

ITS Factory - standardeista

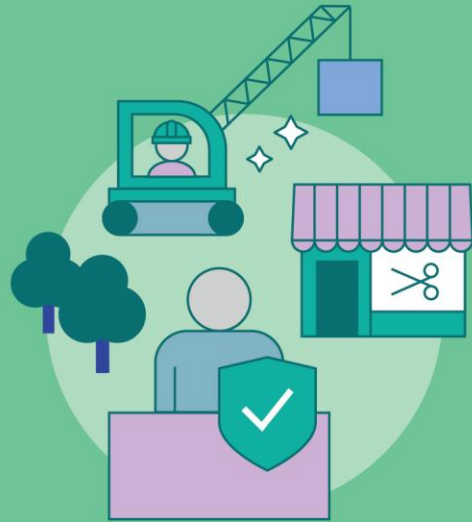
Kimmo Konkarikoski

- Standardointi
- Regulaatiot
- Ilmiöt
- Strateginen standardointi
- Miten osallistua?
- Esimerkkejä

Palvelualat Suomessa



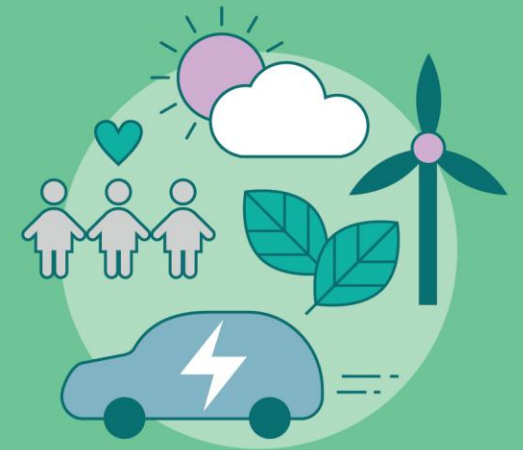
Yli 40 % brutto-
kansantuotteesta



Palvelualalla yli
miljoona työllistä



Palvelut muodostavat
1/3 viennistä



35 % vähentää asiakkaiden
ilmastopäästöjä

Paltan edustamat yksityiset palvelutoimialat: Liikenne ja logistiikka, informaatio ja viestintä, yritys- ja asiantuntijapalvelut, hallinto- ja tukipalvelut, viihde ja virkistys, tekniset palvelut ja muut palvelut.

palta

Standardointiekosysteemi

SFS

METSTA

palta

KEMESTA

cen CENELEC

RT RAKENNUS-
TEOLLISUUS

Suomen ympäristökeskus
Finlands miljöcentral
Finnish Environment Institute

MUOVITEOLLISUUS RY
Finnish Plastics Industry Federation

Väylävirasto

ISO

SESKO

TRAFICOM
Liikenne- ja viestintävirasto

PALTA / Standardointi

Standardien rooli

- markkinaehtoisia, vapaaehtoisia, pakollisia
- voivat olla paljon enemmän kuin suunnittelijan työkalu
- tukee kansallista lainsäädäntöä, ministeriöt, viranomaiset, alueet
- tukee eurooppalaista lainsäädäntöä, EU, ilmoitetut laitokset
- osa T&K&I toimintaa – strateginen standardointi, rahoituskanavat
- mahdollistaa avoimen kilpailun avoimilla markkinoilla

- Liikenne ja logistiikka
- Terveystieteet ja hyvinvointi
- Urheilu ja vapaa-aika
- Ympäristöhuolto
- Rakennuslasit

