

# **Nacionalni izvedbeni načrt TSI**

## **Podsystem vodenje in upravljanje prometa**

**Verzija: 0.3.2**

**Ljubljana, januar 2008**

## UVOD

Na osnovi Direktive 2001/16/ES, čl. 23(1), mora biti podsistem Vodenje in upravljanje prometa predmet tehnične specifikacije za interoperabilnost.

TSI v obstoječi različici ne obravnava vseh vidikov interoperabilnosti v celoti. Zato je potrebno v prehodnem obdobju do polnega izvajanja te TSI določiti pogoje, ki jih je treba izpolnjevati poleg tistih, ki so navedeni v TSI VP.

Izvajanje TSI in skladnost z ustreznimi oddelki TSI je treba določiti v skladu z izvedbenim načrtom, ki ga vsaka država članica pripravi za proge, za katere je odgovorna.

Železniški promet trenutno obratuje v skladu z veljavnimi nacionalnimi, dvostranskimi, večnacionalnimi ali mednarodnimi sporazumi. Pomembno je, da navedeni sporazumi ne ovirajo sedanjega in prihodnjega napredka za doseg interoperabilnosti.

Na osnovi 4. člena TSI Vodenje in upravljanje prometa, države članice pripravijo nacionalni izvedbeni načrt TSI, v skladu z merili določenimi v poglavju 7 zadevne TSI.

Tehnične specifikacije za interoperabilnost, ki zadevajo podsistem Vodenje in upravljanje železniškega prometa (Odločba Komisije številka 2006/920/ES z dne 11. avgusta 2006), kot je navedeno v Prilogi II Direktive 2001/16/ES, zajemajo postopke in dodatno opremo, ki omogoča usklajeno obratovanje raznih strukturnih podsistemov med normalnim obratovanjem, pa tudi zmanjšanim obratovanjem, vključno in zlasti z vlakovnimi vožnjami, načrtovanjem in upravljanjem prometa.

TSI Vodenje in upravljanje prometa zajema tudi strokovno usposobljenost, ki se lahko zahteva za opravljanje prekomejnih storitev v železniškem prometu.

Predlog nacionalnega izvedbenega načrta je izdelan na podlagi Odločbe Komisije 2006/920/ES z dne 11. avgusta 2006 o tehnični specifikaciji interoperabilnosti, ki se nanaša na podsistem Vodenje in upravljanje prometa vseevropskega železniškega sistema za konvencionalne hitrosti (notificirano pod dokumentarno številko C 2006 3593) in opredeljuje strategijo implementacije določil tozadevne TSI za upravljavca železniške infrastrukture pri vzpostavljanju vseevropskega železniškega omrežja za konvencionalne hitrosti in za prevoznika v železniškem prometu za obratovanje vlakov na tem omrežju.

Interoperabilnost pomeni sposobnost vseevropskega železniškega sistema za konvencionalne hitrosti, da zagotovi varen in neprekinjen promet vlakov ob zahtevani stopnji izkoriščenosti zmogljivosti teh prog.

Ta zmožnost temelji na celotnem sklopu pravnih, tehničnih in operativnih pogojev, ki morajo biti izpolnjeni za zadostitev bistvenim zahtevam, katere so opisane v Prilogi III Direktive 2001/16/ES.

## 1. PODLAGE

V dokumentu so upoštevane naslednje osnovne pravne in tehnične podlage:

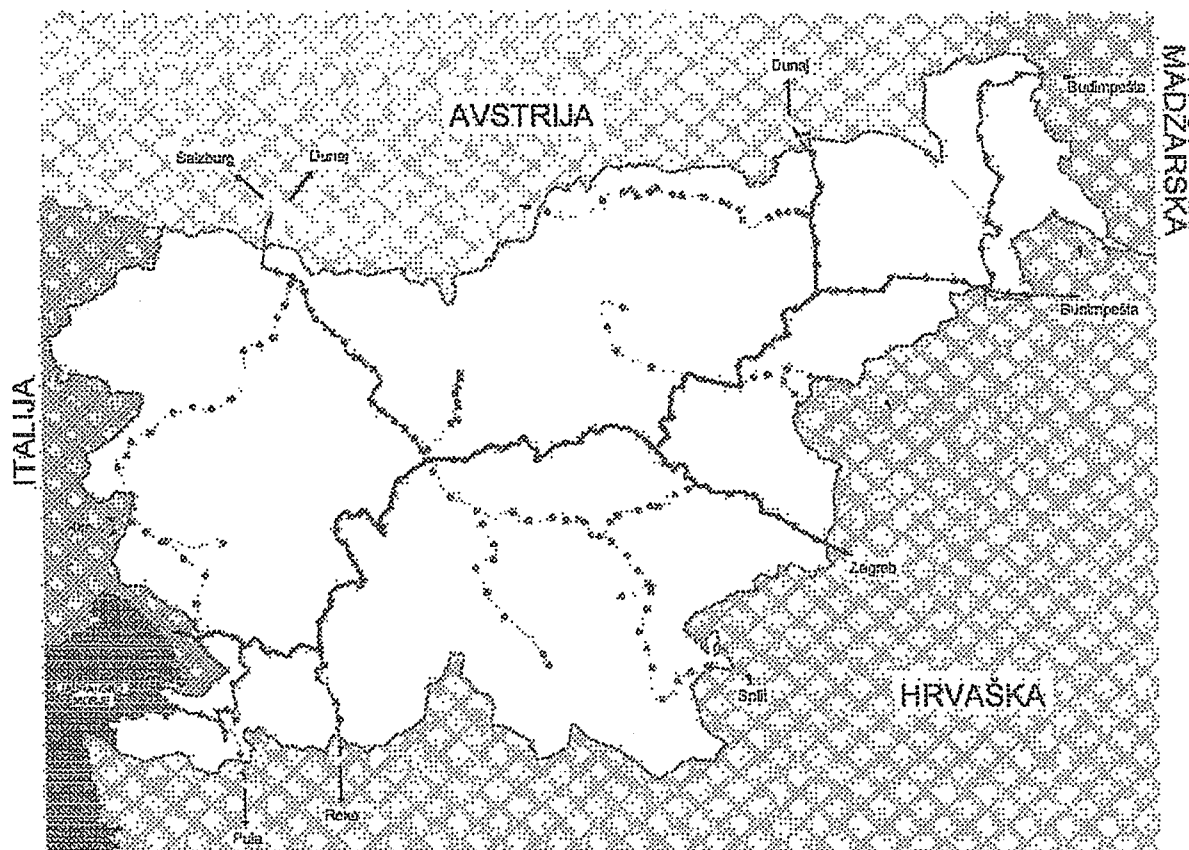
- Direktiva 2001/16/ES Evropskega parlamenta in sveta z dne 19. marca 2001 o interoperabilnosti vseevropskega železniškega sistema za konvencionalne hitrosti;
- Direktiva 2004/49/ES Evropskega parlamenta in Sveta z dne 29. aprila 2004 o varnosti na železnicah Skupnosti ter o spremembi Direktive Sveta 95/18/ES o izdaji licence prevoznikom v železniškem prometu in Direktive 2001/14/ES o dodeljevanju železniških infrastrukturnih zmogljivosti, naložitvi uporabnin za uporabo železniške infrastrukture in podeljevanju varnostnega spričevala;
- Direktiva 2004/50/ES Evropskega parlamenta in Sveta z dne 29. april 2004 o spremembi Direktive Sveta 96/48/ES o interoperabilnosti vseevropskega železniškega sistema za visoke hitrosti in Direktive Evropskega parlamenta in Sveta 2001/16/ES o interoperabilnosti vseevropskega železniškega sistema za konvencionalne hitrosti;
- Odločba Evropskega parlamenta in Sveta št. 884/2004/ES z dne 29. aprila 2004 o spremembi Odločbe št. 1692/96/ES o smernicah Skupnosti za razvoj vseevropskega prometnega omrežja;
- Direktiva 2004/51 Evropskega parlamenta in Sveta z dne 29. aprila 2004 o spremembi Direktive Sveta 91/440 o razvoju železnic Skupnosti;
- Odločba komisije 2006/679/ES z dne 28.03.2006 o tehnični specifikaciji za interoperabilnost v zvezi s podsistemom vodenje-upravljanje in signalizacija vseevropskega železniškega sistema za konvencionalne hitrosti;
- Odločba komisije 2006/860/ES z dne 07. novembra 2006 o tehnični specifikaciji za interoperabilnost v zvezi s podsistemom vodenje-upravljanje in signalizacijo vseevropskega železniškega sistema za visoke hitrosti in spremembo Priloge A k odločbi 2006/679/ES z dne 28. marca 2006 o tehnični specifikaciji za interoperabilnost v zvezi s podsistemom nadzor- vodenje in signalizacija vseevropskega železniškega sistema za konvencionalne hitrosti;
- Odločba komisije št. 2006/920/ES z dne 11. avgusta 2006 o tehnični specifikaciji interoperabilnosti, ki se nanaša na podsistem »Vodenje in upravljanje prometa« vseevropskega železniškega sistema za konvencionalne hitrosti;
- Direktiva komisije št. 2007/32/ES z dne 1. junija 2007 o spremembi priloge VI. k Direktivi Sveta 96/48/ES o interoperabilnosti vseevropskega železniškega sistema za visoke hitrosti in Priloge VI k Direktivi 2001/16/ES Evropskega parlamenta in Sveta o interoperabilnosti vseevropskega železniškega sistema za konvencionalne hitrosti;
- Direktiva 2007/58/ES Evropskega parlamenta in Sveta z dne 23. oktobra 2007 o spremembi Direktive Sveta 91/440/EGS o razvoju železnic Skupnosti in Direktive 2001/14/ES o dodeljevanju železniških infrastrukturnih zmogljivosti in naložitvi uporabnin za uporabo železniške infrastrukture;
- Odločba komisije 2007/153/ES z dne 6. marca 2007 o spremembi Priloge A k Odločbi 2006/679/ES o tehnični specifikaciji za interoperabilnost v zvezi s podsistemom vodenje-upravljanje in signalizacija vseevropskega železniškega sistema za konvencionalne hitrosti in Priloge A k Odločbi komisije 2006/860/ES o tehničnih specifikacijah za interoperabilnost v zvezi s podsistemom vodenje-

upravljanje in signalizacijo vseevropskega železniškega sistema za visoke hitrosti;

- STRATEGY AND IMPLEMENTATION PLAN FOR THE ERTMS MIGRATION Corridor D Valencia to Budapest ([www.ertms-conference.com/conferences2006/docs/e4\\_peetenmans.pdf](http://www.ertms-conference.com/conferences2006/docs/e4_peetenmans.pdf));
- Nacionalni izvedbeni načrt TSI za Podsystem nadzor-vodenje in signalizacija (naprave ob progi in naprave na vozilu) – september 2007;

## 2. CILJI

Cilj Nacionalnega izvedbenega načrta TSI Vodenje in upravljanje prometa je ustvariti pravne, tehnične in operativne pogoje za zagotavljanje varnega in neprekinjenega prometa vlakov ob zahtevani stopnji izkoriščenosti zmogljivosti posameznih prog na celotnem omrežju prog v Republiki Sloveniji, kot je prikazano na sliki.



### Geografski prikaz prog Slovenskih železnic



Glavne proge



Regionalne proge

## 3. MERILA ZA IZVAJANJE

### **3.1. Tehnične zahteve za ERTMS/ETCS**

Za zagotavljanje varnega železniškega prometa morajo biti v skladu s Prilogo III Direktive 2001/16/ES, oziroma tozadevnih TSI izpolnjene vse bistvene zahteve, ki se nanašajo na varnost, zanesljivost in razpoložljivost ter na tehnično združljivost. Tretja in četrta bistvena zahteva iz Priloge III Direktive 2001/16/ES, to je zdravje in varstvo okolja, za TSI, ki se nanaša na vodenje in upravljanje prometa ne veljata.

