CEN/TC278/WG1 & ISO/TC204/WG5
Electronic Fee Collection (EFC)
Status report to CEN/TC278
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Jesper Engdahl

Jesper Engdahl, WG Convenor
Rapp Trans AG
Hochstrasse 100
CH-4018 Basel, Switzerland
Phone: +41 61335 78 53
e-mail: jesper.engdahl@rapp.ch

Johan Hedin, WG Secretary
Hybris Konsult AB
Ormbergsvägen 16
S-117 67 Stockholm, Sweden
Phone: +46 8 658 15 25
e-mail: johan.hedin@hybris.se

Overview of work items under development (1)

Architecture and technology independent

- prCEN/TS 17444-2 **Charging performance – Part 2: Examination framework** (CEN WI 328, WI adopted in March 2012, TC278 N2666; ISO NP adopted in 2012-06, TC204 N2944)

- prCEN/TR **Guidelines for EFC-applications based on in-vehicle ITS Stations** (CEN WI 315, adopted in 2011-08, TC278 N2538)

- prCEN/TS **Interoperable application profiles for information exchange between Service Provision and Toll Charging** ("IAP for info exchange between SP and TC", CEN WI…, adopted in 2013-01, TC278 N2817)

Overview of work items under development (2)

DSRC-based EFC

- ISO/WD-TS 16875 **Interface definition between DSRC – OBE and external in-vehicle devices** (ISO WI adopted in 2012-03, TC204 N2912)

CEN/TC278/WG1 & ISO/TC204/WG5 – Electronic Fee Collection

Overview of work items under development (3)

Autonomous EFC

- prCEN/TS Secure monitoring for autonomous toll systems — **Compliance checking** (CEN WI 282, adopted in 2011-08, TC278 N2539)

- prCEN/TS Secure monitoring for autonomous toll systems — **Trusted recorder** (CEN WI 338, adopted in 2012-05, TC278 N2694)

Overview of publications under revision/conversion

Revision:

- CEN ISO/TS **25110**:2008 Interface definition for **on-board account using ICC**

- EN **15509**:2007 **Interoperability application profile for DSRC** (CEN WI 327, revision), CEN Enquiry closes on 2013-03-13

- EN ISO **12855**:2012 **Information exchange** between service provision and toll charging (ISO/TC204 res 961, 2012-10), updated draft for launching of DIS ballot / CEN Enquiry, targeted for 2013-04

Revision and conversion into Standards, updated drafts for launching of the DIS ballots / CEN Enquiries (ISO/TC204 res 960, 2012-10), targeted for 2013-04 :

- CEN ISO/TS **17575-1**:2010 Application interface definition for autonomous systems – Part 1: **Charging**

- CEN ISO/TS **17575-2**:2010 Application interface definition for autonomous systems – Part 2: **Communication and connection to the lower layers**

- CEN ISO/TS **17575-3**:2011 Application interface definition for autonomous systems – Part 3: **Context data**

- CEN ISO/TS **17575-4**:2011 Application interface definition for autonomous systems – Part 4: **Roaming**

- CEN ISO/TS **12813**:2009 **Compliance check** communication for autonomous systems

- CEN ISO/TS **13141**:2010 **Localisation augmentation** communication for autonomous systems

EFC application standards overview

	DSRC-based EFC		EFC-tech. independent	Autonomous-EFC	
	Tests	Requirements		Requirements	Tests
Frameworks	**14907-1** Test Procedures		**17573** EFC Architecture		
			17574 Security Profiles		
			16439 Security Framework		
Toolboxes	**14907-2** DSRC-OBU Tests	**14906** AID for DSRC-EFC	**12855** Info Exchange	**17575-1/2/3/4** AID Auto.-EFC	**16401**, etc Auto-test (4*2 parts)
		25110 AID, IC-cards	**17444-1/2** Charging Perf. Indic.	**XXXXX** Sec.Mon: CC	
		16875 Interface OBE+		**XXXXX** Sec.Mon: TR	
Profiles	**15876-1/2** IAP Test	**15509** IAP for DSRC-EFC	TS XXXX IAP for Info Exchange	**16331** IAP for Auto-EFC	
				12813 CCC for Auto-EFC	**13143-1/2** CCC Test
				13141 LAC for Auto-EFC	**13140-1/2** LAC Test
Technical Reports		**TR 16040** Urban DSRC	**TR 16152** First Mount OBE		
			TR 16092 Pre-Paid Req.		
			TR 16219 Value Added Serv.		
			TR XXXXX EFC on ITS stations		

