Request for Proposal

CPE Procurement

SSA-T, Appendix 3

Customer's Technical Platform and Physical Environment

Version log

Version	Initials	Date	Comments/amendments
1.0	KIV	18.03.18	
1.1	DIK	18.10.2019	Part of the Tender documents
1.2			

Contents

1. INTRODUCTION

The intention of this document is to give a description of the current and future organisation, processes and technical platform of the Norwegian electronic toll industry, within which the Charging Point Equipment delivered by the Contractor will operate.

To the extent the Customer is required to upgrade the technical platform in order to operate and use the software, the Contractor shall specify the required upgrades in Appendix 2, including the system and sizing requirements.

2. CURRENT AND FUTURE TECHNICAL PLATFORMS

Current state
The current system solution for tolls in Norway is a central system managed by the existing supplier.

The system is highly automated and has over the years proved to be efficient, stable and available for the end users. It has the system functions needed to support the many small toll companies, and the ability to let service companies manage several toll companies.

The operation and contract is managed by the Customer and the service companies are invited to participate in advisory boards. The service companies have signed own service contracts with 3rd parties for OBE/OBU management, invoice distribution and invoice hotel, bank and debt collection, external accounting and so on.

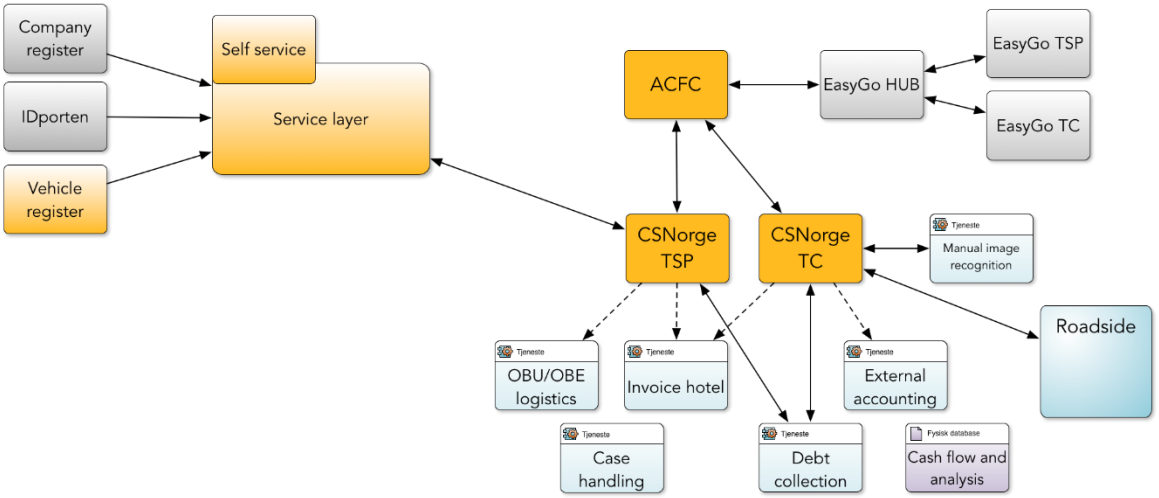


Figure 1 – An illustration of today's central system solution

Overview of current systems and vendors:

Systems	Description	Vendors
ACFC	The ACFC (AutoPASS Collection and Forwarding Central) serves as an interconnecting HUB for all actors (TC and TSP) in AutoPASS Interoperable Payment. All data exchange between Issuers and Operators within AutoPASS is directed through ACFC.	Systor AS
CS Norge	The current system solution for tolls in Norway is a central system managed by the vendor	Q-Free AS
Roadside	The roadside equipment is of differing technologies and age. There are approximately 300 toll stations and 600 collection lanes in Norway	Tecsidel Q-Free AS Kapsch

Service layer	The NPRA service layer is used by AutoPASS self-service users. It has integration to ID-porten, the Norwegian authentication portal, Brønnøysund register, the Norwegian company register, NVDB (National roads database). NVDB contain information regarding toll stations, map coordinates and prices.	Kantega AS
EasyGo HUB	EasyGo and EasyGo HUB serve as an interconnecting HUB for all actors in the EasyGo community	EasyGo