Večina zahtev iz TSI, ki se nanaša na vodenje in upravljanje prometa se sicer nanaša na procese in postopke, vendar se številne zahteve nanašajo tudi na fizične elemente, vlake in vozila, ki so pomembni za obratovanje.

Iz navedenega sledi, da mora uvajanje podsistema »Vodenje in upravljanje prometa« potekati usklajeno s podanimi smernicami za koridorski pristop, kjer je opredeljeno, da se uvede sistem ERTMS/ETCS nivo 1.

Implementacija radio infill-a mora potekati skladno glede dejanske možnosti izvedbe podatkovnega prenosa informacij. Opredeljen nivo je usklajen z Memorandumom o soglasju glede skupne implementacije ERTMS-ja, ki predvideva skupno koordinacijo aktivnosti na področju vzpostavljanja ERTMS-ja. Memorandum je bil podpisan s strani Evropske Komisije, združenja operaterjev /upravljavcev (CER, UIC in EIM) in združenja železniške industrije (UNIFE), dne 17.3.2005. V memorandumu je opredeljena izdelava skupne študije možnih prioritarnih koridorjev za obdobje 10-12 let.

V primeru ekonomske upravičenosti se lahko uvedejo na ostalih ciljnih progah (brez koridorja D) višji nivoji ERTMS/ETCS (nivo 2 ali nivo 3). Odločitev o možnosti implementacije sistemov višjih nivojev bo sprejeta, ko bodo sprejete končne specifikacije in bodo sistemi stabilni.

Za koridor D je bil sprejet nivo 1 in Radio infill.

### **3.2. Funkcionalne in tehnične specifikacije**

Prevoznik v železniškem prometu mora vsemu svojemu osebju (vlakovnemu ali drugemu), vključenemu v za varnost pomembne naloge, ki vsebujejo neposreden vmesnik z osebjem, opremo ali sistemi upravljalca infrastrukture, priskrbeti pravila, postopke ter posebne informacije o železniškem voznem parku in progah, da ta lahko opravi svoje naloge. Te informacije morajo upoštevati vse potrebne elemente za obratovanje v normalnih, poslabšanih ali izrednih razmerah za proge, na katerih poteka promet in za železniški vozni park, ki se uporablja na teh progah. Za osebje na vlakih morajo biti struktura, oblika, vsebina ter postopek priprave in posodabljanja teh informacij v skladu z določili pododdelka 4.2.1.2 TSI – podsistem vodenje in upravljanje prometa.

Prevoznik v okviru dokumentacije za strojevodje v skladu z določili poglavja 4.2.1.2 TSI – podsistem vodenje in upravljanje prometa, izdela »Priročnik za strojevodjo«, ki ima dva dodatka in sicer priročnik za komunikacijske postopke in zbirko obrazcev. Prevoznik v železniškem prometu izdela Priročnik za strojevodjo v enaki obliki za vso infrastrukturo, po kateri bo strojevodja vozil. Rok za dopolnitev »Priročnika za strojevodjo« in obeh dodatkov je najkasneje 6 mesecev pred začetkom obratovanja ERTMS/ETCS nivo 1 na posamezni progah.

V skladu z določili poglavja 4.2.1.2 TSI – podsistem vodenje in upravljanje prometa prevoznik, najkasneje 6 mesecev pred začetkom obratovanja ERTMS/ETCS nivo 1 na posamezni progi, izdelava za vse magistralne in regionalne proge tudi »Navodila o progi«. Vse potrebne podatke za izdelavo Navodil o progi mora prevozniku zagotoviti upravljavec infrastrukture.

Prevoznik mora strojevodjem posredovati informacije o voznem redu, potrebne za normalen promet vlakov. Informacije o voznem redu morajo vsebovati najmanj podatke navedene v poglavju 4.2.1.2.3. Oblika informacij za strojevodje mora biti enotna za vse proge, po katerih vozi prevoznik v železniškem prometu.

Upravljavec infrastrukture za osebje, ki odobrava vožnje vlakov v svojem delovnem jeziku izdelava z varnostjo povezana »Komunikacijska načela«, ki so podrobno opredeljena v Prilogi C k TSI za podsistem Vodenje in upravljanje prometa in pa »Zbirko obrazcev«.

Za komunikacijo v zvezi z varnostjo med vlakovnim osebjem, drugim osebjem prevoznika v železniškem prometu in osebjem, ki odobri vožnjo vlaka, se uporablja delovni jezik upravljavca infrastrukture na zadevni progi.

Vsa navedena dokumentacija mora biti osebju dostopna v elektronski ali v pisni obliki.

### ***3.3. Funkcionalne in tehnične specifikacije za vmesnike***

Z namenom, da se odpravijo določene tehnično-tehnološke ovire pri izmenjavi in interoperabilnosti vlakov morata upravljavec infrastrukture in prevoznik v železniškem prometu vsak v svoj podsistem vključiti določene vmesnike v skladu s TSI za podsistem Vodenje in upravljanje prometa. Na tej podlagi se predpišejo postopki, ki omogočajo usklajeno delovanje novih in drugačnih strukturnih podsistemov za uporabo v vseevropskem železniškem omrežju in zlasti tisti, ki so neposredno povezani z novim sistemom za vodenje in signalizacijo, za katere velja, da so v enakih razmerah enaki.

Določeni operativni predpisi za Evropski sistem upravljanja železniškega prometa ERTMS/ETCS in operativni predpisi za obratovanje za radijski sistem ERTMS/GSM-R bodo poenoteni in so določeni v Prilogi A1, oziroma A2 k TSI za podsistem Vodenje in upravljanje prometa. Trenutno je Priloga A2 še odprta točka, med tem ko je Priloga A1 še zgolj informativne narave, ker predpisi še niso dokončno oblikovani. Ostali standardizirani operativni predpisi pa so določeni v Prilogi B iste TSI.

