come from different areas and represent different stakeholders. By approving this business plan, the interested parties declare their willingness to participate in the consortium and will be formally named as consortium members, with the associated rights and duties. Participants at the kick-off meeting who do not approve the business plan are not given the status of a consortium member and are thus excluded from further decisions made during the kick-off meeting and from any other decisions regarding the project.

If an organization (e.g. an association) sends someone who is not an employee to the consortium, this person shall be authorized by the organization, who shall provide proof of this to DIN.

Each consortium member is entitled to vote and has one vote. If an organization sends several experts to the consortium, that organization has only one vote, regardless of how many consortium participants it sends. Transferring voting rights to other consortium members is not permitted. During voting procedures, decisions are passed by simple majority; abstentions never count.

[1] Organizations are participating legal entities that send the experts to the DIN DKE SPEC consortium and are assigned to a corporate structure as defined by § 15 of the German Stock Corporation Act or § 271 paragraph 2 of the German Commercial Code.

As a rule, the consortium is closed once it is constituted. The current consortium members shall decide whether any additional members will be accepted or not.

During the kick-off meeting, the consortium members shall elect a consortium leader, who is responsible for content management and any decision-making and voting procedures. The leader is supported by the responsible DIN/DKE Project Manager, whereby DIN/DKE will always remain neutral regarding the content of the DIN DKE SPEC. Furthermore, the DIN/DKE Project Manager shall ensure that DIN's rules of procedure, rules of presentation, and the principles governing the publication of DIN DKE SPEC have been observed. Should a consortium leader no longer be able to carry out his/her duties, the DIN/DKE Project Manager shall initiate the election of a new leader.

The DIN/DKE Project Manager is responsible for organizing and leading the kick-off meeting, in consultation with the initiator. Further project meetings and/or web conferences shall be organized by the DIN/DKE Project Manager in consultation with the consortium leader.

If consortium members cannot be present when the DIN DKE SPEC or its draft is approved, an alternative means of including them in the voting procedure shall be used (e.g. in writing, electronically).

All consortium members who voted for the publication of the DIN DKE SPEC or its draft will be named as authors in the Foreword, including the organizations which they represent. All consortium members who voted against the publication of the DIN DKE SPEC or its draft, or who have abstained, will not be named in the Foreword.

Any expansion of the consortium at a later date is decided on by the members making up the consortium at that time. It is particularly important to consider these aspects:

a) expansion would be conducive to shortening the duration of the project or to avoiding or averting an impending delay in the planned duration of the project;
b) the expansion would not result in the project taking longer to complete;
c) the new consortium member would not address any new or complementary issues beyond the scope defined and approved in the business plan;
d) the new consortium member would bring complementary expertise into the consortium in order to incorporate the latest scientific findings and state-of-the-art knowledge;
e) the new consortium member would actively participate in the drafting of the manuscript by submitting concrete, not abstract, proposals and contributions;
f) the new consortium member would ensure wider application of the DIN DKE SPEC.

To allow the legal reproduction and distribution of results for the purposes of project work, the consortium members grant DIN rights of use on the basis of the copyright that will accrue to them for the results of their work on the DIN

DKE SPEC. The transfer of these utilization rights does not prevent the consortium members from using and further developing the knowledge, experience and findings they bring to the project.

Consortium members are requested to inform DIN of all patent rights known to them to be relevant to this DIN DKE SPEC project.

Subsequent changes to the scope (Section 3.2) or to the resource planning (Section 5) require, in addition to a two-thirds majority of all votes cast, the approval of DIN.

7. Contacts

- Consortium leader:
  Dr. rer. nat. Ralf Röhrig (Diplom Physiker)
  Senior Expert Cyber Security Rail / Signaling & Integrated Systems
  TÜV Rheinland InterTraffic GmbH
  Am Grauen Stein; D- 51105 Köln
  Tel: +49 221 806-2917
  Fax:+49 221 806-3940
  Mail: Ralf.Roehrig@de.tuv.com

  Co-chair:
  Dr. Robert Walter
  Künstliche Intelligenz (KI) / Artificial Intelligence (AI) Specialist Assesment & Certification Rail Services
  TÜV Rheinland InterTraffic GmbH
  ACRS - Assessment & Certification Rail Services
  TÜV Rheinland Group
  D-51101 Koeln/Cologne
  Mobile: + 49 172 21 49 331
  Mail: Robert.Walter@de.tuv.com

- Project manager:
  Syad Akkoub
  DIN German Institute for Standardization
  Am DIN-Platz
  Burggrafenstraße 6
  10787 Berlin
  Tel.: + 49 30 2601- 2366
  Fax: + 49 30 2601 - 42366
  e-mail: syad.akkoub@din.de

- Initiator:
  Meike Meller
  Siemens Mobility GmbH
  Otto-Hahn-Ring 6
  Perlach
  81739 München, Deutschland
  Tel.: +49 (173) 5694193
  E-Mail: meike.meller@siemens.com

Annex: Project schedule (preliminary)

DIN DKE SPEC project	2023												2024											
	Jul		Aug		Sep		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Jul	
Initiation																								
1. Request and review																								
2. Business plan drawn up																								
3. Publication of business plan																								
Development phase																								
4. Kick-off meeting/consortium constituted																								
5. DIN DKE SPEC drawn up																								
6. DIN DKE SPEC approved by consortium																								
Publication																								
7. Review and release by DIN																								
8. Publication of DIN DKE SPEC																								
Milestones						**K**			**M**		**M**			**W**			**M / V**								

K Kick-off
M Project meeting
W Web conference
A Adoption of DIN DKE SPEC