SYNOPSIS OF CORRIDOR TRIP MONITORING SYSTEM (CTMS) IN CONJUNCTION WITH TRIPS

Background
The Tripartite Transport and Transit Facilitation Programme (TTTFP) is implementing the harmonised minimum standards in cross border road transportation within the legal framework of the Multilateral Cross Border Road Transport Agreement (MCBRTA) and Vehicle Load Management Agreement (VLMA) that require quality regulation of operators, vehicles and drivers within the Tripartite region. This legal framework has already been adopted by the Tripartite Sectoral Ministerial Committee on Infrastructure in Lusaka, Zambia on 31 October 2019. Operator, vehicle and driver information will be readily available along regional transport corridors at the roadside and at border posts to all regulatory and law enforcement agencies through the Tripartite Transport Registers and Information Platform System (TRIPS) that is now under development for implementation.

In accordance with the provisions of the VLMA and MCBRTA and the corresponding domestic laws and regulations which are to be enacted, the operator is responsible and liable for the quality of operation of both the vehicle and driver and must ensure compliance to receive authorisation to participate in cross border road transportation.

Trip Registration
Assuming that Member/Partner States provide for registration of cross border trips to be a mandatory regulatory requirement in their domestic laws, TRIPS can facilitate safe and free corridor trade and trip monitoring in order to improve corridor efficiency, in a similar manner to the regulation and enforcement of laws and standards relating to registration and licensing on drivers, vehicles and operators. It is proposed that an additional system, to be referred to as the Corridor Trip Monitoring System (CTMS) be developed and hosted in conjunction with TRIPS. Through TRIPS, the Responsible Competent Person (RCP) of the operator undertaking the journey is to register a cross border trip on behalf of the operator on the CTMS, prior to departure.

This trip registration shall include the identification of the crew, i.e. driver, co-driver and/or assistant inclusive of their mobile phone numbers, as well as the vehicle and the responsible operator. The identity of the driver(s) will be verified through the validation of the driving licence/professional driving permit (PrDP) by TRIPS, while any non-driver (crew member) must register a valid passport\(^1\)

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\(^1\) Passports already have MRZ and some possibly chip machine readable properties, each of which requires different readers to a barcode reader. Adding a 2D barcode to such documents will enable use of the same technology deployed for TRIPS to read the content.
or other recognised or approved border control identity document. Documents to satisfy public health requirements identified by Member/Partner States, such as yellow fever cards or certification of other mandatory vaccinations or inoculations, which form part of specified requirements for approval of cross border trip registration requirements, can also be recorded at registration.

To enable the improved tracking of the holder of a mobile phone and personal contact recording capabilities of applications now being released in the market, the responsible operator must provide each crew member with an entry level mobile phone capable of running such applications. In addition to the tracking applications, a health screening application requiring each crew member to record their wellbeing twice daily, will also be loaded on this mobile phone.

Public Health Requirements

During periods when Governments specify additional public health certification, such as the Covid-19 pandemic, such additional health and safety requirements will be set as mandatory information to be registered on the CTMS. Such registration will serve as confirmation that all crew members are compliant with the set conditions for a cross border road transport trip before commencing with the trip, e.g. medical insurance to cover the cost of treatment and/or repatriation of infected crew members, infection/immunity status, location and date of last medical examination or test, as well as the results thereof. Also, to be recorded are the checklist of Covid-19 symptoms, including the temperature of each crew member at the time. To facilitate registration and resolution of Non-Tariff Barriers, consignment and border regulatory documentation can be scanned and uploaded when the cross-border trip is registered on the CTMS. This can be linked to Tripartite NTB Reporting and Elimination Platform [https://www.tradebarriers.org/register_complaint](https://www.tradebarriers.org/register_complaint).

The CTMS trip record so created will be made accessible through TRIPS to authorised public health/medical and law and regulatory enforcement officers from all Member/Partner States along the corridor who may require same for clearance processing, verification and investigations, including contact tracing. TRIPS will provide the information during the journey when any of the 2D barcodes on the vehicle fitness disk, operator disk or any of the crew’s driving licences or PrDPs are scanned by a medical or law/ regulatory enforcement officer. Similar 2D barcodes can be generated for consignment documents or to be affixed to passports and other recognised border control documents, allowing the same equipment to be used by medical and law/ regulatory enforcement officers irrespective of the documentation involved.

Location Tracking

During the trip, the CTMS will collect, consolidate and monitor vehicle movement on the corridor by receiving the following vehicle and crew tracking information through TRIPS:

- Vehicle Location by means of a secure system interface to collect tracking information from the onboard/ embedded satellite navigation system or operator installed vehicle tracking system. The upload of information will be performed at any location when satellite or mobile reception (GSM) is available.