### ***3.4. Strokovna usposobljenost***

Osebje prevoznika v železniškem prometu in upravljavca infrastrukture mora biti strokovno usposobljeno za opravljanje vseh potrebnih nalog v zvezi z varnostjo v normalnih, poslabšanih in izrednih razmerah. Taka usposobljenost zajema strokovno znanje in sposobnost uporabe tega znanja v praksi. V skladu z določbo 2 v Prilogi III k direktivi 2004/49/ES in določili poglavja 4.6 TSI za podsistem Vodenje in upravljanje prometa morata prevoznik v železniškem prometu in upravljavec infrastrukture vzpostaviti sistem usposabljanja ter poskrbeti za sistem preverjanja in ohranjanja usposobljenosti svojega osebja.

Po potrebi je treba zagotoviti usposabljanje, s katerim se zagotovi posodabljanje znanja in spretnosti, zlasti v zvezi z slabostmi ali pomanjkljivostmi v delovanju sistema ali posameznika. Strokovno usposabljanje za vse osebe prevoznika in upravljavca infrastrukture mora biti zaključeno najkasneje do začetka obratovanja ERTMS/ETCS nivo 1 na posamezni progi.

### ***3.5. Zdravstveni in varnostni pogoji***

Osebe prevoznika v železniškem prometu in upravljavca infrastrukture, ki izvajata za varnost pomembne naloge, mora izpolnjevati posebne zdravstvene pogoje v skladu z določbami poglavja 4.7 TSI za podsistem Vodenje in upravljanje prometa. Pri tem je potrebno poudariti da veljajo za strojevodje posebne zahteve, ki so opredeljene v pododdelku 4.7.6 TSI za podsistem Vodenje in upravljanje prometa .

Prevoznik v železniškem prometu in upravljavec infrastrukture za zagotavljanje varnega železniškega prometa izvajata s TSI določene redne zdravstvene preglede in dodatna preverjanja duševne in telesne zmožnosti za svoje osebe, katerih izvajanje se opredeli v sklopu nalog notranjega nadzora.

Prevoznik v železniškem prometu in upravljavec infrastrukture izbereta zdravnike medicine dela in organizacije za zdravstvene preglede v skladu z nacionalnimi predpisi države, v kateri ima slednji licenco ali registracijo.

### ***3.6. Registri železniške infrastrukture in železniškega voznega parka***

V skladu s členom 24 Direktive 2001/16/ES in Odločbo komisije 5357 z dne 09.11.2007 »države članice« zagotovijo da so registri železniške infrastrukture in železniškega voznega parka objavljeni ter vsako leto ažurirani. Ti registri navajajo glavne značilnosti vsakega podsistema ali dela podsistema in njihovo soodvisnost z značilnostmi, določenimi v veljavnih TSI. V ta namen vsaka TSI natančno navaja, katere informacije morajo vsebovati registri infrastrukture in voznega parka.

## **4. PODROBNA MERILA**

Načrt izvajanja mora upoštevati različne ravni možnosti izvajanja, vsakič ko:

- prevoznik v železniškem prometu ali upravljavec infrastrukture začne obratovati ali



- se izvede obnova ali dograditev obstoječih operativnih sistemov prevoznika v železniškem prometu ali upravljavca infrastrukture ali
- se predajo v uporabo novi ali dograjeni podsistemi infrastrukture, energije, železniškega voznega parka ali nadzora, vodenja in signalizacije, ki zahtevajo ustrezne operativne postopke.

Kadar nadgradnje obstoječih operativnih sistemov vplivajo na upravljavce infrastrukture in prevoznike v železniškem prometu, je država članica odgovorna za zagotavljanje, da so ti načrti ocenjeni in dani v uporabo sočasno.

V prehodnem obdobju TSI za podsistem Vodenje in upravljanje prometa omogoča postopno zamenjavo sistema razreda B na enoten sistem z oblikovanjem nacionalnih ali mednarodnih, dvostranskih ali večstranskih sporazumov. Države članice morajo v šestih mesecih po začetku veljavnosti te TSI uradno obvestiti Komisijo, ki oceni združljivost teh sporazumov z zakonodajo EU.

Vseh elementov te TSI ni mogoče izvajati v celoti, dokler ni usklajena strojna oprema (infrastruktura, nadzor in vodenje), ki jo je treba upravljati. Smernice iz te TSI je zato treba jemati le kot vmesno stopnjo, ki podpira prehod na ciljni sistem.

## 5. STRATEGIJA RAZVOJA IN NAČRTOVANJA

Za prehod na nove predpise bo veljalo.

- Novi podzakonski nacionalni predpisi, ki so eksplicitno navedeni v ZVZelP (Zakon o varnosti v železniškem prometu) bodo temeljili na skupnih standardih, določenih v posameznih TSI. Rok za izdelavo teh predpisov je podan v členu 119 tega zakona in je julij 2009.
- Upravljavec železniške infrastrukture izdela registre železniške infrastrukture, varnostni organ pa register železniškega voznega parka.
- Upravljavec infrastrukture in prevoznik v železniškem prometu v povezavi s Prilogo G k TSI za podsistem Vodenje in upravljanje prometa, predložita Varnostnemu organu opis vseh predlaganih novih ali spremenjenih operativnih postopkov, za pridobitev varnostnega spričevala, v skladu s pogoji v Direktivi 2004/49/ES. Rok za izdelavo je december 2010.
- Predpisi se uveljavijo v skladu z direktivo, TSI, odločbo komisije ali drugim dokumentom.
- Za osebje upravljavca infrastrukture se posamezni predpisi uveljavljajo sočasno z razvojem opreme na določeni progi – sistemi ERTMS/ETCS in GSM-R, kakor je to opredeljeno z »Nacionalnim izvedbenim načrtom TSI – naprave ob progi«. Okvirni plan implementacije sistema ERTMS/ETCS in GSM-R je podan v tabeli 1.