Table 1 - Overview of current systems and vendors

Target end state

As described in Appendix 1, the solution ownership will become stronger when the Customer are responsible for the systems supporting their value chain. The chosen concept supports this by making:

- Regional functions the responsibility of the regional companies
- Central components ensuring interoperability and correct identification and pricing will be managed and operated as shared components
- The current service agreements with 3rd parties will be regional

The following illustration shows the value chain from Roadside through AutoPASS IP to the toll collector and toll service provider, with the AutoPASS HUB ensuring interoperability between the components and the integration with EasyGo and new commercial TSP's.

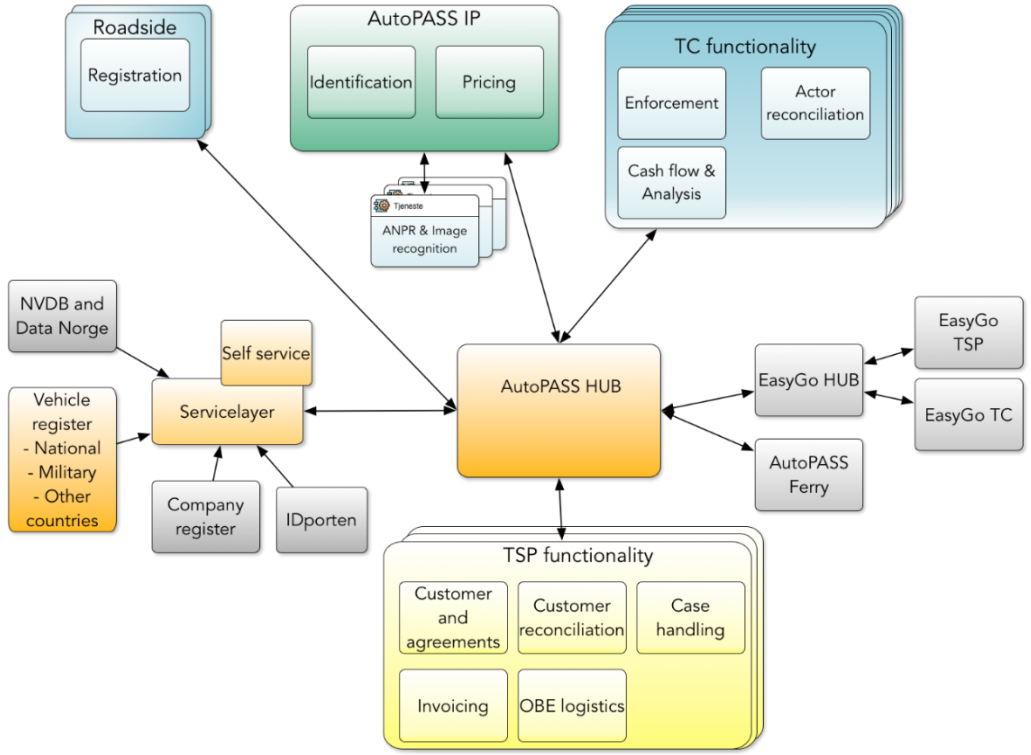


Figure 2 – An illustration of the new system solutions for toll collection in Norway.

The above is a simple illustration of the New System solution for toll collection in Norway. A short description of the functionality of the different components are as follows:

- **AutoPASS HUB** will be the component ensuring interoperability between the different components and the wider community, both during and after all new systems are established and all current companies using the Central System have migrated to the new system solutions.

  The AutoPASS community consist of many actors, and these actors interact technically through exchanging messages and files. AutoPASS HUB is a transport infrastructure with the ability to send defined messages and files based on information given in the messages and files. AutoPASS

HUB is mandatory for all actors in the AutoPASS payment collaboration and the defined data formats.

