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1 Scope of this Sub guideline

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As indicated in article 1 point 4 of regulation (EU) 2019/554, "one or several RUs in cooperation with one or several IMs ("the applicants") may carry out pilot projects to test alternative means of ensuring the effective communication required by paragraph 1".

The purpose of this document is to provide guidelines to facilitate RUs and IMs in the implementation of the communication issues and testing phase.

Abbreviation / Acronyms	Description
EC	European Commission
GDPR	General Data Policy Regulation
IM	Infrastructure Manager
LP	Language Programme; the dedicated RNE work structure
LT	Prototype of a Language Tool
NSA	National Safety Agency
PDM	Predefined message
RFF	Rail Freight Forward
RNE	RailNetEurope
RU	Railway Undertaking
SMS	Safety-Management System
sWG	sub-Working group
TSI OPE	Technical specification for Interoperability – Operation and traffic
	management subsystem
T4R	Translate4Rail
UIC	International Union of Railways
WO	Written orders
Xborder	UIC project and work structure dedicated to the issue of improving
	cross border operation

2 Abbreviations and acronyms







3 Content of this guideline

This sub guideline contains information about testing a Language tool prototype from its designing phase until the official field pilot testing according EU directive 2019/554.

4 Reference documents

DOCUMENT REFERENCE	OFFICIAL JOURNAL
Directive 2004/49/EC of the European	OJ L 164, 30.4.2004, p. 44–113
Parliament and of the Council 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 (Railway	
Safety Directive)	
Directive 2007/59/EC of the European	OJ L 315, 3.12.2007, pp. 51-78.
Parliament and of the Council of 23 October	
2007 on the certification of train drivers	
operating locomotives and trains on the railway	
system in the Community	
Commission Directive 2014/82/EU of 24 June	OJ L 184, 25.6.2014, pp. 11-15.
2014 amending Directive 2007/59/EC of the	
European Parliament and of the Council as	
regards general professional knowledge and	
medical and licence requirements	
Commission Implementing Regulation (EU) No	OJ L 121, 3.5.2013, p. 8–25
402/2013 of 30 April 2013 on the common	
safety method for risk evaluation and	
assessment and repealing Regulation (EC) No	
352/2009	
Commission Regulation (EU) 2015/995 of 8 June	OJ L 165, 30.6.2015, p. 1–69
2015 amending Decision 2012/757/EU	
concerning the technical specification for	
interoperability relating to the 'operation and	
traffic management' subsystem of the rail	
system in the European Union	
Commission Regulation (EU) 2016/796 OF THE	OJ L 138, 26.5.2016, p. 1–43
EUROPEAN PARLIAMENT AND OF THE COUNCIL	
of 11 May 2016 on the European Union Agency	
for Railways and repealing Regulation (EC) No	







DOCUMENT REFERENCE	OFFICIAL JOURNAL
881/2004	
Directive (EU) 2016/797 of the European	OJ L 138, 26.5.2016, p. 44–101
Parliament and of the Council of 11 May 2016	
on the interoperability of the rail system within	
the European Union	
Directive (EU) 2016/798 of the European	OJ L 138, 26.5.2016, p. 102–149
Parliament and of the Council of 11 May 2016	
on railway safety	
Commission Implementing Regulation (EU)	OJ L 129, 25.5.2018, p. 49–67
2018/763 of 9 April 2018 establishing practical	
arrangements for issuing single safety	
certificates to railway undertakings pursuant to	
Directive (EU) 2016/798 of the European	
Parliament and of the Council, and repealing	
Commission Regulation (EC) No 653/2007	
Commission Implementing Regulation (EU)	OJ L 139I , 27.5.2019, p. 5–88
2019/773 of 16 May 2019 on the technical	
specification for interoperability relating to the	
operation and traffic management subsystem of	
the rail system within the European Union and	
repealing Decision	



5 General communication rules

It is important to note that TSI OPE 2019/773 Appendix C does not come into effect until June 2024 and therefore TSI OPE 2015/995 is the legislation in force for the time being. However, the main changes between the two are the new requirements on European Instructions which are to eventually replace written orders with European Instructions and National Instructions. In order to be future proof this guidance is based on TSI OPE 2019/773.

For ensuring safety-related communication is well understood, the following rules must be applied the International Phonetic Alphabet shall be used (acc. TSI OPE 2019/773):

A Alpha	G Golf	L Lima	Q Quebec	V Victor
B Bravo	H Hotel	M Mike	R Romeo	W Whisky
C Charlie	I India	N November	S Sierra	X X-ray
D Delta	J Juliet	O Oscar	T Tango	Y Yankee
E Echo	K Kilo	Р Рара	U Uniform	Z Zulu
F Foxtrot				

Figure 1: International Phonetic Alphabet

The numbers shall be spoken:

- digit by a digit (acc. TSI OPE 2019/773);
- or in block numbers;
- three and multi-digit numbers should be divided into one and two-digit numbers according to the following examples: 782 = seven eighty-two; 5543 = fifty-five forty-three; 19471 = nineteen, four, seventy-one. To facilitate communication between partners and to avoid misunderstandings, numbers shall also be spoken as single digits.

5.1 Communication content

This point indicates the standard terminology to be used in English. Each different project can, on the basis of this guide, adapt the messages to the required languages.

Situation	Terminology
Speech transmission procedure	Term transferring the opportunity to speak to the opposite party: "over"
	Term confirming that the sent message has been

The Standard terminology to be used in the communication procedure is:







	received "received".
	Term used to have the message repeated in the event of poor reception or misunderstanding "Say again"
Message receiving procedure	Term used to ascertain whether a read-back message exactly matches the sent message: "correct"
	Term used to indicate that a read-back message does not match the sent message "Error I say again"
Communications breaking procedure	Term used to keep the other party waiting when there is a temporary break in the communication and the connection is not broken "Wait"
	Term used to tell the other party that the communication might be broken but should be resumed later on "I call again"
	Term used to indicate that the message has ended "out"

In English alternatives for communication procedures are offered, this might not be applicable in other languages.

5.2 Communication of an operational instruction

There is currently a different level regarding the implementation of TSI OPE 2019/773 operational instructions next to written orders in different countries. However, the national requirements and special features must be known, fulfilled, and also integrated into the Safety-Management System (SMS) and the corresponding risk analysis carried out. This must be clarified individually for each pilot, both on the part of the RU and IM.

The Predefined Messages approach provides a framework for written orders. However, written orders have to be and are implemented in the LT for safety relevant communication.

Standard terminology to be used in the communication procedure is:

Situation	Terminology
Cancelling an operational instruction	'Cancel procedure'







If the message is then subsequently to be resumed, the procedure shall be repeated from the start	'Error during transmission'
When a transmission error is discovered by the sender, the sender shall request cancellation	'Error (+ prepare new form)' Or 'Error (+ I say again)'
Error during read back	'Error (+ I say again)'
Misunderstanding: if one of the parties does not fully understand a message, the message shall be repeated	'Say again (+ speak slowly)'

5.3 Others such as national differences

National differences in communication principles have been detected and analysed based on a survey between experts from Germany, Austria, France, Slovenia, Italy, Slovakia and Belgium the current situation in each country.

	TSI OPE 2019/773	Germany	Austria	Austria France /Slovenia/ Italy/ Slovakia	
train	The	No special	Train numbers are	Train numbers are	Train numbers
number	numbers	requirements	spoken in numerical	spoken in numerical	are spoken as
	shall be	usually 1 - 5	blocks. For better	blocks. For better	single digits,
	spoken digit	digits, usually	understanding,	understanding,	between IMs of
	by digit	spoken in	three and multi-digit	three and multi-digit	different
		numerical blocs	numbers should be	numbers should be	countries or
		of two or three	divided into one- and	divided into one- and	between IM and
	Note: From	numbers	two-digit numbers	two-digit numbers	RU in safety
	1 st July 2020		according to the	according to the	communication
	applied in	at cross border	following examples:	following examples:	(= national rules)
	Switzerland.	sections every	782 = seven - eighty-	782 = seven - eighty-	
		single digit	two; 5543 = fifty-five	two; 5543 = fifty-five	
		should be spoken	- forty-three; 19471	- forty-three; 19471	
		separately	= nineteen, four,	= nineteen, four,	
			seventy-one. To	seventy-one. To	
			facilitate	facilitate	
			communication	communication	
			between partners	between partners	
			and to avoid	and to avoid	
			misunderstandings,	misunderstandings,	
			numbers shall also	numbers shall also	
			be spoken as single	be spoken as single	
			digits.	digits.	

This problem can be analyzed by consulting the Sub-Guideline "Risk Analysis".







6 T4R LT tablet's technical specification

The specification proposed by the working group is identified below based on the WP1 Tool outputs.

The specifications for the T4R LT regarding tablet are:

- Device type: Android Tablet;
- Android: Android Pie 9.0+;
- API: 28+.

The application can be downloaded and installed on any Android device with Android 9+, but the ergonomics of the application can be impacted depending on the devices and their screen sizes. For the T4R LT prototype a device with a screen size of approx. 10 inches is recommended.

The procedure of the T4R LT application installation is stated in the T4R Technical Installation Document, which is available for every member testing the T4R LT based on the agreed methodology in the pilot set up according to the T4R Pilot guideline.







7 Language Tool

A Language tool will then be implemented to enable the driver and the traffic controller to understand each other even though each of them speaks in his/her native language, according to EU directive 2019/554.

The T4R Language Tool (LT) is organised in three phases:

- Speech to Text phase (text correction / validation; variables extraction);
- Translation phase;
- Text to Speech phase (phonetic correction; translation selection; variables restoration).

The LT can offer to the user translation between two distinct languages (both ways).

LT is being initiated manually by pressing the "record" button on the tablet. The PDMs can be chosen also from the list (menu) by typing or speaking the message.

LT can work with the set of PDMs and is trained to work with free speech, as well.

LT can recognize:

- the PDM in any range of words and sentences and can combine PDMs with variables (figures, letters and its variations) and constants (any fix names related to the railway line section);
- common communication extended with railway jargon (PDMs, railway words).

Currently, the LT offers the user several choices of voice outputs, different in accent, pronunciation, and volume. The output neutral voice is clear and fluent in the addressed language.

LT is provided as an application, currently installed on tablets provided by the developer to the T4R consortium for the pilot testing purposes (HW with standard audio connectivity and touchscreen display, use the operating system of Android).

LT is designed to work offline. For the tablet, an internet connection is possible (e.g. once a day for updates and download of all communication in the form of recognized and translated text)

With the LT the user will get all necessary information needed for LT approval, operation, and maintenance.

To fulfill the requirement of the Directive 2007/59/EC, the language tool should meet the B1 language skill in the Common European Framework. The evaluation of the language skill of a device cannot be examined in a direct way as the criteria for the language skills for a human are not applicable for a device.

The important capability that needs to be reached by the Language Tool is that the combination of the knowledge of a driver who has the language skills less than B1 level with the help of the Language Tool in overall is able to achieve the skills needed from a B1 language speaking driver.