Pri strategiji prehoda je potrebno posebej opredeliti naslednje:

- Priprava in revizija dokumentacije, ki se nanaša na poglavje 4, TSI za podsistem Vodenje in upravljanje prometa. V prilogi N te TSI so navedene posamezne določbe, katere morata izpolniti upravljavec infrastrukture in prevoznik v železniškem prometu, da lahko začne obratovati.
- Zagotoviti združljivost z vsemi ostalimi podsistemi z ustreznimi vmesniki.
- Upravljavec infrastrukture in prevoznik v železniškem prometu morata zagotoviti ustrezno usposabljanje, da se njuno osebje seznanijo z uvajanjem novih tehnologij in tehnoloških postopkov.
- Zagotoviti dobro komunikacijo z potniki, zlasti v zvezi z okolščinami, ki zadevajo varnost potnikov in pa med upravljavcem infrastrukture ter vlakovnim osebjem. Prav tako se mora zagotoviti učinkovito poročanje o vseh nenavadnih pojavih, ki vplivajo na obratovanje vlakov, stanje voznega parka in varnost potnikov.

Uvedba sistema ETCS zahteva vgradnjo »modula« ETCS v lokomotive, prav tako pa mora proga uporabljati »format ETCS« za pošiljanje informacij vlaku, ki mu med vožnjo omogočajo, da stalno izračunava svojo najvišjo dovoljeno hitrost. Ker sistema ETCS ni mogoče sočasno vgraditi v vse vlake in ker hkrati celotno omrežje ne more v trenutku preiti s starega na novi sistem, je sočasni obstoj starega sistema in sistema ETCS na vlaku in/ali progi neizogiben in je potrebno prehodno obdobje.

## 6. TERMINSKI PLAN IZDELAVE POTREBNE DOKUMENTACIJE IN PREDPISOV

**Tabela 1: okvirni plan implementacije ERTMS/ETCS in GSM-R**

Zap. št.	Proga/odsek	Leto implementacije ERTMS/ETCS	Leto implementacije GSM-R
	<b>Koridor D</b>		
1.	Pilotski odsek Ormož-Hodoš	31.12.2010	30.09.2010
2.	Sežana-Ljubljana	30.06.2011	30.09.2010
3.	Divača - Koper	31.12.2011	30.09.2010
4.	Pragersko-Središče	30.06.2012	30.09.2010
5.	Ljubljana-Pragersko	31.12.2013	30.09.2010
	<b>Ostale glavne proge</b>		
6.	Pragersko-Šentilj-d.m.	31.12.2014	30.09.2011
7.	Ljubljana – Jesenice- d.m.	30.06.2015	31.12.2010
8.	Zidani Most –Dobova-d.m.	31.12.2015	31.03.2011
9.	Pivka-Ilirska Bistrica-d.m.	30.06.2016	31.12.2011
10.	<b>Regionalne proge</b>	31.12.2018	30.06.2013

Najkasneje 6 mesecev pred začetkom obratovanja ERTMS/ETCS nivo 1 na posamezni progi morajo biti izvedene sledeče aktivnosti:

- Prevoznik v železniškem prometu za svoje osebje (vlakovno ali drugo osebje), ki opravlja za varnost pomembne naloge, priskrbi »Pravila in postopke ter posebne informacije o železniškem voznem parku in progi«;
- Prevoznik izdela »Dopolnitev Priročnika za strojevodjo«;
- Prevoznik izdela Dodatek 1 k Priročniku za strojevodjo: »Priročnik za komunikacijske postopke«;
- Prevoznik izdela Dodatek 2 k Priročniku za strojevodjo: »Zbirka obrazcev«;
- Prevoznik izdela »Navodila o progi« za vse magistralne in regionalne proge;
- Upravljaavec infrastrukture za osebje, ki odobrava vožnje vlakov, v svojem delovnem jeziku izdela z varnostjo povezana »Komunikacijska načela«;
- Upravljaavec infrastrukture za osebje, ki odobrava vožnje vlakov izdela v svojem delovnem jeziku »Zbirko obrazcev«;

## 7. FINANČNO VREDNOTENJE

Izvedba tega nacionalnega načrta bo, kljub temu da gre predvsem za usklajevanje nekaterih obstoječih predpisov SZ z evropsko zakonodajo, v splošnem pomenila dodatna finančna sredstva. Direktni stroški bodo nastali z izdelavo, tiskanjem in distribucijo predpisov. Razen tega pa bodo nastali še posredni stroški. Na primer zaradi izvajanja bistvene zahteve, ki se nanaša na strokovno usposobljenost ali bistvene zahteve, ki se nanaša na zdravstvene in druge pogoje za izvršilno osebje, se bodo lahko kot posledica uvajanja evropske zakonodaje pojavili indirektni stroški, ki pa jih v tem trenutku ni moč oceniti.

## 8. POTENCIALNE OVIRE

- Nezadostni zagotovljenih finančni viri (sredstva EU in domači viri), lahko bistveno podaljšajo čas izvede vseh postopkov vključno z izvedbo del in začetkom obratovanja.
- Časovni zamik izvajanja zaradi možnih pritožb potencialnih ponudnikov pri izdelavi dokumentacije in izvajanju del.
- Časovni zamik zaradi nezadostnih kadrovskih virov za pripravo ustreznih podzakonskih aktov. Posledično je lahko tudi časovni zamik pri šolanju uporabnikov sistemov.
- Zaradi specifične izvedbe in visoke tehnološke zahtevnosti pri projektiranju in izvajanju del, obstaja možnost zamika zaradi razpoložljivih kadrovskih in tehničnih resursov izvajalcev.
- Možen časovni zamik zaradi nezmožnosti prevoznikov (finančne), da omenjena sistema implementirajo na vozna sredstva.

# **National Implementation Plan of the TSI**

## **Traffic Operation and Management Subsystem**

**Version 0.3.2**

**Ljubljana, January 2008**

## **INTRODUCTION**

On the basis of Article 23(1) of Directive 2001/16/EC the Traffic Control and Management subsystem shall be subject to a technical specification for interoperability (TSI).