- **AutoPASS IP** includes the most important common parts of the value chain for the toll collection; identifying passages based on information of agreements coming from the Toll service provider (TSPs), and pricing of passages based on the information in the agreement and the price rules and logic managed in the AutoPASS IP. AutoPASS IP further has the needed business logic to address the correct Toll collector (TC) or TSP, which should enforce the priced transaction. AutoPASS IP will also manage all configuration such as toll stations and lanes, prices, status and codes. AutoPASS IP is mandatory for all actors in the AutoPASS community. In this respect, *ANPR & Manual image handling* will be a separate procurement with a clear interface to AutoPASS IP.

- **Toll Collector (TC)** contains the functionality needed for a TC to operate in the AutoPASS community. This includes, but is not limited to reconciliation, invoicing, debt collection, interfaces to banks, debt collection, invoice distribution, external accounting and reporting. AutoPASS TC solutions will be procured and implemented in parallel with the AutoPASS HUB and AutoPASS IP.

- **Toll Service Provider (TSP)** contains the functionality needed for a TSP to operate in the AutoPASS community. This includes, but is not limited to reconciliation, invoicing, debt collection, OBU logistics, customer and agreements, self-service, case handling, interfaces to banks, debt collection, invoice distribution, external accounting and reporting. The intermediate TSP will be replaced by commercial TSPs, as soon as the terms and conditions are in place and in operation. The AutoPASS TSP solutions will be procured and implemented in parallel with the AutoPASS HUB and AutoPASS IP.

- **The EasyGo HUB** is the HUB ensuring interoperability to and from all companies within the EasyGo community. Documentation regarding EasyGo is available through EasyGo documents. The EasyGo HUB will remain and have the same function as today.

- **The roadside equipment** varies in age and owned and managed by each TC. Depending on the local setup, the roadside equipment will send passages on an hourly or daily basis. All roadside equipment stores passages for at least 3 days. The roadside will remain and have the same function as today.
  Today, there is no automatic verification of passages sent from roadside or that they are correctly received by the current Central System. Passages registered on the roadside are sent to the AutoPASS IP via the AutoPASS HUB.

- **Service layer:** The SVV Service bus is used by AutoPASS self-service users. It has integration to ID-porten, the Norwegian authentication portal, Brønnøysund register, the Norwegian company register, Norsk veidatabank (NVDB) and Data Norge. NVDB and Data Norge contains information regarding toll stations, map coordinates and prices.

- **AutoPASS Ferry:** Some ferries have entered the AutoPASS community and by doing this have set up a “roadside” at the ferry station and send the priced transaction for enforcement. By doing this they need the same information regarding valid agreements as a normal roadside, and they send the needed information to a TSP for invoicing, using the data formats described in the annex 6.

The transitional phase towards the end state

The following illustration shows the transitional phase towards the end state. In this phase the new and old system will coexist. In addition, there might be a period where the TSP function lies within the RBPS, until the framework for the TSP are implemented.