According to the official self-assessment framework of the Common European Framework (CEF), the criteria that should be met for understanding, speaking and writing to have B1 level language skills are shown in the following table. In front of each CEF criteria, the capability of the T4R Language Tool are defined. As the combination of the Language Tool and the driver would be essential for this evaluation, more analysis will be done after the field test to address this subject.

	B1 Level criteria	During T4R is meeting the criteria
Speaking	"Can deal with most situations likely to arise while travelling in an area where the language is	The main capabilities of the tool in the design that help the driver to deal with most situations likely to arise:
	spoken."	 An extensive list of scenarios that are likely to be encountered covering a broad range of real operational situations with PDMs: normal operation, and also in degraded and emergency situations were defined and tested in the laboratory phase. A few examples:
		 Traction problems of a train;
		 Damaged switch;
		 Train driver reports persons near to track;
		 Whole train composition shunting movement;
		 Search for the train by the train driver;
		 Disturbance at a level crossing;
		 Emergency stop;
		 Train driver reports a default on a train (load displaced) passing in the other direction;
		 Signaller asks an approaching train if it stops or is just passing in the station;
		 Brake problem;
		 Occupied track in the station.







		The combination of the tool and the driver:
		 More analysis will be done in the deliverable 3.1 based on the results of the field test.
	"Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans."	 The relevant criteria for a LT would be description of an event and briefly give reasons and explanation for opinions and plans [the dreams, hopes and ambitions are not addressed]. the T4R projct addresses these criteria by the capabilities of the tool in the design that help describing an event: In the framework of PDMs, drivers will be able to communicate regarding their needs, reporting the events; By the variables defined in the structure of the PDMs they can provide clear reasons for each event and demand. The combination of the tool and the driver: More analysis will be done in the deliverable 3.1 based on the results of
		the field test.
Understanding	"Can understand the main points of clear standard input on familiar matters regularly encountered in work, school, leisure, etc."	The relevant criteria for a LT would be understanding of the main points of clear standards inputs on familiar matters regularly encountered in work. The T4R project addresses these criteria by the capabilities of the tool in the design that help the driver/signaller to understand the main points:
		and signallers are defined in the form of PDMs.







		 The translation of the PDMs were checked and verified by the bilingual experts.
		 Based on the laboratory tests, the output of the Language Tool is clear and understandable. No loss in the communication from signaller to the driver thanks to the visual validation process by the signaller. The combination of the tool and the driver: More analysis will be done in the Deliverable 3.1 based on the results of the field test.
Writing	"Can produce simple connected text on topics which are familiar or of personal interest."	Not applicable in the current context.



Translate4Rail

8 Preparation of testing a translation Tool

The alternative mean of communication in the T4R project is based on a Language Tool (LT) uploaded on a personal tablet offering an instant translation of the driver/signaller speech, and a transfer to the receiver via a GSM-R device in the language of the receiver. This LT being stored on a personal Tablet complies fully with the GDPR constraints.

	Labor	atory	No derogation from level	Field
T4R Scope	Sandbox phase / Office testing while development	Simulator	B1 to be requested (but still a pilot in line with the regulation 2019/554)	T4R Pilot (B1)

8.1 First stage of preparation for this pilot project

The preparation starts by defining the precise location of the cross border section along which the pilot will be carried out by naming precisely its starting and ending operational points.

The description of this cross border section of the infrastructure must be made available in full details for the drivers and all the staff involved in the preparation of the pilot project in both countries.

Experts of IMs and RUs on both sides of the border will analyze all the operational situations a train may encounter when crossing such a section and all the necessary communications between the driver and the signallers on both sides of the border that may take place when a train runs through that section.

All these communications are to be codified in a series of PDMs of different categories: emergency/critical short messages extremely urgent with a high impact on safety, normal operational messages impacting safety, free speech messages.

These messages are translated in all necessary languages creating a dictionary for controlled translation with a clear correspondence between the blank spot of the translated messages to be filled by the driver.

These standard PDMs include some blanks for variables to be filled by the driver characterizing the specific operation: train number, etc. and validated by the driver.

8.2 Second stage of the preparation

This phase of the preparation starts by the definition of the reference operation in line with the applicable regulations: a B1 driver runs a train in this cross border section safely.

The driver will encounter all possible operational situations and will react according to the SMS of his RU while the signaller will give orders complying with the safety rules of his IM.







This reference system will be used to assess the impact of the alternative means of communication proposed in T4R project.

A detailed description of the alternative mean of communication is presented here under: an operational need occurs, the driver speaks to the tablet with PDMs or key words enabling the tablet to propose a small choice of PDMs on its screen, the driver selects the adequate PDM if not already done - fills in the blank spots (e.g. variables), the driver validates the message, the tablet translates the PDM in signaller language, the message is pronounced by a neutral voice and transferred by voice to the GSM-R radio of the train, the GSM-R sends the message in signaller language to the signaller radio. The signaller acts in the same way to speak to the driver having a similar LT with his personalized voice recognition and the standard PDMs to answer the driver's requests.

Following the description of the process a list of requirements has been elaborated which the system must fulfil which can be found at Risk Analysis Pilot T4R Guidelines.

8.3 Third stage of the preparation

Third stage of the preparation is the risk mapping described in the Sub-Guideline "Risk Analysis". A certain number of equipments (the language tool, the tablet, the GSM-R) and a certain number of actions to be performed by the driver or the signaller are included in the nominal process. At this stage having expressed the functional and operational requirements we must analyse the various hazards that may happen leading to degraded mode of functioning needing mitigation measures to keep the train in a safe situation. These measures may imply more equipment or specific actions from the driver or the signaller.

This topic can be managed with the support of the Sub-Guideline "Risk Analysis".

8.4 Fourth stage of the preparation

In this phase we have three steps leading to the demonstrator use on a train running on the cross border section track driven by a B1 driver acting only with the alternate means of communication.







9 Testing the Language Tool

9.1 Laboratory Phase: Sand phase

The testing starts in free and easy office tests, increases complexity by including more circumstances and finally reaches the range of real railway operations. This ensures to develop a translation software which targets to become a reliable and helpful tool for operational railway staff.

The laboratory phase has no direct contact to "real" railway operations. Laboratory phase is characterized by office conditions and easy testing setups.

9.1.1 Sand phase/Office testing while development

The objective is proving the PDMs effectively complement the language skills for the pilot.

Frequent tests during the software's development ensure purpose of the software and its characteristics fit together well.

Responsible for this step are the pilot managers and the software purchaser.

LAB PHASE Timeline		Personal demands							Environmental conditions					
*all phases are obligatory **in case a RU is testing two input languages all phases at least need to be done in one language, whereas between room 2 - 6 RUs can choose to perform one phase in a different language if they wish.	Scope of the phase	РМ	Assistant	Tester less B1	Tester with B1	Tester is driver or signaler	Tester is future field driver or signaler	Person with at least B2	Simulator operator/in structor	Space	Video with train run/standstill	Noise generation (video/audio)	Real simulator (cab/signall er PC)	Connection driver- signaler
Sand phase	Test the basic functionality of the tool (PDMs, variables, iargon)	x	~	x						office				

While designing the software, and as a first part of the Laboratory Phase, the objective is:

- Pilot manager becoming familiar with tool function;
- Test the basic functionality of the tool;
- Discover mistakes and bugs of the tool;
- Improve the tool functionalities;
- Prove that tool works with PDMs;
- Prove that tool works with free speech;
- Test of speech to text (STT) module.

Not relevant in this part of testing is to check processing time of the software, in order to be able to test software in debug-mode for example or testing in development environment.







9.1.2 Sand phase / Content of office testing

It is useful to run tests using prearranged content like:

- free variables;
- free jargon;
- group variables;
- free speech;
- PDMs.

For office testing an easy test-setup can be realized consisting of:

- Pilot manager;
- Assistant (possible);
- any testing person-mother tongue A;
- any testing person- mother tongue B.

The testing person works alone with his tablet to learn all PDMs, to test and improve his voice recognition by the tablet. The testing person trains himself to utter sentences that leads to the expected PDMs with a unique or double proposal between which he has to choose.

There are no requirements of involving any further parties.

9.1.3 Evaluation of office testing

Office tests should be recorded by the software itself and reporting done.

Any mistake, bug or wrong translation must be documented (reports) and rated according to:

	Content changing mistake (translate "2" as a "3", etc.)
	Content incomplete (output is missing major words)
Not acceptable (must be fixed)	Content cannot be understood (output is not understandable)
	Wrong word synonym (delete/add word to dictionary)
	Wrong grammar (correct PDM or free speech)
	Misunderstanding of certain railway operation







	due to usage of wrong words
Acceptable (should be fixed)	Content of message is correct, but output is poor (wrong order of words, etc).
Acceptable (cannot be fixed)	Mistake would happen in B1 human to B1 human communication as well (translate letter "T" as word "tea").
	solve those issues (like use of international spelling alphabet, etc).

9.1.4 Duration of office testing

Office testing is successful, if all parties involved test 30 free variables, 30 free jargon, all group of variables, 20 free speech and three PDMs from each cluster. This will result in min. 16 hours to max. 24 hours per party.

Different durations can be chosen with the support of the Sub-Guideline "Risk Analysis".

A more detailed overview on this phase is presented in ANNEX III Detailed Testing Methodology.

9.2 Laboratory Phase: Room phase

9.2.1 Room phase

The objective is proving the PDMs and the LT effectively complement the language skills under increasing operational conditions.

Letting a licensed train driver operate a fictional train on a video simulator while using the Language tool for any occurring communication is the most realistic test condition that can be created in office environments. The room phases consist of six different rooms in which different content is tested (PDMs, scenarios, written orders, etc.). Step by step environmental conditions can be shaped with increasing level of empirical realism (with noise/without noise, simulator, etc.). Tests are performed with real operational staff from room one to room six.

Responsible for this step are the pilot manager with the support of the software purchaser.

Within those phases the general objectives are:

test the accuracy of the translation;







- test how the surrounding environment affects the speech recognition;
- Team involved in the test to get familiar with tool function.

The specific room phases objectives are:

- Room 1: test the PDMs (variables, jargon, etc.);
- Room 2: test the scenarios;
- Room 3: test the real scenarios from the testing section;
- Room 4: test the written orders;
- Room 5: test the tool on a simulator alone under operational conditions;
- Room 6: test the tool on a simulator connected (by phone or GSM-R) to the other party in separate rooms under operational conditions.