The current version of the TSI does not fully cover all aspects of interoperability. During the transitional period until the full implementation of this TSI, it is necessary to lay down the conditions to be complied with in addition to those referred to in the TSI VP.

The implementation of the TSI and the conformity with the relevant sections of the TSI must be determined in accordance with an implementation plan that shall be drawn up by each Member State for the railway lines for which it is responsible.

Rail traffic currently operates under existing national, bilateral, multinational or international agreements. It is important that those agreements do not hinder the current and future progress towards interoperability.

Pursuant to Article 4 of the Technical Specification of Interoperability relating to the Traffic Operation and Management subsystem Member States shall establish a national implementation plan of the TSI in accordance with the criteria specified in Chapter 7 of the stated TSI.

Technical specifications of interoperability which refer to the Traffic Operation and Management subsystem (Commission Decision No 2006/920/EC of 11 August 2006), as stated in Annex II to Directive 2001/16/EC, contain procedures and related equipment enabling a coherent operation of the different structural subsystems, both during normal and degraded operation, including in particular train driving, traffic planning and management.

The TSI relating to the Traffic Operation and Management subsystem also covers professional qualifications which may be required for carrying out cross-border services in railway traffic.

The draft national implementation plan has been established on the basis of Commission Decision 2006/920/REC of 11 August 2006 concerning the technical specification of interoperability relating to the subsystem "Traffic Operation and Management" of the trans-European conventional rail system (notified under document number C 2006 3593). It defines the strategy for implementing the provisions of this TSI which applies to the railway infrastructure manager regarding the establishment of the trans-European conventional rail system and to the railway undertaking regarding the operation of trains in this system.

Interoperability means the ability of the trans-European conventional rail system to allow the safe and uninterrupted movement of trains that accomplish the required levels of performance for these lines.

This ability rests on all the regulatory, technical and operational conditions which must be met in order to satisfy the essential requirements described in Annex III to Directive 2001/16/EC.

## 1. BASES

In the document the following legal and technical bases have been taken into consideration:

- Directive 2001/16/EC of the European Parliament and of the Council of 19 March 2001 on the interoperability of the trans-European conventional rail system;
- Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification;
- Directive 2004/50/EC of the European Parliament and of the Council of 29 April 2004 amending Council Directive 96/48/EC on the interoperability of the trans-European high-speed rail system and Directive 2001/16/EC of the European Parliament and of the Council on the interoperability of the trans-European conventional rail system;
- Decision No 884/2004/EC of the European Parliament and of the Council of 29 April 2004 amending Decision No 1692/69/EC on Community guidelines for the development of the trans-European transport network;
- Directive 2004/51/EC of the European Parliament and of the Council of 29 April 2004 amending Council Directive 91/440/EEC on the development of the Community's railways;
- Commission Decision 2006/679/ES of 28 March 2006 concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European conventional rail system;
- Commission Decision 2006/860/EC of 7 November 2006 concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European high speed rail system and modifying Annex A to Decision 2006/679/EC concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European conventional rail system;
- Commission Decision No 2006/920/EC of 11 August 2006 concerning the technical specification of interoperability relating to the subsystem "Traffic Operation and Management" of the trans-European conventional rail system;
- Commission Directive 2007/32/EC of 1 June 2007 amending Annex VI to Council Directive 96/48/EC on the interoperability of the trans-European high-speed rail system and Annex VI to Directive 2001/16/EC of the European Parliament and of the Council on the interoperability of the trans-European conventional rail system;
- Directive 2007/58/EC of the European Parliament and of the Council of 23 October 2007 amending Council Directive 91/440/EC on the development of

the Community's railways and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure;

- Commission Decision 2007/153/EC of 6 March 2007 modifying Annex A to Decision 2006/679/EC concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European conventional rail system and Annex A to Decision 2006/860/EC concerning the technical specification for interoperability relating to the control-command and signalling subsystem of the trans-European high speed rail system;
- STRATEGY AND IMPLEMENTATION PLAN FOR THE ERTMS MIGRATION Corridor D Valencia to Budapest ([www.ertms-conference.com/conferences/2006/docs/e4\\_peetenmans.pdf](http://www.ertms-conference.com/conferences/2006/docs/e4_peetenmans.pdf));
- National Implementation Plan of the TSI relating to the control-command and signalling subsystem (lineside and vehicle installations) – September 2007;





### ***3.1. Technical requirements for ERTMS/ETCS***

For the provision of safety in railway transport all essential requirements related to safety, reliability, availability and technical compatibility must be complied with according to Annex III of Directive 2001/16/EC and the relevant technical specifications for interoperability. The third and fourth essential requirements of Annex III to Directive 2001/16/EC for TSI, i.e. health and environmental protection, shall not apply to TSI relating to traffic operation and management.

Most requirements from TSI relating to traffic operation and management refer to processes and procedures, however, many requirements also refer to physical elements, trains and vehicles that are important for the operation.

For this reason, the introduction of the subsystem "Traffic Operation and Management" must be coordinated with the guidelines given for a corridor approach where it is defined that ERTMS/ETCS level 1 system shall be introduced.

Radio infill must be implemented according to the actual possibilities of the data transmission procedure. The defined level complies with the Memorandum of Understanding on the joint implementation of ERTMS providing joint coordination of activities for ERTMS deployment. The Memorandum of Understanding was signed on 17 March 2005 by the European Commission, the European rail sector associations (the CER, UIC and EIM) and the Association of Railway Supply Industries (UNIFE). It specifies the elaboration of a joint study of the possible priority corridors within a 10 to 12 year timeframe.

In case of economic viability higher levels of ERTMS/ETCS (level 2 and 3) may be introduced on other target lines (excluding corridor D). The decision on the possibility of introducing higher level systems will be adopted after the adoption of the final specification and the provision of stable systems.