- 40 standardointiryhmää
- Yli 300 asiantuntijaa



Petri Laitinen



Jouni Lind



Mikko Paloneva





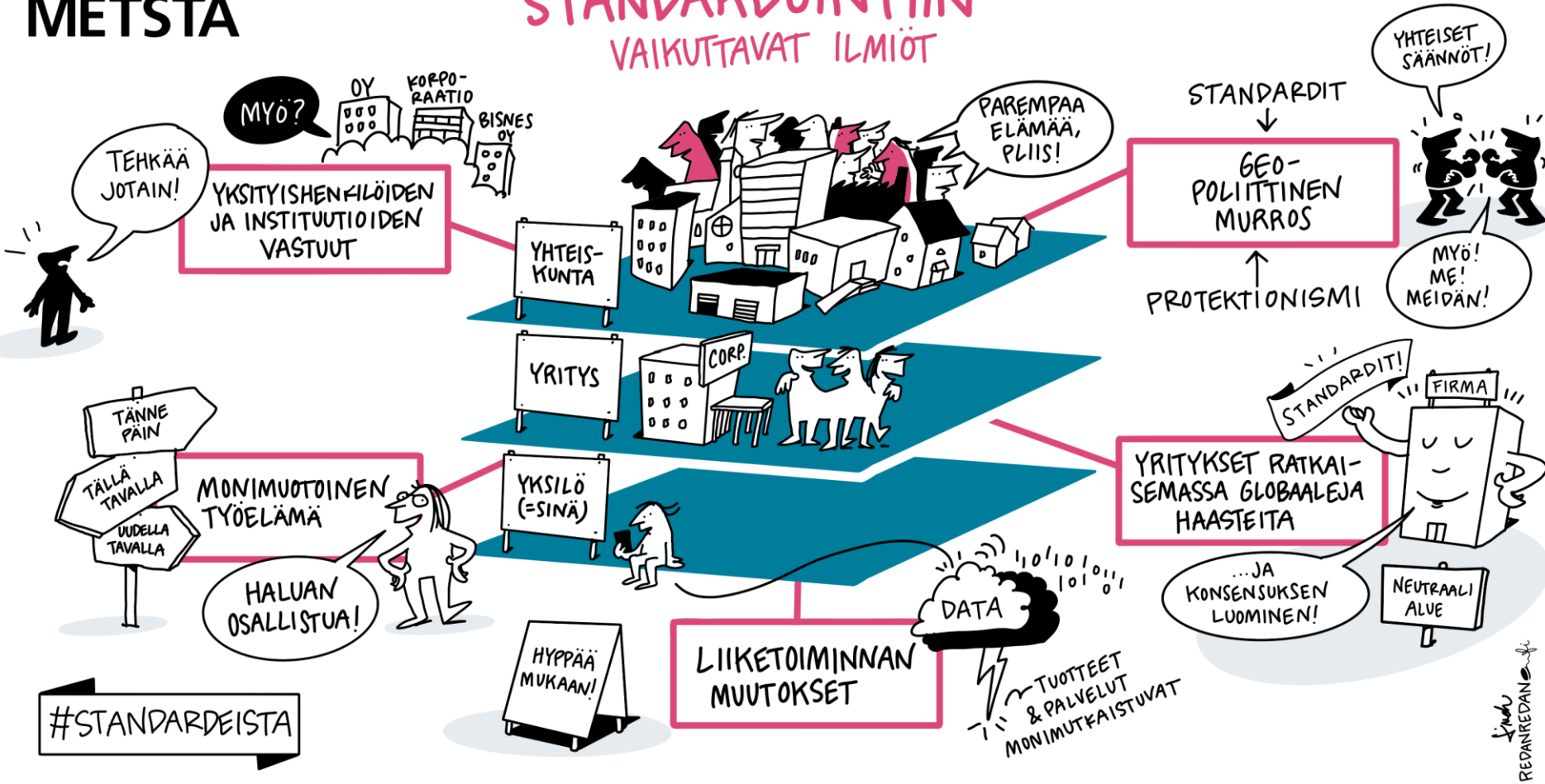
Regulatory Landscape – miten navigoidaan?

- SFS EN ISO 9001
- SFS EN ISO 14001
- SFS EN ISO 27001

- SFS EN ISO 13485
- SFS EN ISO 14971

- Tekoäly, lääkinnälliset laitteet, koneasetus, saavutettavuusdirektiivi, **ITS-direktiivi**, Ajoneuvoasetus, VAK-lainsäädäntö.