LAB PHASE		Personal demands							Environmental conditions					
Timeline *all phases are obligatory **in case a R is testing two input languages all phases at least need to be done in ane language, whereas between room 2 - 6 RUs can choose to perform one phase in a different language if they wish.	Scope of the phase	РМ	Assistant	Tester less B1	Tester with B1	Tester is driver or signaler	Tester is future field driver or signaler	Person with at least B2	Simulator operator/in structor	Space	Video with train run/standstill	Noise generation (video/audio)	Real simulator (cab/signall er PC)	Connection driver- signaler
Room phase														
Room1	PDMs, variables, jargon, without/with noise	2	x	x		x		x		office		x		
Room2	Prepared Scenarios	~	x	x		x		x		office		x		
Room3	Real scenarios from the testing section	~	x	x		x	x	x		office		x		
Room4	Written Orders	~	x	x		x	x	x		office		x		
Room5	RUs testing on simulator alone	~	x	x		x	x	x	x	office/ real sim	x	x	opt	opt
Room6	Testing on simulator connected to the other party	~	x	x		X both connected	X both connected	x	x	office/ real sim	x	x	opt	x

Practical usability of the solution to be piloted shall be finally proofed, before the software meets real operation sites for the first time.

9.2.2 Content of room phase

The room phase is as already mentioned subdivided in six different rooms.

It is useful to run tests using prearranged content like as a minimum amount:

- Room 1: 30 free variables, 30 free jargon, all group variables, 20 free speech, 3 PDMs from each cluster;
- Room 2: 6 (min. 2 each category) scenarios;
- Room 3: 3 scenarios;
- Room 4: 3 written orders;
- Room 5: 3 part of simulator scenarios, 10 PDMs;







• Room 6: 3 simulator scenarios.

For the room phase a test-setup can be realized consisting of:

- Pilot manager (possible);
- Assistant;
- Testing person being a real train driver or signaller mother tongue A (note: from room three on the tester must be the future field driver or signaller);
- Testing person being a real train driver or signaller mother tongue B (note: from room three on the tester must be the future field driver or signaller);
- Person with at least B2 language level of both languages(evaluating accuracy of the translation);
- Simulator instructor from room five on;
- Other person from room 5 on (evaluating the test).

Room one to room six have to simulate artificially created noise, such as typical background noises of signal boxes and locomotive's cabs.

From room one to room four the testing person trains with the tablet alone in the office focusing on different content to be tested and improves the tablet's voice recognition. He trains to utter sentences that leads to the expected PDMs with a unique or double proposal between which he has to choose.

Room five is just relevant for the RU side. The test takes place either with a video of a train run displayed on a computer or a railway computer simulator (rail simulator) and an additional optional possibility is at the real simulator used for training purposes. The simulation transfers the tester (train driver) in a realistic operational situation and with this the simulation is showing the train progressing and various operational events happen and the tester must react and choose the right message to be sent.

Room six testing takes place on either a video or a PC simulator (rail simulator) and an additional optional possibility is at the real simulator, but the testing persons (train driver and signaller) are connected. Two rooms connected by mobile phones (optional GSM-R) are obligatory, so that no nonverbal communication is possible. One of the rooms is the driver's room. A train simulation is shown and the driver is using the tablet while the noise of the train is broadcasted at a level corresponding to the train speed and position. In the second room, the signaller has possibly several screens with a signalbox simulator. He uses the tablet to communicate. In the driver simulator room there is a screen on which the film of the driver vision when the train is running is displayed under the control of a supervisor. The supervisor may create operational events raising questions from the driver and answers from the signaller. In the second







room the signaller answers demands from the driver received by mobile phone (or GSM-R) or sends instructions to the driver using his tablet connected to by mobile phone (or GSM-R) either from his own authority because the train reaches a point where an instruction is needed or because the supervisor has introduced an unexpected operational event. This test phase will be concluded when all possible operational events have been tested and resolved with success from both sides using exclusively the language tool for all purposes of communication.

9.2.3 Evaluation of room phase

Office tests should be recorded by the software itself. A person evaluating the test as a third party from room five is obligatory.

Any mistake, bug or wrong translation must be documented (screenshot for example) and rated according to 9.1.3.

9.2.4 Duration of room phase

There should at the minimum 30 free variables, 30 free jargon, all group variables, 20 free speech, 3 PDMs from each cluster, 6 (min. 2 each category) scenarios, 3 scenarios, 3 written orders, 3 part of simulator scenarios, 10 PDMs, and 3 simulator scenarios being tested. This will result in min. 59 hours to max. 75 hours per party.

Different duration can be chosen with the support of the Sub-Guideline "Risk Analysis".

A more detailed overview on this phase is presented in ANNEX III Detailed Testing Methodology.

9.3 Field Phase

The testing continues on the field. Before asking EU commission for a derogation from B1 requirement a test (called the first phase pilot) in real operations should be performed. In this test setup operational staff is still educated on language level B1 but they already use the LT. In case of problems, the communication can be easily switched back into status quo.

The field phase has direct contact to "real" railway operations. The field phase is characterized by operational conditions and additional prerequisites assuring safe testing.

In T4R project, the first phase-pilot will be performed by using LT and involvement of the drivers with B1 language level. According to 2019/554 no derogation is needed while using alternative means and involving train drivers who fulfil the requirements under point 8 of Annex VI to Directive 2007/59/EC.







9.3.1 Field Test

The objective is to prove the LT effectively complements the language skills under real operational conditions.

Responsible for this step are the pilot managers.

After the finalization of the Laboratory Phase the objective of the field phase is:

- Test the tool on a train under operational conditions in various variations;
- Test the accuracy of the translation;
- Test how the surrounding environment affects the speech recognition;
- Team involved in the test to be familiar with tool function.

The field phase might be understood as dress rehearsal of a translation software together with common PDMs. Conditions and environmental influences shall no longer be simulated but the software shall prove its maturity under realistic conditions. Therefore the tool is tested on trains and signalboxes, but the official standards are still maintained and the tool is only used secondarily.

- The field phase is subdivided in 20 situations, called "FIELD" which handle different operational procedures such as: station/line conditions such as out of peak hours, in operations, interrupted or not interrupted;
- basic/advanced concept such as signaller with tablet, signaller without tablet;
- track positioning such as not often used track, between station, in station;
- motion such as standstill, running;

Those tests require different personal demands depending on company rules (single person, different assistant solution (ranging from solely supervision to handling of the LT for the driver or signaller).

As no direct influence of the tool to the railway operations exists and it is only used by staff of the project team itself, there is no formal approval for those test required. The results of the field phase rather are component of the official pilots announcement later on.







Testusiente			м		0	I AL		RU				Connection
rest funding	Statio	n/Line	Signal box	Signaler	Tool	Locor	notive	Train driver	Assistant	Tool	Suppervison	
	hour	interruption				Track	Motion					
0	out of peak hours	x	tester in the station not in a signaler room		with	not often used track	standstill	Train driver	based on company rules	with	yes	no connection
0	out of peak hours	x		Signaler	with	not often used track	standstill	Train driver	based on company rules	with	yes	no connection
SA	out of peak hours	x	tester in the station not in a signaler room		with	not often used track	standstill	Train driver	based on company rules	with	yes	connected
SA1	out of peak hours	x		Signaler	with	not often used track	standstill	Train driver	based on company rules	with	yes	connected
SB	out of peak hours	×	tester in the station not in a signaler room		without	not often used track	standstill	Train driver	based on company rules	with	yes	connected
SB1	out of peak hours	x		Signaler	without	not often used track	standstill	Train driver	based on company rules	with	yes	connected
DTR	out of peak hours	x				between stations	running	Train driver	based on company rules	with	yes	no connection
RA	out of peak hours	x	tester in the station not in a signaler room		with	between stations	running	Train driver	based on company rules	with	yers	connected
RA1	out of peak hours	x		Signaler	with	between stations	running	Train driver	based on company rules	with	yes	connected
RB	out of peak hours	x	tester in the station not in a signaler room		without	between stations	running	Train driver	based on company rules	with	yes	connected
RB1	out of peak hours	x		Signaler	without	between stations	running	Train driver	based on company rules	with	yes	connected
In a full op	peration										yes	
SAO	operation		tester in the station not in a signaler room		with	in a station	standstill	Train driver	based on company rules	with	yes	connected
SA 10	operation			Signaler	with	in a station	standstill	Train driver	based on company rules	with	yes	connected
SBO	operation		tester in the station not in a signaler room		without	in a station	standstill	Train driver	based on company rules	with	yes	connected
SB10	operation			Signaler	without	in a station	standstill	Train driver	based on company rules	with	yes	connected
DTRO	operation					between stations	running	Train driver	based on company rules	with	yes	no connection
RAO	operation		tester in the station not in a signaler room		with	between stations	running	Train driver	based on company rules	with	yes	connected
RA10	operation			Signaler	with	between stations	running	Train driver	based on company rules	with	yes	connected
RBO	operation		tester in the station not in a signaler room		without	between stations	running	Train driver	based on company rules	with	yes	connected
RB10	operation			Simaler	without	between stations	nuncion	Train driver	based on company	with	1995	connected

9.3.2 Content of field phase

In coordination with the involved signallers and train drivers some situations, that might not have occurred during the assisted operations, shall be simulated. Such situations to be simulated are at least:

- Incoming and outgoing emergency calls (Unauthorized people near track, Sprinkle sand until standstill, Seeking help (health emergency on board, etc.), Report derailment, Dangerous goods emergency, objects in the track, etc.);
- Transmitting written orders in all possible variants;
- Ask for auxiliary locomotive and towing damaged train;
- Shunting operations;
- And any other, for the certain cross border section typical or realistic situation.

According to the scheduled duration of the field test, trains of the attending RUs must be equipped with the LT and a connection to GSM-R must be realized.

For the field phase a test-setup can be realized consisting of:

- Traindriver;
- Signaller;
- Supervisor;
- Traindriver assistant (optional depending on company rules);
- Signaller assistant (optional depending on company rules);







Occasional members of the pilot operation are:

- Pilot manager;
- Representatives of the project running entities.

Communication carried out using the LT should be recorded or can be real time checked by a supervisor. In case the optional assistant solution is chosen trains of the participating railway undertakings get manned by a train driver assistant before entering the cross-border section. Every GSM-R call is carried out in parallel to the real GSM-R communication between both assistants using the translation software. It must be secured, that railway operations do not get derogated from the parallel communication or the presence of the assistants. If necessary, the unused second driver cabin (facing to the wagons) could be used in order to not disturb the driver.

The pilot is running in the defined time with the defined trains. Therefore, permanent members of the pilot operation are the following staff of the participating IMs and RUs.