For Corridor D level 1 and radio infill have been adopted.

### ***3.2. Functional and technical specifications***

The railway undertaking must supply its staff (on-board or other staff) performing safety-critical tasks involving a direct interface between the railway undertaking and the staff, equipment or systems of the infrastructure manager, with rules, procedures and specific information on the rolling stock and the routes to enable them to carry out their duties. The information must take into account the necessary elements for operation in normal, degraded and emergency situations for the routes to be worked over and the rolling stock used on those routes. The structure, form, substance and the procedure for the preparation and updating of information for on-board staff must comply with the provisions of subsection 4.2.1.2 TSI – Traffic Operation and Management subsystem.

As part of the documentation for drivers the railway undertaking shall compile a »Driver's Rule Book« with two appendices (Manual of Communications Procedures and Book of Forms) in accordance with Chapter 4.2.1.2 of the TSI – Traffic Operation and Management subsystem. The railway undertaking must present the Driver's Rule Book in the same format for the entire infrastructure over which the driver will work. The "Driver's Rule Book" and both appendices shall be amended no later than 6 months before the ERTMS/ETCS level 1 is put into operation on individual routes.

In accordance with the provisions of Chapter 4.2.1.2 of the TSI – Traffic Operation and Management subsystem, the railway undertaking shall no later than 6 months prior to putting in operation ERTMS/ETCS level 1 also prepare a Description of the line covering all main and regional lines. The infrastructure manager must supply the railway undertaking with the required information for the preparation of the Description of the line.

The railway undertaking must provide drivers with the information necessary for the normal running of the train. As a minimum the information on the timetable must include those stated in Chapter 4.2.1.2.3. The presentation of information for drivers must be consistent across all lines over which the railway undertaking operates.

The infrastructure manager shall supply the staff authorising train movements with safety-related "Communication Principles" defined in detail in Annex C to the TSI relating to subsystem "Traffic Operation and Management" and a "Book of Forms".

The language used for safety-related communication between the train crew, other railway undertaking staff and the staff authorising train movements shall be the "operating" language used by the infrastructure manager on the route concerned.

The documentation shall be accessible to the staff either in electronic or written form.

### ***3.3. Functional and technical specifications for interfaces***

With the purpose of eliminating certain technical and technological obstacles in the exchange and interoperability of trains, both the infrastructure manager and the railway undertaking must integrate in their system certain interfaces in accordance with the TSI for the »Traffic Operation and Management« subsystem. On this basis procedures shall be prescribed to enable coherent operation of new and different structural subsystems intended to be used in the trans-European railway network, in particular those that are linked directly to the operation of a new train control and signalling system, and they must be identical where identical situations exist.

Certain operating rules for the European Rail Traffic Management System (ERTMS/ETCS) and operating rules for the ERTMS/GSM-R radio system will be harmonised. They are specified in Annex A1 and Annex A2 to the TSI relating to the Traffic Operation and Management subsystem. At present, Annex 2 is still an open subject, whereas Annex A1 is only informative because the rules are not yet finalised. Other standardised operating rules are specified in Annex B to that TSI.

### ***3.4. Professional qualifications***

Staff of the railway undertaking and the infrastructure manager must have attained appropriate professional competency to undertake all necessary safety-related duties in normal, degraded and emergency situations. Such competency comprises professional knowledge and the ability to put this knowledge into practice. In conformity with Annex III clause 2 of Directive 2004/49/EC, and the provisions of Chapter 4.6 of the TSI relating to the subsystem "Traffic Operation and Management" railway undertakings and infrastructure managers are required to establish a training system

and a competence management system to ensure that the individual competency of their staff involved is assessed and maintained.

Additionally, training must be provided, as necessary, to ensure that knowledge and skills are kept current, especially in relation to weaknesses or deficiencies in system or individual performance. Every member of the railway undertaking's and the infrastructure manager's staff must complete his/her professional training no later than by the time ERTMS/ETCS level 1 is put into service on the individual route.

### ***3.5. Health and Safety Conditions***

Staff of the railway undertaking and of the infrastructure manager performing safety critical tasks must meet specific health requirements in accordance with the provisions of Chapter 4.7 of the TSI relating to subsystem "Traffic Operation and Management". It is to be pointed out that drivers are subject to special requirements which are specified in Subsection 4.7.6 of the TSI relating to the subsystem "Traffic Operation and Management".

For the provision of safety in railway transport, the railway undertaking and the infrastructure manager shall conduct regular medical examinations and additional assessments of psychological and physical fitness of their staff as laid down in the TSI. Their performance shall be defined within the set of duties related to internal supervision.

Railway undertakings and infrastructure managers shall select occupational doctors and organisations involved in medical examinations in accordance with the national rules and practices of the country in which the railway undertaking or infrastructure manager is licensed or registered.

### ***3.6. Railway Infrastructure and Rolling Stock Registers***

In accordance with Article 24 of Directive 2001/16/EC and the Commission Decision No. 5357 of 9 November 2007 "the Member States" shall ensure that registers of infrastructure and of rolling stock are published and updated annually. Those registers shall indicate the main features of each subsystem or part subsystem involved and their correlation with the features laid down by the applicable TSIs. To that end, each TSI shall indicate precisely which information must be included in the registers of infrastructure and of rolling stock.

#### **4. DETAILED CRITERIA**

The Implementation Plan must take into account the various levels of potential implementation from whenever:

- a railway undertaking or infrastructure manager commences operations, or
- a renewal or upgrade to the existing operational systems of a railway undertaking or infrastructure manager is introduced, or
- new or upgraded infrastructure, energy, rolling stock or command control & signalling subsystems, requiring a corresponding set of operating procedures, are put into service.

Where upgrades to existing operational systems affect both infrastructure managers and railway undertakings, the Member State is responsible for ensuring that such projects are assessed and placed into service coincidentally.