STANDARDOINTIIN VAIKUTTAVAT ILMIÖT

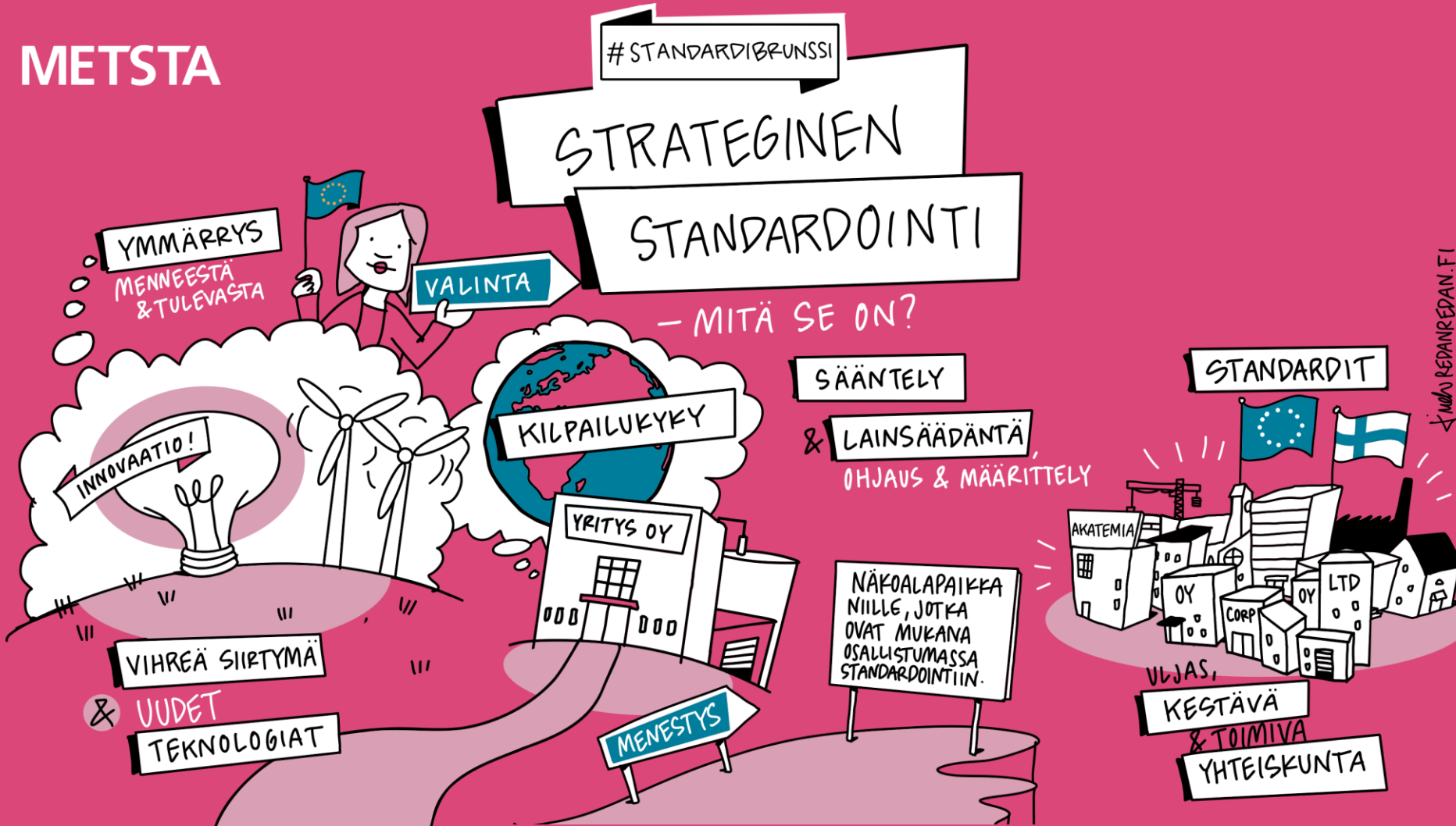


Ilmiöt / Vaikuttavuus

Jatkuva murros
Globaalit haasteet

Mikä on yksittäisen
(pienen) yrityksen rooli?

Resurssit



Voiko standardointi olla osa yrityksen strategiaa?

Voimmeko vaikuttaa standardeihin?