CEN/TC278/WG1 & ISO/TC204/WG5 – Electronic Fee Collection

# prCEN ISO/TS 17444-2 Charging performance – Part 2: Examination framework

- **Objectives**
  - Charging performance evaluation and monitoring for discrete and continuous charging schemes to support procurement and service level agreements

- **Scope**
  - Definition of the methods (data collection, processing...) to support the evaluation and monitoring of the Charging performance metrics defined in part 1

- **Outside the scope**
  - Specific numeric performance bounds, or average or worst-case error bounds in percentage or monetary units
  - Evaluation of the expected performance of a system based on modelling and measured data from trial at another place

- **Status and target**
  - CEN WI adopted in March 2012 (TC278 N2666)
  - ISO NP letter ballot, replies by 2012-05-28 (TC204 N2909)
  - Parallel "TC review" closed in 2012-09 (TC278 N2777)
  - **Being submitted for CEN FV / ISO DTS ballot**

- Drafting is supported by PT134

prCEN TR WI 278315 Guidelines for EFC-applications based on in-vehicle ITS stations

- **Objective :**
  - Assessment of the technical and operational feasibility of using a generic ITS Station @ ETSI EN 302 665 "ITS – Com arch" for EFC applications

- **Scope**
  - Comparison of the ITS and EFC architectures
  - Core requirements for operation of an EFC app on an ITS Station
  - Potential synergies between EFC and ITS applications
  - Requirements for the ITS Station to support EFC apps
  - Recs on standards needed to support deployment of or actions to reduce barriers for deployment of EFC applications on an ITS Station

- **Status and target**
  - WI adopted in 2011-08 (TC278 N2538)
  - Working draft (WG N1654)
  - **TC review (N2822) closes on 2013-04-12**
  - FV: 2013-07

- Drafting is supported by PT136
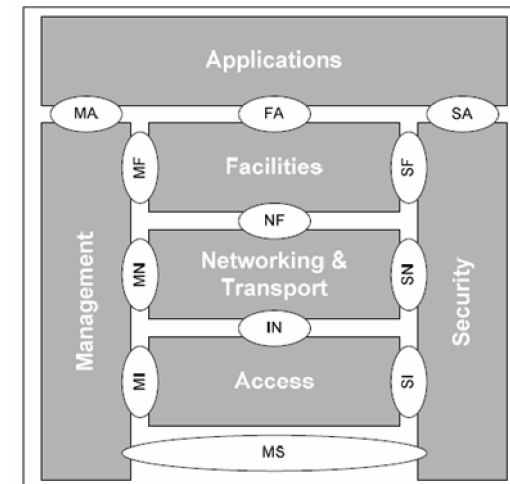
prCEN/TS IAP for information exchange between SP and TC

- **Objective :**
  - Technical interoperability support for the EFC information exchange between Service Providers (SPs) and Toll Chargers

- **Scope**
  - Interoperable application profiles (IAP) – coherent definition of specific sets of options and values provided by EN ISO 12855

- **Status and target**
  - **WI adopted in 2013-01 (TC278 N2817)**
  - TC review: 2014-02
  - FV: 2014-07

- Is dependent on an updated and stable EN ISO 12855 (WG N1676)

- Drafting will be supported by PT137

ISO/WD-TS 16785 - Interface definition between DSRC-OBE and external in-vehicle devices

- **"Interface definition between DSRC-OBE and external in-vehicle devices"**
  - Idea originating from Japan (editorial support from Korea, Singapore ...)
  - DRSC-based OBU that might be combined with external devices (GNSS, cellular etc)
  - Scope: To define the interface between DSRC based OBE and external unit to cope with diversified tolling schemes