During the transitional period, the TSI relating to Traffic Operation and Management enables gradual transition from Class B system to a uniform system through the development of national or international, bilateral or multilateral agreements. Member States shall notify the Commission thereof within 6 months after the entry into force of this TSI. The Commission shall assess the compatibility of these agreements with EU legislation.

The full implementation of all elements of this TSI cannot be complete until the hardware (infrastructure, control and command, etc.) that is to be operated has been harmonised. The guidelines set out in this TSI must therefore only be seen as an interim phase supporting migration to the target system.

## 5. DEVELOPMENT AND PLANNING STRATEGY

For the transition to new legislation the following shall apply:

- New national implementing regulations which are explicitly stated in the Railway Transport Safety Act (ZVZelP) will be based on common standards laid down in the single TSIs. The regulations shall be drawn up by July 2009 as stated in Article 119 of the ZVZelP.
- The railway infrastructure manager shall establish a Railway Infrastructure Register while the safety authority shall establish a Rolling Stock Register.
- In conjunction with Annex G to the TSI regarding the Traffic Operation and Management subsystem the railway infrastructure manager and the railway undertaking shall submit to the safety authority a description of any proposed new or amended operational processes in order to obtain a safety certificate in conformity with Directive 2004/49/EC. . The description should be prepared by December 2010.
- The regulations shall be put into force in accordance with the Directive, the TSI, the Commission decision or other document.
- . For the railway infrastructure manager's staff the single regulations shall enter into force coincidentally with the development of installations on certain lines – ERTMS/ETCS and GSM-R systems, as defined by the »National Implementation Plan TSI – lineside installations«. The framework plan of the ERTMS/ETCS and GSM-R system implementation is shown in table 1.

In the transition strategy the following should be defined:

- Production and revision of documentation that refers to Chapter 4, TSI relating to the subsystem Traffic Control and Management. Annex N of the TSI contains individual provisions to be complied with by the railway infrastructure manager and the railway undertaking to enable the subsystem to be put into service.
- Provision of compatibility with any other subsystem through appropriate interfaces.
- The railway infrastructure manager and the railway undertaking must provide appropriate training to their staff to acquaint them with the introduction of new technologies and technological processes.
- Provision of good communication with passengers, in particular with regard to circumstances which refer to the safety of passengers, and the communication between the railway infrastructure manager and the train crew. Efficient reporting on any unusual occurrences concerning the operation of the train, the conditions of the rolling stock and the safety of passengers.

The introduction of the ETCS system requires the installation of a ETCS »module« into locomotives. Additionally, »format« ETCS must be used on the line to send information to the train which enables constant calculation of the train's maximum permissible speed during the journey. As the ETCS system cannot be installed in all trains at the same time and the entire network cannot instantly change from the old to the new system, the coexistence of the old system and the ETCS system in the train/on the line is unavoidable and calls for a transitional period.

## 6. TIME SCHEDULE FOR THE PREPARATION OF THE REQUIRED DOCUMENTATION AND REGULATIONS

**Table 1: Outline plan for ERTMS/ETCS and GSM-R implementation**

Sequence No.	Line / Section	Year of implementation of ERTMS/ETCS	Year of implementation of GSM-R
	<b>Corridor D</b>		
1.	Pilot section Ormož – Hodoš	31 December 2010	30 September 2010
2.	Sežana-Ljubljana	30 June 2011	30 September 2010
3.	Divača - Koper	31 December 2011	30 September 2010
4.	Pragersko-Središče	30 June 2012	30 September 2010
5.	Ljubljana-Pragersko	31 December 2013	30 September 2010
	<b>Other main lines</b>		
6.	Pragersko-Šentilj-national border	31 December 2014	30 September 2011
7.	Ljubljana – Jesenice – national border	30 June 2015	31 December 2010
8.	Zidani Most –Dobova-national border	31 December 2015	31 March 2011
9.	Pivka-Ilirska Bistrica-national border	30 June 2016	31 December 2011
10.	<b>Regional lines</b>	31 December 2018	30 June 2013

No later than six months prior to putting ERTMS/ETCS level 1 into service on individual routes, the following activities must be completed:

- The railway undertaking shall provide all members of his staff (whether on train or otherwise) who undertake safety-critical tasks with the “rules, procedures, rolling stock and route specific information”
- The railway undertaking shall update the “Driver’s Rule Book;
- The railway undertaking shall produce Appendix 1 to the “Driver’s Rule Book: “Manual of Communications Procedures”;

- The railway undertaking shall produce Appendix 2 to the "Driver's Rule Book: "Book of Forms";
- The railway undertaking shall prepare a "Description of the line" for all main and regional lines;
- The infrastructure manager shall prepare safety-related "Communication Principles" in his operating language for the staff authorising train movements;
- The infrastructure manager shall prepare a "Book of Forms" in his operating language for the staff authorising train movements;

## **7. FINANCIAL ASSESSMENT**

Despite the fact that the purpose of the National Plan is in particular to harmonise some of the existing regulations of the Slovenian Railways (SŽ) with the EU legislation, in general, additional financial resources will still be required. Direct costs will be incurred by the implementation, printing and distribution of the rules. However, indirect costs will be incurred too. The implementation of the essential requirement referring to the professional qualification or the essential requirement referring to health and other conditions for the executive staff may, for example, as a consequence of introducing European legislation, result in the incurrence of indirect costs, however, at present these costs cannot be assessed.

## **8. POTENTIAL OBSTACLES**

- Insufficient financial resources (EU funds and domestic funds) may significantly prolong the period of implementation of all procedures, including the implementation of work and the putting into service.
- The implementation time delay resulting from complaints of potential contractors in the production of documentation and implementation of work.
- Time delay owing to insufficient human resources needed for the preparation of the relevant implementing regulations. This may also result in the time delay referring to the training of system users.
- Specific implementation conditions and the high level of technological complexity in the design and implementation of work may cause time delay because of insufficient human and technical resources of the contractors.
- Possible time delay resulting from the (financial) unfitness of the railway undertaking to implement the stated systems with regard to the rolling stock.