Osallistu
Seuraa
Tiedä
Vaikuta
Verkostoidu

- **Standardointiin vaikuttaminen tai seuraaminen (kilpailuetu)**
 - Standardit eivät synny tyhjästä
- **Vaikuttaminen standardien avulla**
- **Standardointi mahdollisuutena ei uhkana**
- **Mainehyöty, arvot, kuluttajat, verkostoituminen**
- **Jos luulet että standardit eivät koske sinua, olet todennäköisesti väärässä**

*Standardit toimivat kompassina
regulaatioviidakossa*



PALTA / Standardointi

- Liikenne ja logistiikka
- Terveysthuolto ja hyvinvointi
- Urheilu ja vapaa-aika
- Ympäristöhuolto
- Rakennuslasit

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Miten osallistua

- <https://www.palta.fi/tietoa-paltasta/standardointi/liity-standardointiryhmiin/>
- PALTA SR 002 Älyliikenneryhmässä jäseniä noin 40
 - Traficom, Väylä, Fintraffic, F-secure, Hiab, HSL, Ioncor, ITS Finland, LVK, Murata, Semel, Huawei, Unieke, Vaisala, VTT.
- Ryhmien osallitusmaksu 1200 € / taho
 - Standardointiryhmän jäsenet pääsevät netin kautta käsiksi kansainvälisen komitean kaikkeen aineistoon. Ryhmät pitävät vuodessa 1-3 kansallista kokousta, joissa käydään läpi äänestyksessä ja vireillä olevat asiat ja keskustellaan standardien sisällöstä.

Miksi osallistua

- Vaikuttaminen standardien kehitykseen ja suuntaan
- Linkitykset lainsäädäntöön
- Verkostoituminen muiden asiantuntijoiden kanssa
- Portti ja näköalapaikka Eurooppalaiseen sekä kansainväliseen standardointiin
- Vain osallistumalla voit vaikuttaa.

PALTA / Standardointi

- Liikenne ja logistiikka
- Terveystieteet ja hyvinvointi
- Urheilu ja vapaa-aika
- Ympäristöhuolto
- Rakennuslasit
- 40 standardointiryhmää
- Yli 300 asiantuntijaa



European framework on ticketing



MDMS

MULTIMODAL DIGITAL
MOBILITY SERVICES
REGULATION



SDBTR

SINGLE DIGITAL BOOKING AND
TICKETING REGULATION



PRR

PASSENGER RIGHTS



MMTIS

EU-WIDE MULTIMODAL TRAVEL
INFORMATION SERVICES



RAIL – TSI TELEMATICS

TECHNICAL SPECIFICATIONS FOR
INTEROPERABILITY OF DATA
SHARING,
INCL. TICKETING DATA

- Support the development, application and implementation of EU legal framework
- Multimodal approach – ITS directive 2010/34/EU
- Rail integration – Rail interoperability directive (EU) 2016/797