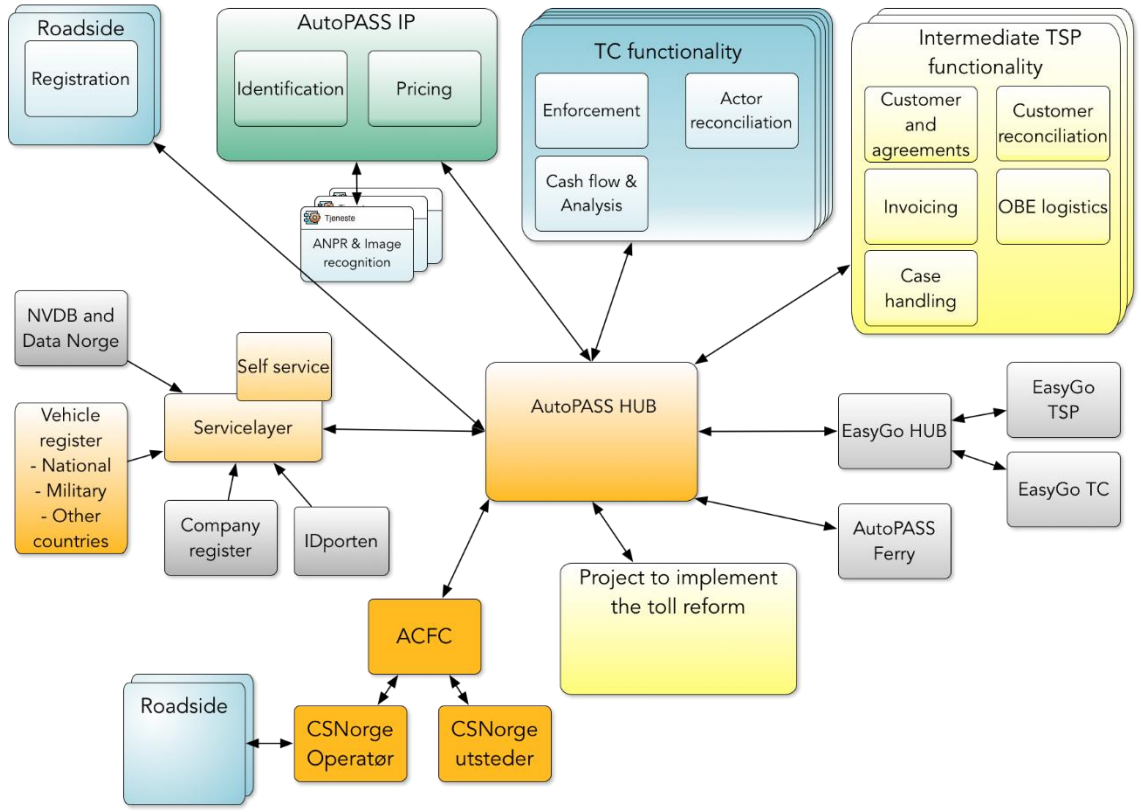


Figure 3 – An illustration of the transitional phase

3. INFORMATION ABOUT NETWORK

3.1 Introduction

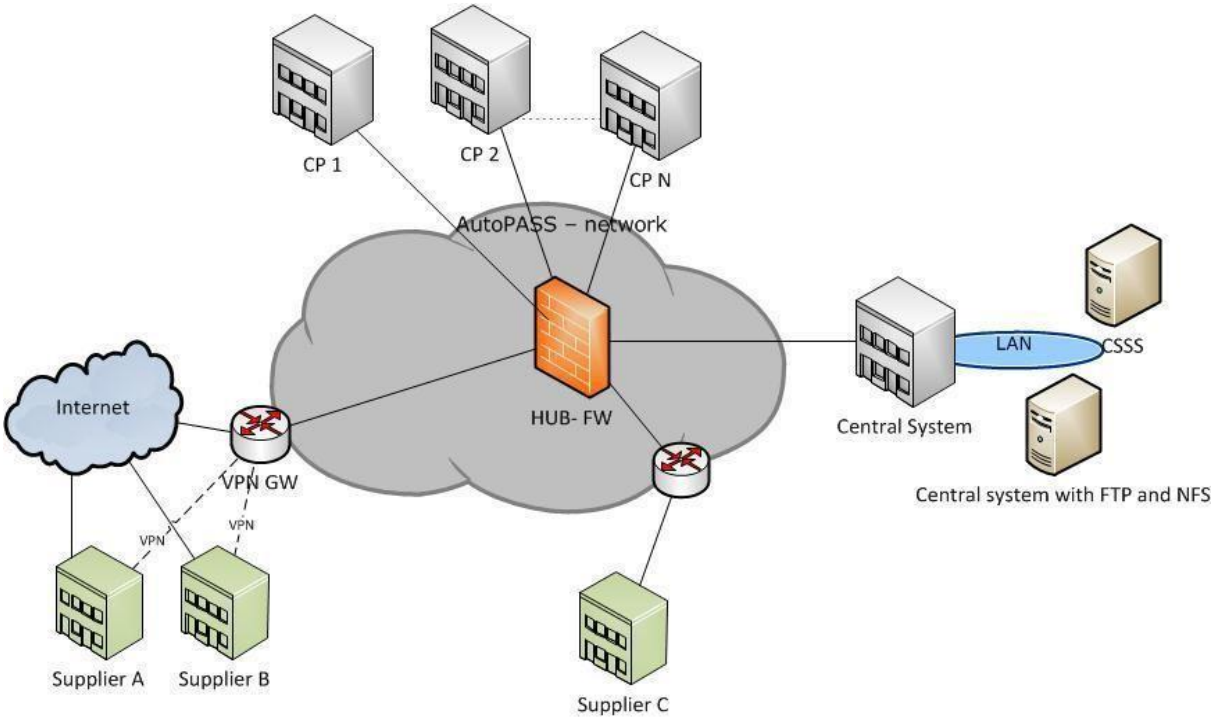
This section describes the overall AutoPASS network and gives requirements to the Contractor for establishing communication between the Charging Points, Central System and the Contractor.