Role	Section of activity	Certifications	Language skill	Additional requisites
Interoperable train driver/Assistant	A – B and v.v.	European driver licence Complementary certification for Country A and for the stretch Y – B in Country B or Complementary certification for Country B and for the stretch Y – A in Country A	Language A + Language B both Level B1	Trained for the usage of PDMs Trained for the usage of the Language tool
Ordinary signaller/Assistant	Y – A and v.v.	Ordinary certifications for signallers (t.b.d. by IMs)	Language A Specific language requirements for the border section	Trained for the usage of PDMs Trained for the usage of the Language tool
Ordinary signaller	Y – B and v.v.	Ordinary certifications for signallers (t.b.d. by IMs)	Language B Specific language requirements for	Trained for the usage of PDMs







Role	Section of activity	Certifications	Language skill	Additional requisites
			the border section	Trained for the usage of the Language tool

Roleplay of field test

Section of activity	Activity	Roleplay
Y – A and v.v.	Communication $RU \rightarrow IM$	 Train driver speaks Language B (even if he has nationality of Country A) to the translating tool on the base of PDMs
		- Tool translates into Language A
		 Tool transmits message to signaller through ordinary means
		- Signaller receives message in Language A
		 Train driver verifies the congruence between the message he wanted to send, and the message produced by the tool
		 Train driver records the result and annotates any error in the logbook
		 In case of errors the train driver suspends the application of the tool, and shifts to ordinary operations
	Communication IM \rightarrow RU	 Signaller speaks in Language A on the base of PDMs to the train driver through ordinary means
		 Train driver receives message in Language A through ordinary means
		- Tool translates into Language B
		 Train driver verifies the congruence between the message received from the signaller and the message produced by the tool
		 Train driver records the result and annotates any error in the logbook
		 In case of errors the train driver suspends the application of the tool, and shifts to ordinary operations
Y – B	Communication	- Train driver speaks Language A (even if he has nationality
and v.v.	RU → IM	of Country B) to the translating tool on the base of PDMs
		- Tool translates into Language B
		 Tool transmits message to signaller through ordinary means
		- Signaller receives message in Language B
		- Train driver verifies the congruence between the message







Section of activity	Activity	Roleplay
		he wanted to send, and the message produced by the tool - Train driver records the result and annotates any error in the logbook
		 In case of errors the train driver suspends the application of the tool, and shifts to ordinary operations
	Communication IM \rightarrow RU	 Signaller speaks in Language B on the base of PDMs to the train driver through ordinary means
		 Train driver receives message in Language B through ordinary means
		- Tool translates into Language B
		 Train driver verifies the congruence between the message received from the signaller and the message produced by the tool
		 Train driver records the result and annotates any error in the logbook
		 In case of errors the train driver suspends the application of the tool, and shifts to ordinary operations

RUs must document which competence each train driver at each train had.

There should be frequent meetings of at least the pilot managers and involved operational staff (themselves or a spokesperson). Those meetings deal with the experiences gained in the pilot operations and should take place regularly and after near miss and incidents immediately.

9.3.3 Scope of field test

Field test proves the usability and reliability of a LT for communication in cross border railway operation. Therefore, operational staff (or assistants) with a language knowledge of B1 uses the software in normal and degraded mode operations as well as emergency situations/operations. The software should prove its usability in real operational conditions, especially with original background noises in their certain volume.

9.3.4 Preparation of field test

In T4R, there is no formal approval of the field test required, as it does not require a derogation from the language level. Besides that, it is of course wise to inform the responsible safety authorities, workers' councils and trade unions national representatives, safety department, etc.

In a formal pilot for which a derogation is required, as the safety authorities will be







asked to exemplify their opinion it would be wise to invite them to supervise the field test in order to get a reliable insight in the software's performance.

In the first phase pilots (such as T4R), as the LT will be used in real operations, there should be an information beforehand addressed to:

- ERA (informed);
- EU Commission (informed);
- National safety authority(s) (involved).

The briefing should contain at least:

- Duration, geographical range and attending companies;
- Notice, that it's the first phase to prepare the pilot according 2019/554 using alternative means and involving train drivers who fulfil the requirements under point 8 of Annex VI to Directive 2007/59/EC.

No formal approval of any of these parties is required.

The involvement of internal safety departments is mandatory. The attending companies should also organise internal briefings about the pilot addressed to workers council and/or trade unions.

Involved drivers and signallers need to get a detailed introduction into the software functions. They must also get trained in usage of predefined messages. Equipment (Tablets, Laptops, etc.) must be available in required number. The train driver assistant and the signaller assistant need to get a formal approval of entering locomotive and signal box.

There must be a connection between GSM-R and software, to enable the driver or/and signaller to activate the software when required. *To be able to use the software in parallel to GSM-R, the software must be able to run on tablets.*

The pilot managers must agree on the pilot's details with all participating RUs(at least one RU for each of the 2 countries concerned) and form a pilot running consortium with them. Safety aspects of participating RUs and IMs must be analyzed and might require amendment. Based on such analyses operational rules might have to been adapted to ensure a safe pilot. This will be a result of CSM-RA safety studies.

9.3.5 Evaluation of Field Phase

The field test takes place at the cross-border section on a limited number of days. The evaluation is based on the software internal recordings or/and the supervisors' assessment. Each conversation must be checked by bilingual staff and railway experts regarding mistakes according to 9.1.3.







No unacceptable mistakes must occur during the field test. All performed conversations should be listed and classified if they handle routine, degraded and emergency situations.

After the field test or at least every week while running the field test a meeting with representatives of every participating RU and IM should take place. It is the scope of this meeting to collect the staff's experiences regarding:

- Quality of output;
- Ergonomics of software;
- Usability of predefined messages.

9.3.6 Duration of Field Phase

The first phase Pilot (using alternative means and involving train drivers who fulfil the requirements under point 8 of Annex VI to Directive 2007/59/EC and no need for derogation) can be seen as dress rehearsal before the second phase pilot (with train drivers having a lower level of language skills than those required in point 8 of Annex VI to Directive 2007/59/EC and using the alternative means proved effective in the first phase and need to request a derogation) according to regulation (EU) 2019/554. Results of the field test are internal but shall be used when applying for the pilot as proof of regulation (EU) 2019/554 8 (4) b) iii):

iii) the applicants have provided evidence that these tools have been tested under operational conditions involving drivers fulfilling the language requirements of paragraph 2.

To be able to get a resilient conclusion, a minimum number of sample of trains be carried out. Different duration can be chosen with the support of the Sub-Guideline "Risk Analysis".





10 Description on the use of PDM

Shift2Ra

The Translate4Rail project aims to wipe off the language barrier to enable any driver to continue to drive safely its train across the border concerning only the language in a country where he does not speak the national language. It refers to the elements contained in the TSI OPE 2019/773 to ensure that the project complies with the requirements of that decision. The project aims at developing a simple but effective solution which will be shown on field tests.

Drivers and signallers to be involved in the project must be trained to master their communication in using only the PDMs for their exchanges impacting safety.

10.1 Communication principles for the use of PDMs

Point 8 of Annex VI to Directive 2007/59/EC establishes the level of language skills to be fulfilled by train drivers, so that they can communicate actively and effectively in routine, degraded and emergency situations. They shall communicate following the communication method specified in Commission Regulation (EU) 2019/773. All applicable legislation must be taken into consideration and the following requirements are in line with the aforementioned. Given the implementation of the European instructions in the whole European networks, necessary adjustments should be done based on the existing national rules of the involved Member States in the pilot. Therefore, the following chapter provides to be applied rules for the use of PDMs from a language perspective.

10.2 Communication structure

Regarding the structure, the voice transmission of safety-related messages shall be short and clear without abbreviation. In particular, it shall cover the following points to ensure it is understandable and the necessary action can be done, whoever is giving the message shall:

- give the exact location;
- state the task which is carried out and information on the action that is needed;
- assure the message is received and repeated back as required;
- if necessary, correction of mistakes that have been made in the message;
- if necessary, let the person know how they can be contacted.

10.3 Communication methodology

Drivers shall identify themselves by the train number and the location and inform the signaller to use the Language Tool (Please use the translation tool for the communication). signallers shall identify themselves by the name of the station, the location of the signal box





or traffic control centre.

For communication between signallers and drivers, it is the signallers' duty to ensure talking to the driver within their control area, this is especially relevant for areas where communications boundaries overlap, which also applies after an interruption during transmission.

This point indicates the standard terminology to be used in English. Each different project can, on the basis of this guide, adapt the messages to the required languages.

The following messages shall be used for this purpose by the different parties based on TSI-OPE 2019/773

by the controller	Train [running number], this is the [control area/location of the signal box].
by the train driver	This is train [running number] at [location]

Note: variables [running number] refers to the "train number" and [location] to the "track number, km, signal number, station name, other specific location, location between stations and in front of switch number.

Special attention must be paid to the alternatives (e.g. train numbers «digit by a digit» or in blocks of numbers) (see point 5.3).Until the full application of the TSI OPE 2019/773 Appendix C from June 2024, it is proposed to also refer to the rules from IM and RU's national rules and Rule books, reflecting the upcoming TSI OPE 2019/773 Appendix C requirements, to cover everything that is needed for the use of PDMs.

The list of Predefined Messages offers tools to fulfil the aforementioned requirements in this chapter.

10.4 List of Predefined Messages

The list of Predefined Messages provides standardised messages in seven different languages.

The following figure explains the structure of the list.









Figure 1: Description of the Structure of the List of Predefined Messages

The List of Predefined Messages can be found in the T4R Deliverable D1.2 Enhanced list of Predefined messages, Annex D1.2 part 3. (accessible also via T4R website: https://translate4rail.eu/).

10.5 Clustering of Predefined Messages

Predefined Messages are grouped into five clusters representing the situation in railway the level of urgency (Basic, Disturbance, Emergency, Accident, Activities within Stations), assigned to the motion of the operational situation ("Standing still", "Running", "Both"), and furthermore subdivided for training purposes regarding the content of an operational situation (Identification/Location, Basic Communication, Train Movement, Written Order, Arrival / Departure, Signals, Track status, Train Action/Status, Shunting, Reporting Situation, Wagon Load, Assistance).



Figure 2: Overview of the Clusters

The classification of the PDMs is provided primarily for training purposes. The user will need to be familiar with PDMs in his mother language before participating in the operational phase of the pilot testing.

10.6 Key Determinant: Variables

Communication between RUs and IMs is not solely determined by the Predefined Messages but also by variables.

Within the Predefined Messages, a variety of constants & variables are integrated which are displayed, described and additionally provided with an example in the following table. A detailed overview is integrated into the previous chapter.

Co	nstants Variables	Type (NUMERIC, ALPHA_NUM ALPHA, etc.)	IERIC, Exam	nple	
Constants	Variable English	type of variable	variable text example	Rules	Variable English - description/keywords
train	<train number=""></train>	NUMERIC	4711	After	train number
locomotive	<locomotive number=""></locomotive>	NUMERIC		After	locomotive number



10.7 Pre-defined Messages in Use as Scenarios

The list of PDMs, as well as general scenarios, is the inevitable part of the guidance. The aim







is to offer to the IMs and RUs staff involved in the Pilot testing a fully comprehensive set of PDMs, in a relevant operational scenario, which encompasses all they have to exchange with a controller in routine, degraded or emergency operational situations in a country where they do not understand nor speak the local language. An IT tool – "Language Tool" – should be implemented to enable them to understand each other even though each of them speaks in his/her native language. The following overview provides scenarios that shall be tested during Pilots. Those scenarios cover a broad range of real operational situations: normal operation, but also in degraded and emergency situations that are likely to be encountered.