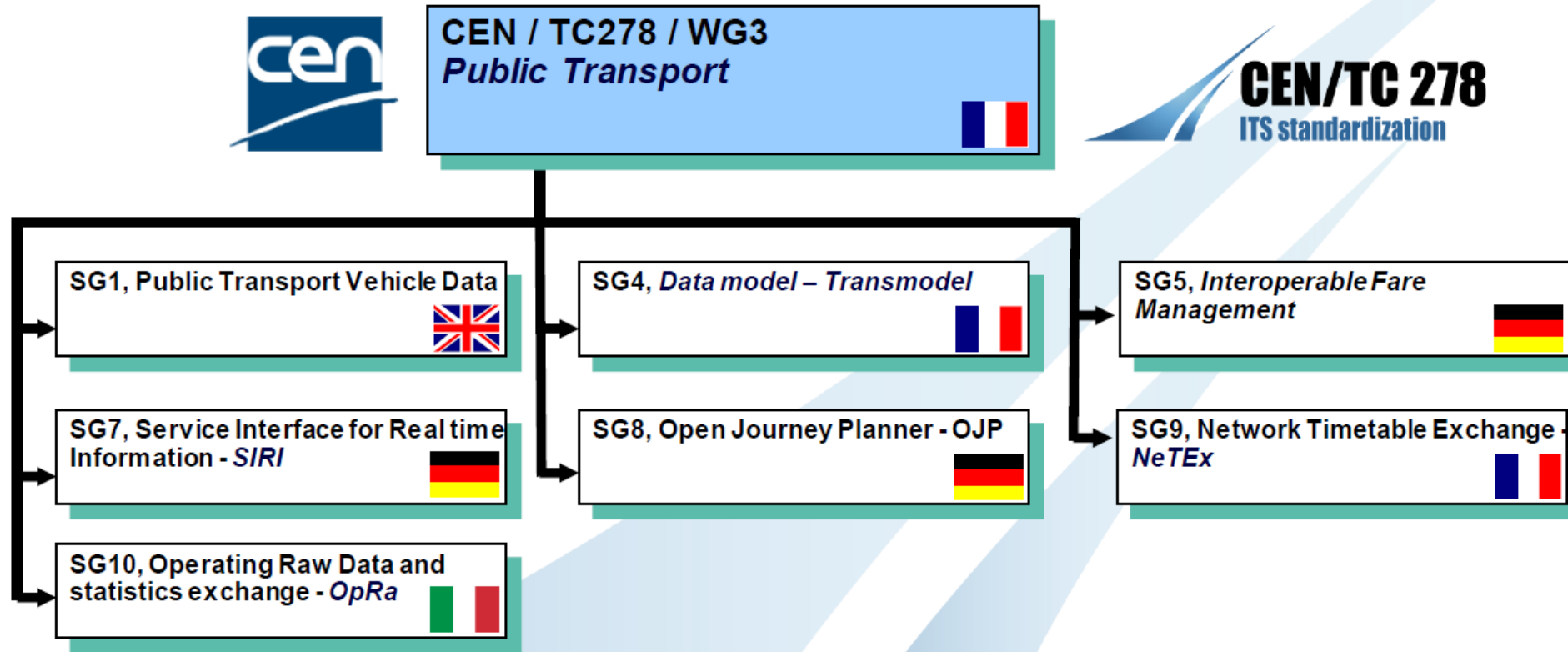
Nyt suurin osa CEN TC 278 / WG 3 julkaisuista TS (Technical Specification) ja nyt on tarve päivittää kaikki EN (standardi) muotoon (ennen seuraavaa TSI päivitystä)

- SiRi (2028)
- NeTEx (2028, 2029)
- OPJ API (2028)
- OnRa (2028)
- Distribution API (2029)
- Barcode (2029)

TSI TAP

- Viitataan CEN EN/TS dokumentteihin
- NeTEx, SiRi
- Future EN (multimodal)
- EU fare profile
- API
- Barcode

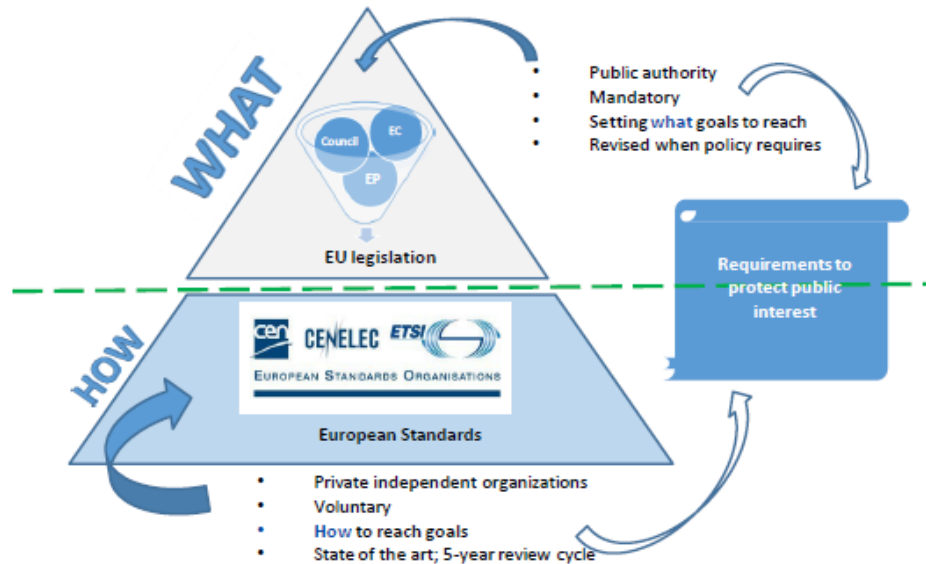
CEN TC278 WG3 active Sub-Groups



- [CEN/TC 278](#) Intelligent transport systems
- [ISO/TC 22](#) Road vehicles
- [ISO/TC 22/SC 31](#) Data communication
- [ISO/TC 22/SC 32](#) Electrical and electronic components and general system aspects
- [ISO/TC 22/SC 33](#) Vehicle dynamics and chassis components
- [ISO/TC 204](#) Intelligent transport systems
- [ISO/TC 241](#) Road traffic safety management systems