The AutoPASS network is established as a HUB/SPOKE solution where all communication passes through a central point (HUB). The data traffic is validated with respect to defined firewall rules and if accepted forwarded to the recipient. The core components in the network are based on MPLS (Multi-Protocol Label Switching) and are delivered and administrated by external vendor (3rd party). The main components like firewalls and switches are redundant ensuring high availability, and also managed by the external vendor.

A principal sketch of the network is given in Figure 4.

The communication to the Charging Point Oslo 2015, is based on fixed line or Single-Pair. High-speed Digital Subscriber Line (SHDSL) and the standard data rate is 2 Mbps

Figure 4 – Principal sketch of the AutoPASS network



Higher capacity can be delivered upon request.

3.2 Availability and quality

The availability is 99.5%. Fault on the network is reported to a single contact point.

3.3 Options and requirements for AutoPASS network connection

Communication between the Contractor and the AutoPASS network can be established by one of the solutions presented in Table 6 and further specified in Table 7.

Table 6 – Connection to the AutoPASS network

Connection method	Description
VPN tunnel	Used if the Contractor requires a fixed connection to the AutoPASS network: • The Contractor's VPN equipment shall be compatible with Cisco VPN. The Contractor shall establish the connection, cover the cost and be responsible for the connection to the AutoPASS Network. • IP range for all communication to the AutoPASS network is allocated by the Customer (NPRA IP plan), and shall also be used on the Contractors side.
Fixed line	Used if there are special demands with respect to availability or higher data rate (bandwidth): • The Contractor shall establish the connection, cover the cost and be responsible for the fixed line to the AutoPASS network.

Table 7 – VPN configuration; available settings with preferences in bold

IKE negotiation (Phase 1)

Parameter name	Available settings
IKE Mode	Main, Aggressive
Supported data encryption	AES-128, AES-192, AES-256, 3DES, DES
Supported hash algoritms	SHA1, MD5
Diffie-Hellman Group	5, 2, 1
Lifetime measurement	14400 sek, 28800 sek
Preshared key	Yes
Preshared Secret	
Nat transversal	no, yes

IPSec negotiation (Phase 2)

Parameter name	Available settings
Supported data encryption	AES-128, AES-192, AES-256, 3DES, DES
Supported hash algoritms	SHA1, MD5

Diffie-Hazellman Group	no-pfs, 5, 2, 1
Lifetime measurement	3600 sek
Replay Protection	no, yes
Encapsulation	ESP

3.4 General requirements with use of IP Addresses

The AutoPASS network uses addresses in the range 10.120.0.0/15 and it is important that the Contractor does not use this address range in the Local Area Network (LAN) that shall communicate with the AutoPASS network. NAT (Network Address Translation) can be used on the Contractor's side for hiding addresses where conflicts have been identified.

IP ranges/subnet(s):

Charging Point Equipment (CPE): 10.120.x.x/26 (64 addresses per Charging Point)

Data concentrator: 10.120.255.x/29 (8 addresses)

Contractors side (LAN): 10.121.0.0/16 (RFC1918 compatible) or official (public) internet IP-addresses