- Traction problems of a train;
- Damaged switch;
- Train driver reports persons near to track;
- Whole train composition shunting movement;
- Search for the train by the train driver;
- Disturbance at a level crossing;
- Emergency stop;
- Train driver reports a default on a train (load displaced) passing in the other direction;
- Signaller asks an approaching train if it stops or is just passing in the station;
- Brake problem;
- Occupied track in the station
- etc.







ANNEX I Pre-defined Messages List

See D1.2 Enhanced list of predefined messages







ANNEX II Scenarios for Pilot testing

See D1.2 Enhanced list of predefined messages







ANNEX III Detailed Testing Methodology

LAB PHASE			203	20				2021										Persona	l demands					En	vironmental condi	ions	
Immeine * all phases are obligatory **in cose a RU is testing two input language: all phases it dest need to be done in one language, whereas between room 2 - 6 RUs can choose to perform one phase in a different language if they wish.	Scope of the phase	October	Nove	mber	Decem	ber	Januar	y	February	,	March	April	Expecte [h	ed duration Hours]	PM	Assistant	Tester less B1	Tester with B1	Tester is driver or signaler	Tester is future field driver or signaler	Person with at least B2	Simulator operator/ instructor	Space	Video with train run/standstill	Noise generation (video/audio)	Real simulator (cab/signaller PC)	Connection driver- signaler
Sand phase	Test the basic functionality of the tool (PDMs, variables, jargon)												min. 16	max. 24	x	~	x						office				
Room phase													min. 59	max. 75													
Room	PDMs, variables, jargon, without/with noise												min. 20	max. 28	~	x	x		x		x		office		x		
Room	Prepared Scenarios												min. 12	max. 14	~	x	x		x		x		office		х		
Room	Real scenarios from the testing section												min. 6	max. 7	~	x	x		x	x	x		office		x		
Room	Written Orders												min. 6	max. 7	~	x	x		x	x	x		office		x		
Room	RUs testing on simulator alone												min. 3	max. 3	~	x	x		x	x	x	x	office/ real sim	x	x	opt	opt
Room	Testing on simulator connected to the other party												min. 12	max. 14	~	x	x		X both connected	X both connected	x	x	office/ real sim	x	x	opt	x







	Task
Pilot manager	Learn all existing functions of the tool from the manual
	Learn how to download and update language packs
	Learn how to download and install the APK update
	Learn how to download the log file
	Know all existing functions of the tool from the manual
	Know how to download and update language packs
	Know how to install the APK update
	Know how to download the log file
	Coordinate all tests (Sand Deam C)
	Prenare real scenarios from the testing section
	Prenare PDMs and partly operational scenarios for the simulator
	Harmonise scenarios of the simulator and communication
	Prepare operational scenarios for the simulator
	Reporting
	optional: prepare a video to NSAs to create a demonstration video
Assistant	Learn all existing functions of the tool from the manual
	Learn how to download and update language packs
	Learn how to download and install the APK update
	Learn how to download the log file
	Know all existing functions of the tool from the manual
	Know how to download and update language packs
	Know how to install the APK update
	Know how to download the log file
	Coordinate all tests (Sand - Room 6)
	Poporting
	Reporting
	Evaluate the effect of using the tablet on the train driver / signaller tasks
	Evaluate the overall performance
Other person	Evaluate the test
Testing person(s)	Study PDMs
	Learn use of tablet
	Test minimal set of DDMs
	Test minimal set of PDIVIS
	Test minimal set of heriobles
	Test minimal set of variables
	Test minimal set of scenarios from the testing section
	Test minimal set of Written Orders
	Test minimal set of scenarios on the simulator
	Test minimal set of scenarios of a simulator connected (phone or GSM-R) to the
	other party or physical presence
	Test without and with noise
	Test with noise
Simulator operator/instructor	Support to harmonise scenarios of the simulator and communication
	Support to prepare operational scenarios for the simulator
	Evaluate the effect of using the tablet on the train driver / signaller tasks
	Evaluate the overall performance
Person with both language level	
competences (incl. railway	
jargon knowledge)	Evaluate the accuracy of the translation
T4R partners	Gather reports for impoving the tool







Sand test						
Objective	Description	Responsible				
-	Pilot manager to be familiar with tool function	PM				
	Test the basic functionality of the tool	PM				
	Discover mistakes and bugs of the tool	PM				
	Improve the tool functionalities	PM				
	Prove that tool works with PDMs	PM				
	Prove that tool works with free speech	PM				
	Test of speech to text (STT) module	PM				
	,					
Tasks	Description	Responsible	Way			
	Test minimal set of PDMs	PM				
	Test minimal set of free speech	PM				
	Test minimal set of variables	PM				
	Learn all existing functions of the tool from the manual	PM	read the tool manual, discuss with T4R team			
	Learn how to download and update language packs	PM	read the tool manual, discuss with T4R team			
	Learn how to download and install the APK update	PM	read the tool manual, discuss with T4R team			
	Learn how to download the log file	PM	read the tool manual, discuss with T4R team			
	Reporting	PM				
	Gather reports for impoving the tool	T4R, LP sWG				
Outputs	Type of output	Target subject				
	reports from testing	PM				
	logs files provided to WG	T4R, LP sWG				
	bugs reports					
Testing period						
	starts	01 October 2020)			
	ends	30 November 2020)			
Expected duration	16-24 hours for every participants during the period					
Testing location	office					
Connection to						
GSM-R	not required					
to other party (RU/IM)	not required					
Wifi	required for downloads only					
Participants	Position	Participation	Minimal task	Required knowledge	Language competence	
	Pilot manager	required	learn how to use the tool and do the test	any	mother tongue	
	assistant	possible			mother tongue	
	testing person	required	test the tool	at least one tested language	mother tongue	
						-
Content of the test	Subject	Number				-
	Free variables	30				
	tree jargon	30				
	group variables	a				-
	tree speech	20)			
	PUMS	3 trom each cluster	r i			







