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Sustainable mobility and transportation — Roadside feeding electric road system —

Part 1: Service role architecture

Mobilité et transport durables — Système routier électrique d'alimentation en bordure de route —

Partie 1: Architecture des rôles de service

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Contents

Page

Foreword ..... **v**
Introduction ..... **vi**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Abbreviated terms **1**
5 Classification of the current electric road system (ERS) **2**
5.1 General 2
5.2 Service state classification of the electric road system (ERS) 2
5.3 Various types of electric road system (ERS) 2
6 Electric road system (ERS) infrastructure components **3**
6.1 Renewable energy source 3
6.2 Electric network storage infrastructure 3
6.3 Electric road infrastructure for contact and roadside feeding type electric road system (ERS) 3
6.4 Vehicle facility interacting with road infrastructure 3
6.5 Digital infrastructure supporting the electric road system (ERS) for electric power management 3
6.6 System components 4
6.6.1 General 4
6.6.2 Renewable energy power source 4
6.6.3 Energy storage 4
6.6.4 Power feeding facility 4
6.6.5 Vehicle side power receiving and feeding facilities 4
6.6.6 Digital infrastructure supporting the electric road system (ERS) for electric power management 4
7 Role model **5**
7.1 Objective 5
7.2 National variations 5
7.3 Basic role model 5
7.4 Application layer role and functional model for the electric road system (ERS) 6
7.4.1 General 6
7.4.2 Role and functional model options 7
8 Concept of operation **7**
8.1 General 7
8.2 Statement of the goals and objectives of the system 7
8.3 Strategies, tactics, policies and constraints affecting the system 8
8.4 Operational processes for the system 8
8.5 Role of the service provider 8
8.6 User 8
9 Operational physical layer role model **8**
9.1 General 8
9.2 Actors 9
9.3 Electric road system (ERS) service role and functional model 10
9.3.1 General 10
9.3.2 Electric road system (ERS) service control centre 10
9.3.3 Electric road system (ERS) service user with nomadic device 10
9.3.4 Electric road system (ERS) facility provider 10
9.3.5 Electric road system (ERS) service facility 10
9.3.6 Electric road system (ERS) service recorder 10
9.3.7 Electric road system (ERS) service facility owner 10

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9.3.8 First responders (police/fire fighters) 10
9.3.9 Electric road system (ERS) service supporting infrastructure facilities (physical and digital) 10
9.3.10 Regulator 11
9.3.11 Regional road authority 11
9.3.12 Security credential management system (SCMS) 11
9.3.13 Traffic management centre 11

10 Booking and payment layer role and functional model 11
10.1 General 11
10.2 Actors 12
10.3 Electric road system (ERS) service role and functional model in the booking and payment layer 12
10.3.1 General 12
10.3.2 Users with nomadic devices 12
10.3.3 Electric road system (ERS) service provider 12
10.3.4 Strategic fee planning 12
10.3.5 Banking 12
10.3.6 Central account payment system 13
10.3.7 Payment media owner 13
10.4 Booking and payment layer data flow 13

Annex A (informative) **Roadside feeding system information 14**

Bibliography 15

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Foreword

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Introduction

Achieving carbon neutrality for heavy-duty commercial vehicles, which are responsible for intercity commercial transport, is essential. Possible solutions include electric vehicles (EVs) and hydrogen vehicles. Challenges exist in using battery electric vehicles (BEVs) for long haul intercity commercial transportation.

It is inefficient and uneconomical for an EV carrying a large battery to travel between cities while being charged due to the time consumed for charging. Therefore, it is a wise measure to receive electricity from the infrastructure while driving on the interurban corridor and charging the battery and obtaining driving energy.

When running at the beginning and end of travelling, the vehicle can run as a pure EV and does not emit carbon dioxide. It is known that various methods have already been developed around the world for charging systems while driving; sometimes this is called “dynamic charging.” This means that the electrical power system is for dynamic charging on highways.

The international standardization of contact-type roadside electric roads is described in this document. Another point to consider is the elimination of carbon dioxide emissions. Electric vehicles should be powered by renewable energy as much as possible. In addition, it is necessary to install power storage equipment to smooth out the loading due to various changes in energy consumption.

Safety measures to avoid human body hazards from the power supply equipment are necessary on the roadside. In addition, security measures against cyber-attacks are also necessary. It is necessary to authenticate the rights of the power supply side and the power receiving side to avoid unauthorized energy consumption by a third party which does not have access rights.

It is only when these measures are taken that a highly reliable electric road system (ERS) can be constructed.

Sample Document

The ISO 4078 series specifies the roadside ERS and related services supporting intercity commercial EV transportation systems. This document defines a role and function model for the introduction of roadside electric roads and related services to support intercity commercial EV transportation systems. ISO 4078-2 defines the service and operational concept and ISO 4078-3 defines the system component.

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Because of the variety of role and function model presentation methodologies currently available, there is a need for a more commonly understood set of role and function model presentation guidance and requirements. This document defines the presentation of a generic roadside-powered electric road service role and function model.

New business cases in the future can refer to this document as a baseline document. In fact, it is intended to assist future business development, but not to hinder it. This document can also contribute to the development of the business case for other future road system services, other than electric road services.

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Sustainable mobility and transportation — Roadside feeding electric road system —

Part 1:
Service role architecture

1 Scope

This document specifies the role architecture of electric road systems (ERS) with dynamic charging capability.

The in-vehicle control system is not within the scope of this document.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

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No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Abbreviated terms

AC	alternating current
AI	artificial intelligence
BEV	battery electric vehicle
CONOPS	concept of operations
DC	direct current
ERS	electric road system
EV	electric vehicle
ITS	intelligent transport system
METR	management for electronic traffic regulations
SCMS	security credential management system

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