- **Status and target**
  - PWI TS adopted in Nov 2010 (TC204 N2674, Nov 2010)
  - Latest working draft (WG N1613)
  - ISO TS WI adopted in March 2012 (N2912, NP letter ballot result)
  - **Being submitted for "TC review": 2013-02**
  - ISO DTS ballot: 2013-07

EN 15509 Interoperability application profile (IAP, rev)

- **Objectives**
  - Interoperability, equipment compatibility, best industry practice
  - Support the European EFC Directive (2004/52/EC)

- **Scope**
  - DSRC requirements
  - EFC functions and data, security and ICS proforma

- **Status and target**
  - Result of review enquiry (TC278 N2556, 2009-09)
  - Decision to revise 15509 (TC278 Res 025-2011)
  - **CEN Enquiry: draft (WG N1627; CRR TC N2709) submitted in 2012-07. Enquiry closes on 2013-03-11**
  - Draft ready for FV: 2013-04

prCEN/TS WI 278282 "Secure monitoring for autonomous toll systems – Compliance checking"

- ## Objective
  - Support for the Toll Charger to check the trustworthiness of the toll declarations from the Toll Service Provider whilst respecting the privacy of the user
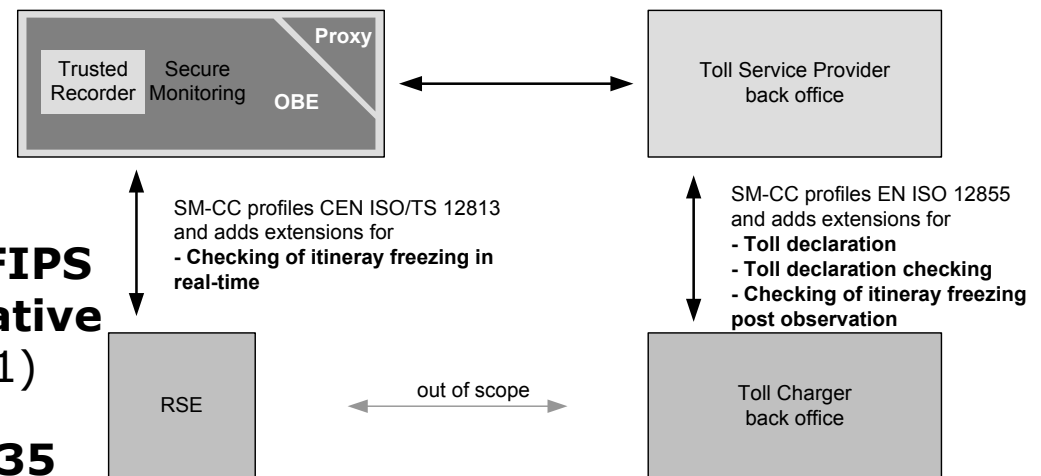
- ## Scope
  - Secure monitoring concept and stake holder reqs
  - Transactions and data
  - Using whenever possible existing standards (CEN/ISO TS 12813, EN CEN/ISO 12855, CEN/ISO TS 17575-1...)

- ## Status and target
  - CEN WI adopted in 2011-08
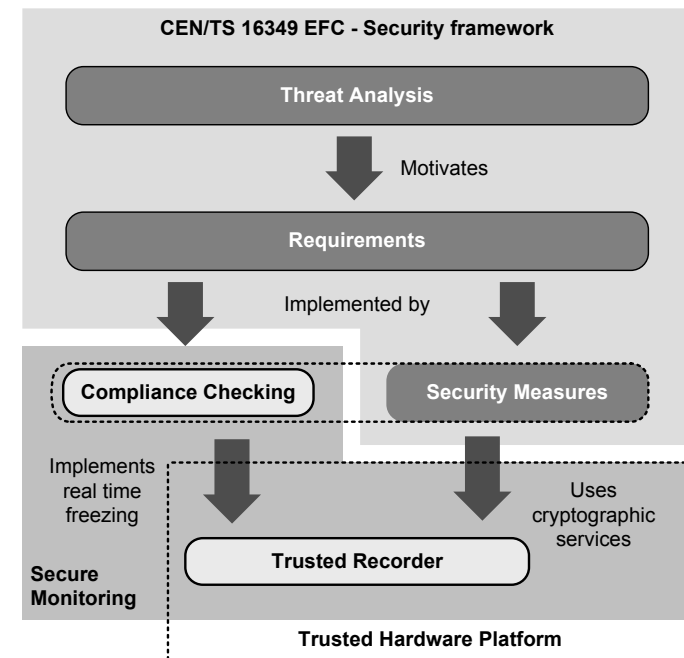 - TC review completed (TC N2841, 2013-01)
  - FV: 2013-04