ROOM 1									
Objective	Description	Responsible							
	test the PDMs (variables, jargon, etc.)	PM							
	test the accuracy of the translation	Person with both language level co	mpetences (incl. railway jargon knowledge)						
	test how the surrounding enviroment affects the speech recognition	PM							
	Team involved in the test to be familiar with tool function	PM							
Tasks	Description	Responsible	Way						
	Study PDMs	PM	operational staff (real train driver/signaller) to lear	n PDMs					
	Test minimal set of PDMs	PM							
	Test minimal set of free speech	PM							
	Test minimal set of variables	PM							
	Evaluate the accuracy of the translation	Person with both language level co	mpetences (incl. railway jargon knowledge)						
	Evaluate the effect of using the tablet on the train driver / signaller ta	at PM	occupancy/stress level/attention/						
	Evaluate the overall performance	PM							
	Test without and with noise	PM							
	Know all existing functions of the tool from the manual	PM	read the tool manual, discuss with T4R team						
	Know how to download and update language packs	PM	read the tool manual, discuss with T4R team						
	Know how to install the APK update	PM	read the tool manual, discuss with T4R team						
	Know how to download the log file	PM	read the tool manual, discuss with T4R team						
	Reporting	PM							
	Gather reports for imposing the tool	T4R I P WG							
	council reports for importing the wor	I II C II OITO							
Outpute	Type of output	Target subject							
Outputs	reports from testing	DM	coupre RDMs veriables, income including results	of the translation accuracy in an environment without / with r	oiro, and parformance of	torting por	100		
	reports norm lesting	TID ID WO	covers in Divis, variables, jargori, including results	or the translation accuracy in an environment without / with r	loise, and performance of	tesung pen	SUN		
	logs tiles provided to WG	14R, LP SWG							
	bugs reports								
The second se									
resting period	l la		0						
	starts	01 December 202	0						
	enas	08 January 202	1						
Expected duration	20-28 hours (10-14 hours for every participants during the period w	ith noise/10-14 hours for every parti	cipants during the period without noise)						
Testing location	office to simulate real noise situation (eq. per video)								
	optional: at a video/PC simulator (rail simulator)								
	optional: at the real simulator								
Connection to									
CSM P	pat required								
to other party (PLI/IM)	not required								
to other party (Roriw)	nocrequired								
win	required for downloads only								
Participants	Position	Participation	Minimal task	Required knowledge	Language competence				
	Pilot manager	possible	coordination	any					
	assistant	required	handle the tool, coordinate and evaluate the test	any	mother tongue				
	testing person(s)	required	test the tool	operational staff (real train driver/signaller)	mother tongue				
	Person with both language level competences (incl. railway jargon k	r required	Evaluate the accuracy of the translation	railway jargon knowledge	both language level compe	etences (ind	ol. railway ja	argon knowl	edge)
Content of the test	Subject	Number (minimal set to be teste	3)						
	Free variables	3	0						
	fann innann	3	0						
	nee jargon								
	group variables	8	- 						
	group variables free speech	2	Ш 0						
	group variables free speech PDMs	2 3 from each cluste	u U V						
	ree speech PDMs	2 3 from each cluste	ul D F						
	inee jagun group variables free speech PDMs	2 3 from each cluste	all O Pr						
ROOM 2	inte jagun group variables free speech PDMs	3 from each cluste	al 0 19						
ROOM 2 Objective	Iner production group variables free speech PDMs	a 2 2 3 from each cluste Responsible	ai 0 r						
ROOM 2 Objective	Inter production of the second	3 from each cluste Responsible PM	an O C						
ROOM 2 Objective	group availables free speech PDMs Description Inst the scorarios tes the securator of the translation	a 2 3 from each cluste Responsible PM Person with both language level com	a 0 r r etences (incl. railway iaroon knowledge)						
ROOM 2 Objective	Inter production of the second record record of the second record	2 3 from each cluste Responsible PM Person with both language level comp PM	al r r						
ROOM 2 Objective	Introduction and the second se	2 3 from each cluste Responsible PM Person with both language level comp PM PM	ai r r etences (incl. railway jargon knowledge)						
ROOM 2 Objective	Inter prop. group variables (res speech PDMs Description test the scenario of test the securacy of the translation test how the scruturading environment effects the speech recognition Team involved in the test to be familiar with tool function	3 from each cluste 3 from each cluste Responsible PM Parson with both language level comp PM PM	al r r etences (inct. railwey jargon knowledge)						
ROOM 2 Objective	Inter prigation of the second	2 3 from each clust Responsible PM PM PM Responsible	a r r etences (incl. railway jargon knowledge) W av						
ROOM 2 Objective	Interprint group variables (free speech PPMs Description test the scenario of test the scenario of test the scenario of the translation test how the surrounding environment effects the speech recognition Team involved in the test to be familiar with tool function Description Team inputed to and of scenarios	3 from each cluste 3 from each cluste PM PM PM PM Responsible PM PM	ai o r etences (incl. railway jargon knowledge) Way						
ROOM 2 Objective Tasks	Inter prigra group variables (rec speech Police Description test the scenarios test the scenarios test the scenarios test over se varrounding environent affects the speech recognition Team invoked in the test to be familiar with teor function Description Team ministry of the transition	3 from each cluste Responsible PM PM PM PM PM PM PM PM PM PM	ai o r etences (incl. railway jargon knowledge) Way etences (incl. railway jargon knowledge)						
ROOM 2 Objective Tasks	Interce minibles Interespench PDMs Description Inter the speech Inter the science of the speech recognition Test how the surrounding environment affects the speech recognition Test minibles of the test to be familiar with tool function Description Test minimal set of sciences of the stratistion Evaluate the accuracy of the stratistion must be trian driver / seconder test	3 from each clust Responsible PM PM PM PM Responsible PM Responsible PM Person with both language level comp	al 0 r r Hetences (incl. railway jargon knowledge) May extences (incl. railway jargon knowledge) mousemen/ukines Jawaliatentoni						
ROOM 2 Objective	Inter prignt (rec speech Polis	3 from each cluste Responsible PM PM PM PM PM PM PM PM PM PM	ai o etences (incl. railway jargon knowledge) Way wetences (incl. railway jargon knowledge) accupancy/stress level/attention/						
ROOM 2 Objective	Interce precision before The approximation POMe	3 from each clust Responsible PM PM PM PM Responsible PM Responsible PM PM Responsible PM PM PM PM PM PM PM PM PM PM	ai 0 r r Way etences (incl. railway jargon knowledge) way etences (incl. railway jargon knowledge) occupancy/sitess knel/attention/						
ROOM 2 Objective Tasks	Inter prignt (res speech Polk Description test the scorary's test the scorary's test the scorary's test the scorary's Team innersite of scenarios Evaluate the accuracy of the transition Evaluate the accuracy of the transition Evaluation term is accuracy of the transition Eval	3 from each cluste Responsible PM PM PM PM PM PM PM PM PM PM	a o v v etences (incl. railway jargon knowledge) etences (incl. railway jargon knowledge) etences (incl. railway jargon knowledge) couponcylstess knetistention/ raart tab bod manual .etencertin 749 more						
ROOM 2 Objective Tasks	Interceptual Interceptual Inter Speech Polie Description Ites In a scenario Ites Inter Seconary of the translation Ites Inter Seconary of the translation Ites Inter Seconary of the translation Ites Inter Seconary of the translation Description Description Evaluate the accuracy of the translation Evaluate the accuracy of the translation Evaluate the effect of using the tablet on the train driver / signaler far Evaluate the accuracions of the tablet on the train driver / signaler far Evaluate the accuracions of the tablet on the train driver / signaler far Evaluate the output performance	3 from each clust Responsible PM PM PM PM Responsible PM PM PM PM PM PM PM PM PM PM	a o r r etences (incl. railway jargon knowledge) Way etences (incl. railway jargon knowledge) occupancy/stress kwel/atention/ read the bool manual, discusse the tenom						
ROOM 2 Objective	Inter prignin group variables Inter speech PDMs Description test the scenarios test the scenarios test the scenarios test the scenarios test the scenarios test the scenarios Team innevale in the test to be familiar with toof function Description Team innevale of scenarios Evaluate the effect uning the stated on the train driver / signalier tat Evaluate the order of uning the stated on the train driver / signalier tat Evaluate the order of uning the stated on the train driver / signalier tat Evaluate the order of uning the stated on the train driver / signalier tat Evaluate the order of uning the stated on the train driver / signalier tat Evaluate the order of uning the stated on the train driver / signalier tat Evaluate the order of the order to form the manual Know all evaluations of the state from the union	3 from each clust Responsible PM PM PM PM PM PM PM PM PM PM	etences (incl. railway jargon knowledge) way etences (incl. railway jargon knowledge) etences (incl. railway jargon knowledge) cocupancy/stress level/attention/ received the tool manual, discuss with TAR team						
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ROOM 2 Objective	Interce metables Interespeech PDMe	3 from each clust Responsible PM PM PM PM PM PM PM PM PM PM	etences (incl. railway jargon knowledge) r etences (incl. railway jargon knowledge) way etences (incl. railway jargon knowledge) coccupancy/stress isvel/attention/. read the tool manual, discuss with TAR team read the tool manual, discuss with TAR team etad the tool manual, discuss with TAR team						
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ROOM 2 Objective Tasks Gutputs	Intercept and when a second s	2 3 from each clust Responsible PM PM PM Responsible PM Responsible PM Responsible PM	elences (incl. railway jargon knowledge) Way etences (incl. railway jargon knowledge) Cocoupency/sitess inveliatentics/. read the tool manual, discuss with T4R team read the tool manual, discuss with T4R team covers scenarios; including results of the translation	accuracy in an environment without / with noise, and perform	nne of testing person				
ROOM 2 Objective Tasks Outputs	Interce precise the second of	3 from each clust Responsible PM PM PM PM PM PM PM PM PM P	etences (incl. railway jargon knowledge) r etences (incl. railway jargon knowledge) Way etences (incl. railway jargon knowledge) coccupancy/stress isvel/attention/. read the tool manual, discuss with TAR team read the tool manual, discuss with TAR team ead the tool manual, discuss with TAR team covers scenarios; including results of the transistion	accuracy in an environment without / with noise, and perform	nce of testing person				
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ROOM 2 Objective Tasks Outputs Testing period Expected duration	Inter production Inter a speech Polic Post Polic Post Polic Post Polic Post Polic Post Post Post Post Post Post Post Pos	2 3 from each cluste Responsible PM PM PM PM Responsible PM PM PM PM PM PM PM PM PM PM	i i 0 i r r r etences (incl. railway jargon knowledge) Way etences (incl. railway jargon knowledge) cocupancy/stress level/attentor/. read the bod manual, discuss with T4R team read the bod manual, discuss with T4R team read the bod manual, discuss with T4R team covers scenarios; including results of the translation s during the period without noise)	accuracy in an environment without / with noise, and perform	nce of testing person				
ROOM 2 Objective Tasks Tasks Outputs Testing period	Intercept and less Intercept an	2 3 from each clust Responsible PM PM PM Responsible PM Responsible PM PM PM PM PM PM PM PM PM PM		accuracy in an environment without / with noise, and perform	nce of testing person				
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ROOM 2 Objective Tasks Gutputs Testing period Expacted duration Testing location	Intercept and when the second	2 3 from each clust Responsible PM PM PM Responsible PM Responsible PM Responsible PM PM PM PM PM PM PM PM PM PM		accuracy in an environment without / with noise, and perform	nce of testing person				
ROOM 2 Objective Tasks Outputs Testing period Expected duration Testing location	International less Internationa	3 from each clust Responsible PM PM Person with both language level comp PM TarR_LP aWG Target subject CM C08 January 2021 22 January 2021 C23 January 2021 C24	etences (incl. railway jargon knowledge) w way etences (incl. railway jargon knowledge) coccupancy/stress level/attention/. read the tool manual, discuss with T4R team read the tool manual, discuss with T4R team ead the tool manual, discuss with T4R team covers scenarios; including results of the translation s during the period without noise)	accuracy in an environment without / with noise, and perform	nce of testing person				
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ROOM 2 Objective Tasks Outputs Testing period Expected duration Testing location Connection to GSN-R	Inter or paid Inter or paid Research Polya Pol	3 from each clust Responsible Plu Plu Person with both language level comp PM PM Responsible PM PM PM PM PM PM PM PM PM PM	a b c covers scenarios; including results of the translation	accuracy in an environment without / with noise, and perform	ance of testing person				
ROOM 2 Objective Tasks Tasks Outputs Testing period Expected duration Testing location Connection to GSN-R to other party (RUIM)	Interception analysis (Peed speech PDNe PDNe PDNe PDNe PDNe PDNe PDNe PDNe	2 3 from each clust Responsible PM PM PM Responsible PM Responsible PM PM PM PM PM PM PM PM PM PM	etences (incl. railway jargon knowledge) way etences (incl. railway jargon knowledge) cocupancy/stress level/attention/ read the tool manual, discuss with T4R team read the tool manual, discuss with T4R team covers scenarios; including results of the translation s during the period without noise)	accuracy in an environment without / with noise, and perform	nce of testing person				
ROOM 2 Objective	Interce precise the second se	3 from each clust Responsible PM PM Person with both language level comp PM	etences (incl. railway jargon knowledge) way etences (incl. railway jargon knowledge) way etences (incl. railway jargon knowledge) coccupancy/stress lavel/attention/. read the tool manual, discuss with TAR team ead the tool manual, discuss with TAR team ead the tool manual, discuss with TAR team covers scenarios; including results of the translation s during the period without noise)	accuracy in an environment without / with noise, and perform	nce of testing person				
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ROOM 2 Objective Tasks Outputs Testing period Expected duration Testing location Connection to GGMAR to other party (RUIM) Wift Participants	Inter production Provide speech Provide Perform Provide Perform Provide Perform Provide Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perform Perf	3 from each clust Responsible PM Person with both language level comp PM	elemones (incl. railway jargon knowledge) way elemones (incl. railway jargon knowledge) way elemones (incl. railway jargon knowledge) coccupancy/stress involvedge) coccupancy/stress involvedge) coccupancy/stress involvedge read the bod manual, discuss with TAR team read the bod manual, discuss with TAR team cocers scenarios; including results of the translation s during the period without noise) Minimal test coordination mandel the tool, coordinatia and evaluate the test test the bod	accuracy in an environment without / with noise, and perform accuracy in an environment without / with noise, and perform Required knowledge ary ary ary personal staff (real train driver/signaler)	Language competence mother tongue				
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ROOM 3									
Objective	Description	Responsible							
	test the real scenarios from the testing section	PM							
	test the accuracy of the translation	Person with both language level con	npetences (incl. railway jargon knowledge)						
	test how the surrounding enviroment affects the speech recognition	PM							
	Team involved in the test to be familiar with tool function	PM							
Tasks	Description	Responsible	Way						
	Prepare real scenarios from the testing section	PM	define scenarios is a document before testing						
	Test minimal set of real scenarios from the testing section	PM							
	Evaluate the accuracy of the translation	Person with both language level cor	mpetences (incl. railway jargon knowledge)						
	Evaluate the effect of using the tablet on the train driver / signaller ta	a PM	occupancy/stress level/attention/						
	Evaluate the overall performance	PM							
	Test without and with noise	PM							
	Know all existing functions of the tool from the manual	PM	read the tool manual, discuss with T4R team						
	Know how to download and update language packs	PM	read the tool manual, discuss with T4R team						
	Know how to install the APK update	PM	read the tool manual, discuss with T4R team						
	Know how to download the log file	PM	read the tool manual, discuss with T4R team						
	Reporting	PM							
	Gather reports for impoving the tool	T4R, LP sWG							
Outputs	Type of output	Target subject							
	reports from testing	PM	covers real scenarios from the testing section; inclu-	uding results of the translation accuracy in an environment	t without / with noise, and perfe	ormance of	testina pe	rson	
	logs files provided to WG	T4R, LP sWG	<u>, , , , , , , , , , , , , , , , , , , </u>						
	bugs reports								
Testing period									
	starts	22 January 202	1						
	ends	29 January 202	1						
Expected duration	6-7 hours (3-3.5 hours for every participants during the period with	noise/ 3-3.5 hours for every particip	ants during the period without noise: excl. preparatio	on time for the real scenarios from the testing section)					
Testing location	office to simulate real noise situation (eg. per video)								
	optional: at a video/PC simulator (rail simulator)								
	optional: at the real simulator								
Connection to									
GSM-R	not required								
to other party (RU/IN	1) not required								
Wifi	required for downloads only								
	Be a faile a	Participation (1997)	Mer to a final fi	Barris I. I. I.					
Participants	Position	rarucipation	minimai taSK	required knowledge	Language competence			-	
	Prior manager	possible	coordination Incl. preparation of the real scenarios	any	mothers to serve			-	
	assistant	required	nancie the tool, coordinate and evaluate the test	any fature EIELD drives as simples	mother tongue				
	testing person(s)	requirea	test the tool	Tuture FIELD driver or signaler	mother tongue		1		1
	revision with tending to tell competences (incl. reitway jaraon k	Deres and D	EVALUATE THE ACCURACY OF THE TRANSLATION	ranway largun knowledge	uuun language ievel compi	HUNCES (INC	a. raiway	jargon knowler	Jye)
	Terson mer over kingaage iever oon peleriees (inde raimay jarger i	a required							
Contont of the test	Subject	Number (minimal set to be tester	a						