Standardointipyyntö – linkki EU-lainsäädäntöön

Harmonize standards

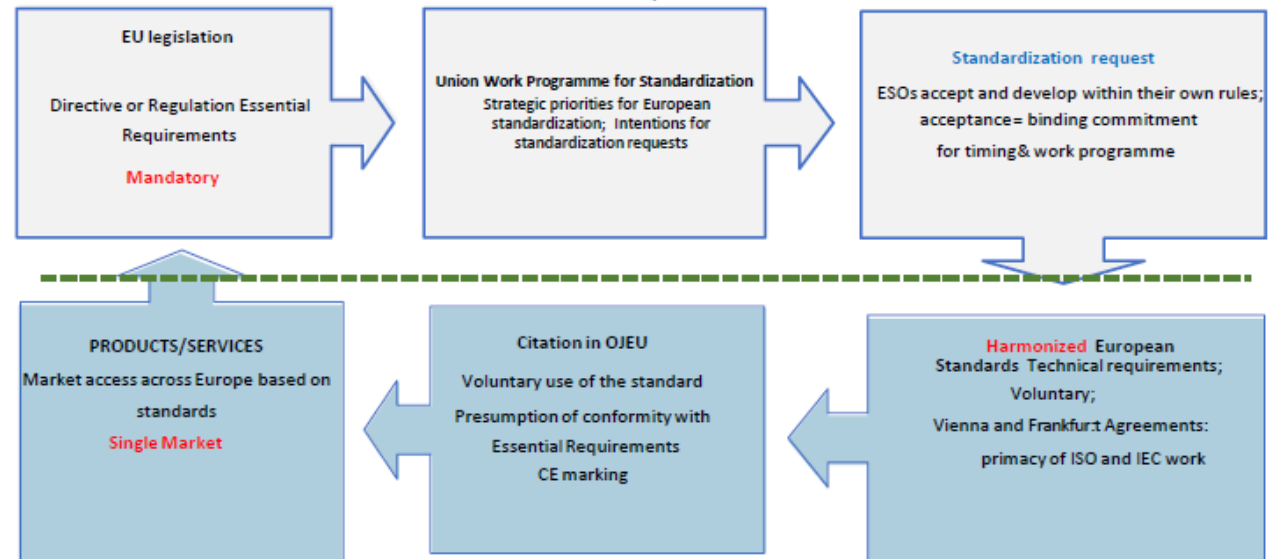
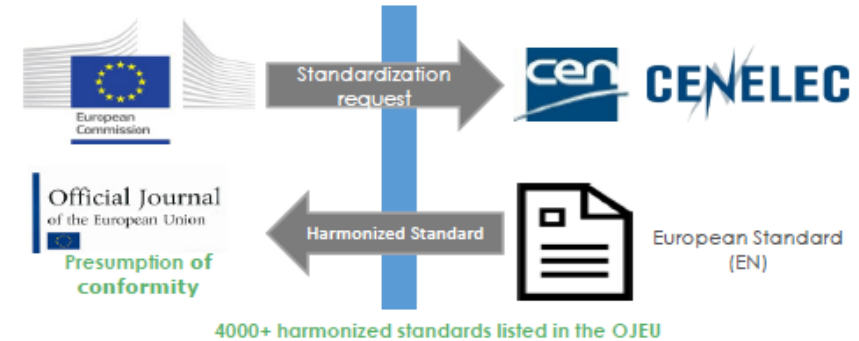


What are standardization requests (mandates)?

Standardization requests (commonly referred to as 'mandates') emanating from the European Commission (EC) ask for specific actions from the ESOs to support and complement European policy objectives. Standardization requests are usually issued to support the implementation of European Union (EU) legislation and policies for products and services.

Use of harmonized standards

The use of these standards remains voluntary. Manufacturers, other economic operators, or conformity assessment bodies are free to choose another technical solution to demonstrate compliance with the mandatory legal requirements.