- ## Proposed TC decision to ref FIPS & IETF publications as normative (TC N2821, deadline 2013-03-21)

- ## Drafting is supported by PT135

Proxy

Trusted Recorder | Secure Monitoring | OBE

Toll Service Provider back office

SM-CC profiles CEN ISO/TS 12813 and adds extensions for
- Checking of itineray freezing in real-time

SM-CC profiles EN ISO 12855 and adds extensions for
- Toll declaration
- Toll declaration checking
- Checking of itineray freezing post observation

RSE

out of scope

Toll Charger back office

prCEN/TS WI 278338 "Secure monitoring for autonomous toll systems – Trusted recorder"

- **Objective**
  - Support for the Toll Charger to check the trustworthiness of the toll declarations from the Toll Service Provider whilst respecting the privacy of the user

- **Scope**
  - Secure monitoring concept and stake holder reqs
  - Transactions and data
  - Using whenever possible existing standards (CEN/ISO TS 12813, EN CEN/ISO 12855, CEN/ISO TS 17575-1...)

- **Status and target**
  - CEN WI adopted in 2012-05
  - Working draft (WG N1611)
  - TC review: 2013-07
  - FV: 2014-02

- **Drafting will be supported by PT138**

CEN/TS 16349 EFC - Security framework

Threat Analysis → Motivates → Requirements → Implemented by → Compliance Checking / Security Measures

Implements real time freezing — Secure Monitoring

Uses cryptographic services

Trusted Recorder

Trusted Hardware Platform

Miscellaneous (1)

- **Recently approved publication**
  - CEN ISO/TS 17444-1 EFC - **Charging performance** – Part 1: Metrics approved in ISO and CEN in 2012-10 (TC278 2776)

- **ISO DTS ballot / CEN FV,** closes on 2013-04-10
  - CEN ISO/TS 25110 EFC - Interface definition for **on-board account using ICC**

Miscellaneous (2) QA - Initial thoughts

- **Current situation**
  - Room for improvement
  - Importance of QA grows with the number of EFC standard compliant systems and standards

- **Needs (WG N1583)**
  - Ensure harmonised definitions of terms across the ITS/EFC suite of standards
  - Ensure correct ASN.1 data definitions and use of existing definitions whenever applicable
  - Early identification and resolution of conflicting definitions
  - Effective procedures for maintenance of our standards (corrections, extensions ...)
  - Appropriate dissemination of corrections and anticipated future extensions

- **Solutions - terms and definitions**
  - ISO database for standardized terms and definitions
  - **Central repository of standardised EFC terms** (TC278 **N2799** & TC204 N3041)

Miscellaneous (3) QA - Initial thoughts

- **Solutions - data definitions**
  - Central repository of the proposed changes and their provisional handling (WG N1606), incl maintenance of the ASN.1 modules
  - Rec to include **ASN.1 module as electronic inserts** in future ITS/EFC stds
  - **Best practice and recs on how to present (EFC) data definitions (WG N1684)**. ISO/TR 25100:2012 "Harmonization of ITS data concepts" and ISO 14813-6:2009 "ITS ref model – Data presentation in ASN.1" taken into account in the analysis