ROOM 4									
Objective	Description	Responsible							
	test the Written Orders	PM							
	test the accuracy of the translation	Person with both language level com	petences (incl. railway jargon knowledge)						
	test how the surrounding environment affects the speech recognition	PM	, , , , , , , , , , , , , , , , , , , ,						
	Team involved in the test to be familiar with tool function	PM							
Tasks	Description	Responsible	Way						
	Test minimal set of Written Orders	PM							
	Evaluate the accuracy of the translation	Person with both language level com	petences (incl. railway jargon knowledge)						
	Evaluate the effect of using the tablet on the train driver / signaller ta	PM	occupancy/stress level/attention/						
	Evaluate the overall performance	PM							
	Test without and with noise	PM							
	Know all existing functions of the tool from the manual	PM	read the tool manual, discuss with T4R team						
	Know how to download and update language packs	PM	read the tool manual, discuss with T4R team						
	Know how to install the APK update	PM	read the tool manual, discuss with T4R team						
	Know how to download the log file	PM	read the tool manual, discuss with T4R team						
	Reporting	PM							
	Gather reports for impoving the tool	T4R, LP sWG							
		-							
Outputs	Type of output	Target subject							
	reports from testing	PM TID LID INCO	covers written Orders; including results of the ti	ansiation accuracy in an environment without / with hoise, a	nd performance of testing p	erson			
	logs files provided to WG	14R, LP SWG							
	bugs reports								
Testing period									
reading period	starte	20 January 2021							
	ands	05 February 2021						-	
	Chab	COT							
Expected duration	6-7 hours (3-3.5 hours for every participants during the period with	noise/ 3-3.5 hours for every participa	ints during the period without poise)						
	······································								
Testing location	office to simulate real noise situation (eq. per video)								
	optional: at a video/PC simulator (rail simulator)								
	optional: at the real simulator								
Connection to									
GSM-R	not required								
to other party (RU/IM)) not required								
Wifi	required for downloads only								
Participants	Position	Participation	Minimal task	Required knowledge	Language competence				
r ai coiparito	Pilot manager	nossible	coordination	any	congooge competence			++	
	accistant	required	handle the tool coordinate and evaluate the test	any	mother tongue			-	
	testing person(s)	required	test the tool	future FIFI D driver or signaler	mother tongue			++	
	Person with both language level competences (incl. reitway iargon k	required	Evaluate the accuracy of the translation	railway jargon knowledge	hoth language level compe	tences (inc	l railway is	argon knowle	dae)
					see. anguage is to compe				
Content of the test	Subject	Number (minimal set to be tested)							