M591 /Amd1 – Standardointipyyntö

	Reference Projex	Reference to be added in M/591/A1	Title	EU Legislation CEN DATABASE	M/591 A1 or EISMEA call	Deadline	
Transmodel	EN 12896-1:2016	EN 12896-1	EN 12896-1 Public transport - Reference data model - Part 1: Common concepts	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	EN 12896-10:2022	EN 12896-10	EN 12896-10 Public transport - Reference data model - Part 10: Alternative Modes	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	EN 12896-2:2016	EN 12896-2	EN 12896-2 Public transport - Reference data model - Part 2: Public transport network	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	EN 12896-3:2016	EN 12896-3	EN 12896-3 Public transport - Reference data model - Part 3: Timing information and vehicle scheduling	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	EN 12896-4:2019	EN 12896-4	EN 12896-4 Public transport - Reference data model - Part 4: Operations monitoring and control	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	EN 12896-5:2019	EN 12896-5	EN 12896-5 Public transport - Reference data model - Part 5: Fare management	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	EN 12896-6:2019	EN 12896-6	EN 12896-6 Public transport - Reference data model - Part 6: Passenger information	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	EN 12896-7:2019	EN 12896-7	EN 12896-7 Public transport - Reference data model - Part 7: Driver management	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	EN 12896-8:2019	EN 12896-8	EN 12896-8 Public transport - Reference data model - Part 8: Management information & statistics	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	CEN/TR 12896-9:2019				N/A		
SIRI	EN 15531-1:2022	EN 15531-1	EN 15531-1 Public transport - Service interface for real-time information relating to public transport operations - Part 1: Context and framework	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	EN 15531-2:2022	EN 15531-2	EN 15531-2 Public transport - Service interface for real-time information relating to public transport operations - Part 2: Communications infrastructure	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	EN 15531-3:2022	EN 15531-3	EN 15531-3 Public transport - Service interface for real-time information relating to public transport operations - Part 3: Functional service interfaces	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
		CEN/TS 15531-4:2021	EN 15531-4 (New part)	New standard on Public transport - Service interface for real-time information relating to public transport operations - Part 4: Functional service interfaces: Facility monitoring	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028
		CEN/TS 15531-5:2022	EN 15531-5 (New part)	New standard on Public transport - Service interface for real-time information relating to public transport operations - Part 5: Functional service interfaces situation exchange: Situation exchange	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028
		CEN/TS 15531-6:2024	EN 15531-6 (New part)	New standard on Public transport - Service interface for real-time information relating to public transport operations - Part 6: Functional service interfaces: Control Actions	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028
		CEN/TS 15531-7:2025	EN 15531-7 (New part)	New standard on Service Interface for Real Time Information (SIRI) - Part 7: Passenger Real-Time Information European Profile	2010/40/EU, 2016/797/EU	2016/797/EU	
NeTex	CEN/TS 16614-1:2020	New standard Part 1	New standard on Public transport - Network and Timetable Exchange (NeTex) - Part 1: Public transport network topology exchange format	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	CEN/TS 16614-2:2020	New standard Part 2	New standard on Public transport - Network and Timetable Exchange (NeTex) - Part 2: Public transport scheduled timetables exchange format	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	CEN/TS 16614-3:2020	New standard Part 3	New standard on Public transport - Network and Timetable Exchange (NeTex) - Part 3: Public transport fares exchange format	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	CEN/TS 16614-4:2020	New standard Part 4	New standard on Public transport - Network and Timetable Exchange (NeTex) - Part 4: Passenger Information European Profile	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	CEN/TS 16614-5:2022	New standard Part 5	New standard on Public transport - Network and timetable exchange (NeTex) - Part 5: Alternative modes exchange format	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
	CEN/TS 16614-6:2024	New standard Part 6	New standard on Public transport - Network and timetable exchange (NeTex) - Part 6: European Passenger Information Accessibility Profile	2010/40/EU, 2016/797/EU	2016/797/EU	End 2028	
		CEN/TS	New standard Part 7	New standard on European profile NeTex-EFIP (fares)	2010/40/EU, 2016/797/EU	2016/797/EU	End 2029
OpRa	CEN/TS	New standard	New standard on Public transport - Operating raw data and statistics exchange	2010/40/EU	N/A		
OJP	CEN/TS 17118:2024	New standard	New standard on Intelligent transport systems - Public transport - Open API for distributed journey planning	2016/797/EU	2016/797/EU	End 2028	
API	CEN/TS	New standard	New standard on European distribution of transport tickets API	2016/797/EU	2016/797/EU	End 2029	
BT4PT	CEN/TS	New standard	New standard on Barcode ticketing for public transport	2016/797/EU	2016/797/EU	End 2029	