- **Solutions – maintenance on top-up of the formal systematic review**
  - Provisional handling of post adoption comments on published stds – WG internal repository (WG N1628)
  - Preparation of corrigenda, when appropriate. **Cor EN ISO 14906:2013-02 submitted to ISO/TC for publication**. 17575-1 & -3 and 12855 corrigenda are ready and will be submitted once green light from ISO/TC & CS

Miscellaneous (4)

- EFC 2006 Grant Agreement (2 ENs and 4 TS)

- EFC 2007 Grant Agreement (1 EN, 15 TS and 4 TRs)

- **EFC 2010 Grant Agreement**
  - Security framework & Charging performance metrics (TC278 N2362)
  - Target : 3 TS - approval expected by H1/2013

- **EFC 2011 Grant Agreement (2011-38)**
  - Secure monitoring for autonomous toll systems — Compliance checking
  - Guidelines for EFC-applications based on in-vehicle ITS stations
  - Target : 1 TS and 1 TR – approval expected by mid 2014

- **EFC 2012 Grant Agreement Application (2012-21)**
  - Secure monitoring for autonomous toll systems — Trusted recorder
  - Interoperable application profiles for information exchange between Service Provision and Toll Charging
  - Coordination of PTs and support to the EC
  - Agreement signed in 2012-09
  - **Experts selected in 2013-02 (TC278 N2820)**

CEN/TC278/WG1 and ISO/TC204/WG5

Recent meetings: 16-17 October 2012, Moscow (Russia)
17 Oct **joint meeting with C-ITS**
23-24 January 2013, London (UK)

Next meetings: 9-11April 2013, Vienna (Austria)
26-27 June 2013, Helsinki (Finland)
8-9 October 2013, Kobe (Japan)

Members: Australia, Austria, Canada, China, Czech Republic, Finland, France, Germany, Italy, Japan, Korea, Netherlands, Norway, Poland, Portugal, Slovenia, South Africa, Spain, Sweden, Switzerland, United Kingdom

In total **47 expert members** from 21 countries (15 CEN)

Subgroups: SG1 - Wolfgang Beier: Info exchange, architecture, security
SG2 - Jean François Jouen: DSRC based EFC, testing
SG5 - Ian Catling: GNSS/CN based EFC

Liaisons: EC DG TREN, EC Electronic Toll Committee, ETSI ITS, CEN/WG3 & ISO/WG8, CEN WG16 & ISO /WG18, ISO/WG16, IEEE 1609, CEN/TC224/WG11

Convenor's recommendations to TC78 (1)

1. **CEN/TC278**
   - **considering the need to speed up the production process ;**
   - **noting ISO's procedures for developing and approving ISO international standards**

   requests CEN CMC to consider to align CEN's enquiry and approval procedures with ISO's, at least for WIs under the VA, including the approval without formal vote when no negative votes are received during the CEN Enquiry.

2. **CEN/TC278**
   - **considering the good and fruitful collaboration between ISO/TC204 and CEN/TC278;**
   - **considering a potential reorganisation of ISO/TC204, as outlined in the potential proposal for a reorganisation of ISO/TC204 in ISO/TC204 N3027;**
   - **noting that CEN does not use sub-committees;**

   encourages ISO/TC204 to take full account of the joint CEN/TC278 and ISO/TC204 WIs and joint ITS legacy publications when reviewing and potentially adapting its organisation

Completed Work (1) - Architecture and technology independent

EN ISO 12855	EFC - **Information exchange between service provision and toll charging** (published in 2012-02)
ISO 17573	EFC - **System architecture** for vehicle-related tolling (published in 2010-12, replacing ISO/TS 17573:2004)
CEN/TS 16439	EFC – **Security framework** (published in 2013-01)
CEN ISO/TS 17574	EFC – Guidelines for **security protection profiles** (2nd ed published in 2009-09)
CEN ISO/TS 17444	EFC – **Charging performance** **Part 1: Metrics** (published in 2012-10)
CEN TR 16092	EFC - Requirements for **pre-payment** systems (published in 2011-03)
CEN TR 16152	EFC – **Personalisation and mounting** of first mount OBE (published in 2011-03)
CEN TR 16219	EFC – **Value added services** based on EFC on-board equipment (published in 2011-07)