ROOM 5 (RUs o	only)													
Objective	Description	Responsible												
	test the accuracy of the translation	Person with both	h language level comp	petences	s (incl. railway jargon knowledge)									
	test how the surrounding enviroment affects the speech recognition	PM			. ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,									
	Team involved in the test to be familiar with tool function	PM												
Tacks	Description	Pornonciblo		Way										
Tubito	Prepare PDMs and partly operational scenarios for the simulator	PM		define s	cenarios in a document before testi	ng, which	are relevant for the pilot field phase							
	Harmonise scenarios of the simulator and communication	PM												
	Test minimal set of scenarios on the simulator	PM Barcan with both		notonoor	(inal railway intern kenydadao)									
	Evaluate the effect of using the tablet on the train driver / signaller ta:	Person with both	n language level comp	occupa	s (Incl. railway jargon knowledge) ncv/stress level/attention/									
	Evaluate the overall performance	PM		occupu	noy/or coo lo lo la									
	Test with noise	PM												
	Know all existing functions of the tool from the manual	PM		read the	e tool manual, discuss with T4R tean	1								
	Know how to install the APK undate	PM		read the	a tool manual, discuss with T4R team	1								
	Know how to download the log file	PM	1	read the	e tool manual, discuss with T4R team	۱								
	Reporting	PM												
	Gather reports for impoving the tool	T4R, LP sWG												
Outputs	Type of output	Target subject												
	reports from testing	PM TAR I P sWG		covers I	PDMs and partly operational scenar	los for the	e simulator; including results of the translation accu	racy in an	environment wit	h noise, an	d pertormar	nce of testin	ig person	
	bugs reports	14IC, LF 8110												
T														
Testing period	starts		05 February 2021											
	ends		12 February 2020											
Expected duration	3 hours													
Testing location	at a video/PC simulator (rail simulator)													
	optional: at the real simulator													
Connection to														
GSM-R	not required													
to other party (RU/IM)	not required													
Wifi	required for downloads only													
Destisiones	Desition	Destisiantisa		Minimal	l taali	Demuine	d ha anda da a	1						
Participants	Position Pilot manager	possible		coordin	ation incl. organisation of the simula	any	a knowledge	Language	competence					
	assistant	required		handle t	the tool and coordinate	any		mother tor	ngue					
	other person	required		evaluate	e the test	operation	al and safety expertise	mother tor	ngue					
	testing person(s)	required		test the	tool the simulator testing and supervise a	future FI	ELD driver or signaler (not applicable for IMs)	mother tor	ngue					
	Person with both language level competences (incl. railway jargon kr	required		Evaluate	a the accuracy of the translation	railway ia	ar san to tranings at a sinuator	both langu	ane level comp	etences (in	sl railway ia	argon know	edae)	
	,				,	, ,								
Content of the test	Subject	Number (minim	hal set to be tested)											
	Part of simulator scenarios		3											
	PDWB		10											
ROOME														
Objective	Description	Pornon	allela											
CONCIVE	MEAL MUMU	100000000	SIDIE											
Objective	test the tool on a simulator connected (by phone) to the other party	in	sible											
Objective	test the tool on a simulator connected (by phone) to the other party seperate rooms (real train driver AND signaller) under operational	in	sible											
Objective	test the tool on a simulator connected (by phone) to the other party seperate rooms (real train driver AND signaller) under operational conditions	in PM												
Objective	Less the tool on a simulator connected (by phone) to the other party separate rooms (real train driver AND signaller) under operational conditions test the accuracy of the translation test but has circumumicing antimoment affacts the enach recommition	PM Person v	with both language lev	velcom	petences (incl. railway jargon know	ledge)								
	Less the tool on a simulator connected (by phone) to the other party separate rooms (real train driver AND signaller) under operational conditions test the accuracy of the translation test how the surrounding environment affects the speech recognition Team involved in the test to be familiar with tool function	PM Person v PM PM	with both language lev	vel com	petences (incl. railway jargon know	ledge)								
	Used point a simulator connected (by phone) to the other party separate rooms (real train driver AND signalier) under operational conditions test the accuracy of the translation test how the surrounding environment affects the speech recognition Team involved in the test to be familiar with tool function	PM Person v PM PM	with both language lev	vel com	petences (incl. railway jargon know	ledge)								
Tasks	test the tool on a simulator connected (by phone) to the other party separate rooms (real train of wire AND signaller) under operational conditions test the securacy of the translation test how the surrounding environment affacts the speech recognition Team included in the test to be familiar with tool function Description	PM Person v PM PM PM	with both language lev	vel com	petences (incl. railway jargon know	ledge)								
Tasks	The start back of an a simulator connected (by phone) be other party separate more (real train driver AND signaller) under operational contents and the start of the start attains that have the surrounding environment affacts the speech recognition Team involved in the test to be familiar with tool function Description Perspere operational scenarios for the simulator Program operational scenarios for the simulator	PM Person v PM PM Respon PM	with both language lev	vel com	petences (incl. railway jargon know Way define scenarios is a document be	ledge) fore testi	ng, which are relevant for the pilot field phase							
Tasks	These processing of the second	PM Person v PM PM Respon PM SM-R) PM	with both language lev	wel com	pelances (incl. railway jargon know Way define scenarios is a document be	ledge) fore testi	ng, which are relevant for the pilot field phase							
Tasks	test the toxic on a simulator connected (by phone) to the other party separate rooms (real train driver AND signaler) under operational conditions test the securacy of the translation test the securacy of the translation team incohed in the test to be familiar with tool function Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description D	PM Person v PM PM PM PM PM SSM-R) PM Person v	with both language lev sible with both language lev	vel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know	ledge) fore testi ledge)	ng, which are relevant for the pilot field phase							
Tasks	Interception to an a simulator connected (by phone) to the other party separate corns (real train driver AND signality under operational conditions) that the translation last the accuracy of the translation take the view aurounding environment affects the speech recognition Team imclued in the test to be familiar with bod function Description Description Team immits at our bearrans of a simulator and communication Team immits and contained or the simulator and communication the accuracy of the transition Evaluate the effect of using the table on the train driver / signaler 1	in PM Person v PM PM PM PM PM SM-R) PM Person v asks PM	with both language lev sible with both language lev	vel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupanery/stress level/attention/.	ledge) Ifore testi	ng, which are relevant for the pilot field phase							
Tasks	test the tock on a simulator connected (by phone) to the other party separate rooms (real train other AND signallar) under operational conditions test the esurorunding environment affects the speech recognition Team incolved in the test to be familiar with tool function Description Prepare operational scenarios for the simulator Hummonia scenarios of the simulator and communication Teat minimal set of accuracy of a simulator connected (phone or G Evaluate the accuracy of the table) on the tain driver / signaler to Evaluate the scenario of the simulator connected (phone or G Evaluate the accuracy of the table) on the train driver / signaler to Teat the offeet of using the table) on the train driver / signaler to Teat the noise.	IN PM Person V PM PM PM PM PM SSM-R) PM PM SSM-R) PM PM SSM-R) PM PPM SSM-R) PM PPM PM PM PM	with both language lev sible with both language lev	vel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupancy/stress level/attentiov/.	ledge) fore testi ledge)	ng, which are relevant for the pilot field phase							
Tasks	Inset the scal on a simulator connected (by phone) to the other party separate rooms (real train driver AND signaller) under operational conditions test the securacy of the translation test the securacy of the translation test the securacy of the translation Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Description Descript	in PM Person V PM PM PM PM SM-R) PM SSM-R) PM SSM-R) PM Person V asks PM PM PM PM	with both language len sible with both language len	vel com	pelences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupancy/stress level/attentior/ read the tool manual, discuss with	ledge) fore testi ledge) T4R tean	ng, which are relevant for the pilot field phase							
Tasks	Inset the social na simulator connected (by phone) to the other party segnetar corrors (rest train other AND signaller) under operational conditions test the securated train station. The select his speech recognition Team included in the test to be familiar with bod function. Description Propure operational scenarios for the simulator Hermonics securates of the simulator Hermonics securates of the simulator Evaluate the advocump of the trainations of the simulator Evaluate the advocump of the trainations of the simulator Evaluate the index of using the table on the train driver / signaler to Evaluate the index of using the table on the train driver / signaler to Evaluate the index of using the table on the train driver / signaler to Evaluate the index of the bod from the manual Know all oxisting functions of the bod from the manual	in PM Person V PM PM PM SM-R) PM SSM-R) PM SSM-R) PM Person V asks PM PM PM PM PM PM	with both language len sible with both language len	vel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupancy/stress level/attentiov/ read the tool manual, discuss with read the tool manual, discuss with	ledge) fore testi ledge) T4R tean T4R tean	ng, which are relevant for the pilot field phase							
Tasks	The the toxic na simulator connected (by phone) to the other party separate rooms (real train driver AND signaler) under operational conditions test the securacy of the translation test the securacy of the translation test the securacy of the translation Description Prepare operational scenarios for the simulator Hemonics scenarios of the simulator Hemonics scenarios of the simulator Evaluate the occurrs of the simulator Evaluate the occurrs of the stabilitor Evaluate the occurre performance Evaluate the occurre the occurre performance Evaluate the occurre p	in PM Person V PM PM PM PM PM PM PM PM PM PM PM PM PM	with both language len	wel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupancy/stress level/attention/ read the tool manual, discuss with read the tool manual, discuss with read the tool manual, discuss with	ledge) ifore testi ledge) T4R tean T4R tean T4R tean	ng, which are relevant for the pilot field phase							
Tasks	Inset the box in a simulator connected (by phone) to the other party segmetar corres (rest arian driver AND signaller) under operational conditions test the surrounding environment affects the speech recognition Team include in the test to be familiar with hoof function Description Team include in the test to be familiar with hoof function Team include in the test to be familiar to the second second second second second second second team include in the second second second second second second team include and the second second second second second second team include and the second second second second second second Evaluate the effect of using the tabletion the train driver / signaler t Evaluate the overall performance Teat with noise Know how to dominiad and update language packs Know how to include the big file	In PM Person 1 PM PM PM PM SSM-R) PM PM SSM-R) PM PPM PM	with both language len	vel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know cocupancy/stress level/attention/. raad the tool manual, discuss with read the tool manual, discuss with read the tool manual, discuss with	fore testi fore testi fedge) T4R tean T4R tean T4R tean T4R tean	ng, which are relevant for the pilot field phase							
Tasks	Inset the social on a simulator connected (by phone) to the other party separate rooms (real train other AND signallar) under operational conditions test the securacy of the translation test the securacy of the translation test have the surrounding environment affects the speech recognition Team included in the test to be familiar with tool function Description Prepare operational scenarios for the simulator Humories scenarios of the simulator connected (phone or G Evaluate the accuracy of the translator Evaluates the officer of the tool from the train driver / signallar to Teat thin the officer of the tool from the train driver / signallar to Teat thin the officer of the tool from the train driver / signallar to Teat thin thosis Know how to downall and updates language packs Know how to install the APK tupdate Know how to downal the Log file Reporting Gather reports for importing the tool.	PM Person v PM PM PM PM PM PM PM PM PM PM PM PM PM	with both language lev sible with both language lev sWG	vel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupancy/stress level/attention/. read the tool manual, discuss with read the tool manual, discuss with read the tool manual, discuss with	fore testi fore testi fedge) T4R tean T4R tean T4R tean T4R tean	ng, which are relevant for the pilot field phase							
Tasks	The bear on a simulator connected (by phone) be other party signetiar corrers (real train driver AND signaler) under operational conditions test the surcourding environment affects the speech recognition Team included in the test to be familiar with tool function Description Description Himmonie scenarios of the simulator Propare operational scenarios for the simulator Himmonie scenarios of the simulator Evaluate the accuracy of the translation Team minimal set of scenarios of a simulator connected (phone or G Evaluate the accuracy of the translation Evaluate the editory of the tarshaten Evaluate the output performance Test with noise Krow all existing functions of the tool from the manual Krow hov to download and update language packs Krow hov to download and update language packs Krow hov to download the tool Gather reports for impoing the tool goinmir prepare a value on IASA to create a demonstration videe	PM Person to PM PM PM PM PM PM PM PM PM PM PM PM PM	with both language len sible with both language len sWG	vel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupancy/stress level/attentior/ read the tool manual, discuss with read the tool manual, discuss with read the tool manual, discuss with	fore testi fore testi fedge) T4R tean T4R tean T4R tean	ng, which are relevant for the pilot field phase							
Tasks	Inset the social na simulator connected (by phone) to the other party segnetar corrors (rest train other AND signaller) under operational conditions test the surrounding environment affects the speech recognition Team involved in the test to be familiar with tool function Description Prepare operational scenarios for the simulator Harmonias exemutes of the simulator Harmonias exemutes of the simulator Harmonias exemutes of the simulator Evaluate the adorcurroy of the transition Evaluate the effect of using the table on the train driver / signaller t Evaluate the overall performance Evaluate the overall performance Know how to downdar and update language packs Know how to downdar du topate language packs Know how to install the APK update Know how to downdar the log file Reporting Cather reports for impointing the tool optional, prepare a video to NSAs to create a demonstration vide	PM Person to PM Person to PM PM PM SSM-R) PM PM PM PM PM PM PM PM PM PM PM PM PM P	with both language lev sible with both language lev	vel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupancy/stress level/atention/ read the tool manual, discuss with read the tool manual, discuss with	fore testi fore testi fedge) T4R tean T4R tean T4R tean	ng, which are relevant for the pilot field phase							
Tasks	The bear on a simulator connected (by phone) be other party separate rooms (real train driver AND signaler) under operational conditions. Itsel the becurrounding environment affects the speech recognition Team involved in the test to be familiar with tool function Description Prepare operational scenarios for the simulator Himmories scenarios of the simulator Himmories scenarios of the simulator Evaluate the accuracy of the translation Evaluate the accuracy of the translation Evaluate the effect of using the table! on the train driver / signaler t Evaluate the outcarroup of the translation Evaluate the effect of using the table! form the manual Know how to download and update language packs Know how to download after the tool from the manual Know how to download after the tool from the manual Know how to download after the tool from the manual Know how to download after the tool from the manual Know how to download after the tool from the manual Know how to download after the tool from the manual Know how to download after tool from the manual Know how to download the top file Recording Casther reports for impointing the tool gottimet program to the store tool to KAs to create a demonstration video The of output	PM Person to PM PM PM PM PM PM PM PM PM PM PM PM PM	with both language len sible with both language len sWG	vel com	pelences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupancy/stress level/attention/ read the tool manual, discuss with read the tool manual, discuss with	ledge) fore testi ledge) T4R tean T4R tean T4R tean T4R tean	ng, which are relevant for the pilot field phase							
Tasks Outputs	Inset the social na simulator connected (by phone) to the other party segmente rooms (result arian driver AND signaller) under operational conditions test the securated arian driver AND signaller) under operational test how the surrounding enriroment affects the speech recognition Team included in the test to be familiar with bod function Description Team included in the test to be familiar with bod function Team includes of operations of a simulator requires operational scorarsion for the simulator Team includes of operations of a simulator connocted (phone or G Evaluate the effect of using the testide the train driver / signaler t Evaluate the effect of using the stellar the train driver / signaler t Evaluate the effect of using the stellar the train driver / signaler t Evaluate the effect of using the stellar the train driver / signaler t Evaluate the effect of using the stellar the galaxy packs frow how to domind and update the traing and the train Recording the for importing the tool optional: the train record to the dimensional the tool optional: b for importing the tool optional: proper a video to NSAs to create a demonstration video.	PM Person vi PM PM PM PM SSM-R) PM PM PM PM PM PM PM PM PM PM PM PM PM P	with both language len sible with both language len siWG	vel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupancy/stress level/attentiov/ read the tool manual, discuss with read the tool manual, discuss with read the tool manual, discuss with covers scenarios of the simulator;	fore testi fore testi tedge) T4R tean T4R tean T4R tean	ng, which are relevant for the pilot field phase	sent with no	ise, connection	n to the othe	er party, ar	d performa	nce of testin	ig person
Tasks	The the sol on a simulator connected (by phone) bite of the party separate rooms (real train of ther AND signallar) under operational conditions test the surrounding environment affacts the speech recognition Team included in the test to be familiar with tool function Description Propere operational scenarios for the simulator Himmonias scenarios of the simulator Himmonias scenarios of the simulator Evaluate the occurround of a simulator connected (phone or G Evaluate the occurround of the studiet con the train driver / signallar t Evaluates the occurround of the studiet con the train driver / signallar t Evaluates the occurround of the studiet con the train driver / signallar t Evaluates the occurround of the studiet con the train driver / signallar t Evaluates the occurround of the studiet con the train driver / signallar t Evaluates the occurround of the studiet con the train driver / signallar t Evaluates the occurround and updates language packs Know how to domated the log file Reporting Gather reports for impointing the tool optionat; prepare a video to NSAs to create a demonstration video Type of output reports from testing Log files produed to WG	IN Responses PM PM PM PM PM SM-R2 PM PM PM PM PM PM PM PM PM PM	with both language len sible with both language len sWG subject sWG	vel com	petences (incl. railway jargon know Way define scenarios is a document be petences (incl. railway jargon know occupancy/stress level/atention rand the tool manual, discuss with read the tool manual, discuss with read the tool manual, discuss with read the tool manual, discuss with covers scenarios of the simulator;	fore testi fore testi factean T4R tean T4R tean T4R tean	ng, which are relevant for the pilot field phase	nent with no	ise, connection	n to the oth	er party, ar	d performa	nce of testin	ig person
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