Revision of existing standard
Conversion of existing TS into EN
Conversion of new TS into EN

ISO TC 204 – 2025-10-31 - NWIP

- **WG 1**
 - **ISO/PWI 25965**: Intelligent transport systems — Ontologies — Model management
- **WG 3**
 - **ISO/PWI 19297-4**: Intelligent transport systems — Shareable geospatial databases for ITS applications — Part 4: Common data structure
 - **ISO/PWI 19297-5**: Intelligent transport systems — Shareable geospatial databases for ITS applications — Part 5: Data encoding method
- **WG 8**
 - **ISO/PWI TR 24852**: Intelligent transport systems — Public transport — Complementary concepts to ISO 24014-1:2021 for account-based ticketing
 - **EN ISO 12855:2025**: Electronic fee collection — Information exchange between service provision and toll charging
 - **ISO/PWI 25611**: Intelligent transport systems – Public transport – Role model for monitoring the charging status of electrified public transport vehicles

ISO TC 204 – 2025-10-31 - NWIP

- **WG 9**

- **Intelligent transport systems – Data quality framework for edge ITS data – Part 1: Foundational concepts and glossary** (Target: TR)
- **Intelligent transport systems – Data quality framework for edge ITS data – Part 2: Core framework** (Target: TR)
- **Intelligent transport systems – Data quality framework for edge ITS data – Part 3: Implementation guidelines** (Target: IS)

- **WG 14**

- **Intelligent transport systems — Automated Driving Systems (ADS) in urban areas — Overview and challenges** (Target: TR)
- **Intelligent transport systems — Automated Driving Systems (ADS) in urban areas — Guidelines for specifying collision avoidance testing procedures** (Target: PAS)

- **WG 16**

- **ISO/TS AWI 237081: Intelligent transport systems – Station unit requirements – Part 1: Core requirements**
- **ISO/TS PWI 237082: Intelligent transport systems – Station unit requirements – Part 2: Central ITS stations**
- **ISO/TS PWI 237083: Intelligent transport systems – Station unit requirements – Part 3: Roadside ITS stations**
- **ISO/TS PWI 237084: Intelligent transport systems – Station unit requirements – Part 4: Personal ITS stations**

ISO TC 204 – 2025-10-31 - NWIP

- **WG 17**

- **PWI 17739-8:** Intelligent transport systems – Roadside infrastructure supported location-based services on nomadic devices for connected automated mobility – Part 8: Incident prevention support in work zones
- **PWI 23795-4:** Intelligent transport systems – Extracting trip data using nomadic and mobile devices for estimating CO₂ emissions – Part 4: Estimation of greenhouse gas emissions in transport sectors
- **PWI 17438-7:** Intelligent transport systems – Indoor navigation for personal and vehicle ITS stations – Part 7: Message dictionary for extensions
- **PWI 6029-4:** Intelligent transport systems – Seamless positioning for multimodal transport in ITS stations – Part 4: Wheelchair navigation services on nomadic devices
- **PWI **Intelligent transport systems – Infrastructure sensor-assisted remote parking systems via nomadic devices – Part 1: General requirements and use cases definition**

- **WG 18**

- **ISO/PWI 17739-7:** Intelligent transport systems – Roadside infrastructure supported location-based services on nomadic devices for connected automated mobility – Part 7: Poor visibility advisory at boundaries
- **ISO/PWI 25974-1:** Intelligent transport systems – Electric vehicle (EV) battery safety monitoring and performance evaluation for nomadic and mobile devices – Part 1: General information and dataset requirements

- **WG 19**

- **ISO/TS 25614-2:** Intelligent transport systems — Orchestration of vehicles for fixed locations – Part 2: Additional services