The vehicle tracking information will be supplemented by real time location data recorded by the Vehicle Load Management Information System (VLMIS) at the regional weigh stations on the corridor, i.e. when the vehicle was identified through automated number plate recognition (ANPR) or when the vehicle fitness disk, operator disk and/or driving licence or PrDP was scanned by an officer at a weigh station or at any other location along the corridor.

Where available, the vehicle tracking information will also be supplemented by tracking data originating from existing customs cargo tracking systems such as the Regional Electronic Cargo Tracking System (RECTS) implemented in the EAC of the COMESA Virtual Trade Facilitation System (CVTFS).

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2 Typically, Android operating systems 6.0 Marshmallow or above with at least 1GB RAM, Bluetooth Low Energy (BLE) and GPS (both A-GPS and GLONASS).
Driver(s) and Crew Location by means of integration with existing mobile phone tracking solutions that provide location data when the driver and crew members’ mobile phones connect to a mobile network (GSM or WiFi). In case of a pandemic, this integration will allow for the tracking of all crew members’ movement and other persons with mobile phones that they may have been in contact with when they were not in the vehicle.

The data collection can be used for statistical analysis and reports on corridor diagnostics and metrics performance analysis such traffic volumes, travel time, waiting times, queue management and publication of various metrics.

**Covid-19 Infection Testing**

One of the most difficult aspects to deal with while trying to contain the spread of infection during a pandemic is if the nature of the virus is such that asymptomatic infected persons can infect others. The Covid-19 test results from Iceland, where almost 5% of the population were tested irrespective of whether they were symptomatic, showed that almost 50% of the infected persons were asymptomatic or mildly symptomatic. These results support the understanding that infected persons who are asymptomatic, or mildly symptomatic, have played a significant role in spreading the SARS-CoV-2 virus.

Consequently, the “simple” test methods used in the past of measuring persons for a fever at an entry point such as a land border post will not be sufficient and it will hold significant safety benefits if one is able to:

- identify and prevent an infected person from possible contact with officials and other members of the public,
- be able to test persons for possible infection in a contained environment, and
- use an automated testing method that produces reliable results within a short space of time without having to convey the specimens to be tested to a secondary location.

Chaotic scenes at a land border post with large numbers of trucks and crew awaiting clearance in the absence of adequate facilities and clear procedures to accommodate and control such large crowds in a safe manner (as we have already observed at Kasumbalesa and other border posts following the outbreak of Covid-19 in the region) should be avoided. Thus, it is suggested that pre-clearance checkpoints be established some distance from the border and customs control area at convenient locations, preferably in the vicinity of facilities that are better equipped than the border posts to deal with drivers or crew members that are infected. In this manner, only vehicles of which the crew has been cleared may proceed to the border post immigration, customs, security and other regulatory clearance processing.

Ideally such clearance (and possibly testing) should take place while the crew remain within the vehicle to prevent contact with other crews and infect them or be infected by such crew members. To accomplish a no-contact clearance process, the medical or law enforcement officials are to scan the vehicle fitness disk or operator disk on the vehicle to obtain the crew identity, vehicle and operator information from the CTMS through a compliant/approved TRIPS handheld device. Based on the information retrieved from the CTMS, a decision can be made in accordance with the developed health protocol whether the Covid-19 status of the crew members allows them to be cleared to proceed to the border or require testing.

The Covid-19 protocols are evolving as more information is gained from studies performed regarding the behaviour of the SARS-CoV-2 virus. As the testing protocols develop, the status of the crew members on the CTMS may include aspects such as the following:

- Symptomatic History – Details recorded twice daily by crew members on the symptom screening applications on their mobile phones.
- Positive Test – Date and location of such test, together with the quarantine arrangements.
• Immunity Certification – Persons who contracted Covid-19 and recovered upon which a sufficient amount of antibodies is present within their bodies to render them immune to further infections of SARS-CoV-2 for a predetermined period of time within which they would not need to be tested.

• Vaccination Certification – Once a vaccine has been developed, vaccinated persons would be immune to infection of SARS-CoV-2 for the duration of the validity period of the vaccine within which they would not need to be tested.

• “Active” Negative Test – If supported by the testing protocols, it may become possible to capitalise on the incubation period between the time that a person was infected and the time that the asymptomatic person may infect others, i.e., persons who have been tested and found to be negative within such incubation period.