Completed Work (2) – Architecture and technology independent

CEN ITR   Integration of **payment systems for transport services** (CEN/TC278 N278, 1994-03-17)

CEN ITR   Definition of **Threats and Security Controls** for the Charging Interface in Electronic Fee Collection (CEN/TC278 N780, 1997-10)

Completed Work (3) – DSRC-based EFC

EN ISO 14906   EFC - **application interface definition for DSRC** (3rd edition published in 2011-10)

CEN ISO/TS 14907   EFC - **Test procedures** user and fixed equipment

Part 1: Description of **test procedures** (3rd ed published in 2010-06)

Part 2: **Conformance test for the onboard unit application interface** (2nd ed in 2011-11)

EN 15509   EFC - **Interoperable application Profile for DSRC** (published 2007-05)

EN 15876   EFC – **Conformity evaluation** of on-board and roadside **equipment to EN 15509**

Part 1: Test suite structure and test purposes (2010+A1:2012)

Part 2: Abstract test suite (published 2011-04)

CEN ISO/TS 25110   EFC - Interface definition for **on-board account** using ICC (published in 2008-11)

CEN TR 16040   EFC - Requirements for **urban DSRC systems** (published in 2010-06)

CEN ITR   AFC requirements for **DSRC** (CEN/TC278 N318, 1994-08)

CEN ITR   EFC - Requirements for **Integrated Circuit Cards** (CEN/TC278 N779, 1997-10)

Completed Work (4)
Autonomous and support for autonomous EFC systems

CEN ISO/TS 17575   EFC - **Application interface definition for autonomous systems**

Part 1: **Charging** (published in 2010-06)

Part 2: **Communication and connection to the lower layers** (published in 2010-06)

Part 3: **Context data** (published in 2011-04)

Part 4: **Roaming** (published in 2011-04)

CEN/TS 16331   EFC **– Interoperable application profiles for autonomous systems** (published in 2012-03)

Completed Work (5)
Autonomous and support for autonomous EFC systems

CEN ISO/TS 16407 **EFC – Evaluation of equipment for conformity to CEN ISO / TS 17575-1**

Part 1: Test suite structure & test purposes (published in 2011-10)

Part 2: Abstract test suite (published in 2012-03)

CEN ISO/TS 16401 **EFC – Evaluation of equipment for conformity to CEN ISO / TS 17575-2**

Part 1: Test suite structure & test purposes (published in 2012-03)

Part 2: Abstract test suite (published in 2012-03)

CEN ISO/TS 16410 **EFC – Evaluation of equipment for conformity to CEN ISO / TS 17575-3**

Part 1: Test suite structure & test purposes (published in 2011-10)

Part 2: Abstract test suite (published in 2012-03)

CEN ISO/TS 16403 **EFC – Evaluation of equipment for conformity to CEN ISO / TS 17575-4**

Part 1: Test suite structure & test purposes (published in 2012-03)

Part 2: Abstract test suite (published in 2012-03)

Completed Work (6)
Autonomous and support for autonomous EFC systems

CEN ISO/TS 12813	EFC - **Compliance check communication** (Published in 2009-11)
CEN ISO/TS 13143	EFC - **Evaluation** of on-board and roadside equipment for conformity **to CEN ISO/TS 12813**
	Part 1: **Test suite structure and test purposes** (published in 2011-04)
	Part 2 : **Abstract test suite** (published in 2011-05)
CEN ISO/TS 13141	EFC – **Localisation augmentation communication** (published in 2010-02)
CEN ISO/TS 13140	EFC - **Evaluation** of on-board and roadside equipment for conformity **to CEN ISO/TS 13141**
	Part 1: Test suite structure and test purposes (published in 2011-04)
	Part 2: Abstract test suite (published in 2012-03)
CEN ITR	Application **requirements** for EFC systems based on **GNSS/CN** (CEN/TC278 N798, 1997-11)