• “Expired” Negative Test – If the period of time since the previous negative test results exceeds the incubation period, every person should be tested again irrespective of being symptomatic.

At the border posts with high traffic volumes along the main regional corridors connecting the land locked countries to the sea ports, a fully automated pathogen test\(^3\) of a nose or throat swab that produce reliable test results within hours should be deployed to test all persons irrespective of being symptomatic. At border posts with low traffic volumes where the cost of such test equipment may not be warranted and the nearest test location can only be reached in several hours by road, the use of drones\(^4\) may be considered to transport the test specimens to the nearest facility where the test can be conducted.

Once the test results are available, the test date, time and location and results together with other symptomatic information, including the person’s temperature reading, are to be uploaded to the CTMS using the TRIPS handheld device. When required, the official can request the available movement records of the vehicle and crew members. Vehicles of which the crew has been cleared without the need for testing and those that have tested negative are allowed to proceed to or through the border.

Vehicles of which a single crew member tested positive are not allowed to proceed to the border and the procedures in accordance with the developed protocol for such events will be followed by the officials at the checkpoint. The system will communicate such information and results to the operators and vehicle owners to arrange for a back-up or replacement/relay crew and the disinfection of the vehicle. Backup or replacement crews are to be registered in the same manner and tested in terms of the management protocol before they are allowed to proceed with the journey.

Provisions for the mutual recognition of the above specified medical test results (travel health visa) will be written into regional Agreements and shall be domesticated in national laws.

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\(^3\) Typically a test such as the Xpert\(^\text{®}\) Xpress SARS-CoV-2. According to the Cepheid website, the test leverages the design principles of their cartridge technology, in which multiple regions of the viral genome are targeted. The test can provide rapid detection of the current coronavirus SARS-CoV-2 in approximately 45 minutes with less than a minute of hands on time to prepare the sample. Xpert\(^\text{®}\) Xpress SARS-CoV-2 can be utilized in multiple settings where actionable test results are needed to make informed treatment decisions quickly. The test delivers point-of-care results with the same level of performance seen in reference labs. The test is designed for use on Cepheid’s GeneXpert\(^\text{®}\) Systems, which have a worldwide footprint of more than 23,000 placements. [https://www.cepheid.com/coronavirus](https://www.cepheid.com/coronavirus)

Another automated rapid test option is the Bosch Vivalytic Analyser using Vivalytic Test Cartridges, which according to the Bosch website tests for 10 different pathogens from a nose or throat swab, including SARS-CoV-2 and Influenza A & B, producing test results at the roadside within 2.5 hours with reliability of more than 95%. [https://www.bosch.com/stories/vivalytic-rapid-test-for-covid-19/](https://www.bosch.com/stories/vivalytic-rapid-test-for-covid-19/)

\(^4\) The use of drones is envisaged in Ghana with a view to increase its testing capacity by using drones to fly samples collected from over 1,000 healthcare facilities in rural areas to laboratories in cities for Covid-19 testing. It is anticipated that the contactless transportation will increase the speed of testing outside of urban hubs on a daily basis. The drone company, Zipline, estimates that a trip could take under an hour. Trucks, on the other hand, would take several hours to traverse rural roads between hospitals. The fleet of drones is already used to deliver blood, vaccines and essential medical equipment to rural areas. [https://flyzipline.com/solutions/global-public-health/](https://flyzipline.com/solutions/global-public-health/)
Immigration/ Customs Pre-Clearance

All immigration and customs documentation recorded on the CTMS, inclusive of the results of the Covid-19 clearance details which allowed the vehicle to proceed to the border post are accessible to the immigration and customs officials on TRIPS and could be used for pre-clearance purposes. An immigration visa information management interface can be added to the system.

In addition, the tracking information would also provide an indication of the expected time of arrival of the vehicle at the border post. An interface from TRIPS to the immigration and customs systems used could make the documents and other travel health visa related information available on the existing systems used by the immigration and customs authorities within the region.

24x7 Availability

The TRIPS makes provision for high availability hosting architecture through high redundancy with several hosting sites linked via independent network connections to the international internet infrastructure along both the East and West coast of Africa. This same architecture will ensure that the CTMS as mission critical system will also remain available to the public health and law enforcement authorities along all corridors traversing the Member/Partner States of the Tripartite under conditions where up to 50% of the network and/or hosting infrastructure may be unavailable.

Corridor Management Institutions (CMI)

Hosting of the CTMS in conjunction with TRIPS renders the system available to all CMI s as a corridor performance management tool for a smart corridor without the need for each CMI to procure and host a similar system locally for a particular corridor.