

# DELTA

Datensicherheit und -integrität in  
der Elektromobilität beim Laden  
und eichrechtskonformen Abrechnen



## 2016-12-01\_DELTA\_Anwendungsfaelle

Dieses Dokument beschreibt die im Projekt DELTA erfassten Anwendungsfälle und deren Relevanz für die weitere Betrachtung im Projektverlauf.

Arbeitsstand: 01.12.2016



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-001	Charge control via CHAdeMO		Charger, Vehicle	CHAdeMO (FKFS)	Ladestrom, Ladespannung sowie deren Ober- und Untergrenzen		
DELTA-UC-018	Vehicle inspection and repair	<p>In this case, usually an external test Equipment is connected to the vehicle which Implies that the communication is not time critical (within standard timing requirements of communication).</p> <p>This external test equipment can request vehicle data which can be qualified to determine readiness of the vehicle or to perform vehicle diagnostic fault tracing as part of a repair.</p>	Inspection and Maintenance Agency and Repairers	Diagnose (FKFS)	Diagnostik-Datensatz		IF_EV_DoXX (nicht IF_EV_EVSE)
DELTA-UC-019	Vehicle/ECU software reprogramming	<p>This use case implies that large amounts of data will be transferred from the external test equipment to the vehicle.</p> <p>The vehicle requires connection establishment with (optional) security negotiations.</p>	Vehicle Engineering/ Manufacturing and Repairers or service	Diagnose (FKFS)	ECU Firmware und Konfiguration		IF_EV_DoXX (nicht IF_EV_EVSE)
DELTA-UC-024	Reading charging values; eg.: voltage, current, energy(flow), SoC, SoH, costs information, ...	<p>Provide information about the charging.</p> <p>Provide information about completed or (emergency) stopped charging session, provide information about charging sessions in the past.</p>	Repair technicians (OBD-Connector);	Diagnose (FKFS)	State of Charge, State of Health, Voltage, Current, Energy (flow), Konfigurationsdaten		IF_EV_OBD



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DELTA-UC-025	Change charging setting (eg. max current)	Setup an charging parameter update	Repair technicians (OBD-Connector);	Diagnose (FKFS)	Konfigurationsdaten vom Ladesteuergerät		IF_EV_OBD
DELTA-UC-029	Sell EV to second hand vendor	<p>This use case involves the process of selling an EV to a second hand vendor and takes the handling and deletion of owner/contract specific data (such as certificates and key material) and privacy relevant data into account.</p> <p>This use case may also take the remote deletion and handling of data into account as well.</p>	Second Hand Vendor EV EV owner (Selling EV)	Monitoring & Life-Cycle (SIT)	EMAID	EV - Secure Storage/ Security Module?	OBD?
DELTA-UC-031	Sell EV to new private owner	This use case involves the process of selling an EV directly to a new private owner and takes the handling and deletion of contract specific data (such as certificates and key material) and privacy relevant data into account.	EV Owner EV Private Customer	Monitoring & Life-Cycle (SIT)	EMAID	EV - Secure Storage/ Security Module?	Owner doesn't have access to OBD, is there a direct way for the owner to delete/ modify respective information? E.g. via EVSE?
DELTA-UC-033	Scrap EV	<p>Once an EV reaches a certain "age" or if it was fatally damaged during an accident, the EV may be brought to a scrapyard.</p> <p>Because scrapyards are often hardly well protected environments, it needs to be made sure that any privacy related data and contractual data (such as certificates and key material) are handled correctly and are deleted from the vehicle to prevent misuse (e.g., extraction of keys out of the scrapped car parts).</p>	EV Owner Scrapyard personnel Towing Services / Third party service providers (?)	Monitoring & Life-Cycle (SIT)	EMAID	EV - Secure Storage/ Security Module?	?



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DELTA-UC-035	Maintain EV	<p>During maintenance it may be necessary to replace parts of an EV or update its software. Both may also contain necessary privacy related data as well as contract specific data that needs to be handled, destroyed and or possibly migrated to a new platform etc.</p> <p>At the end of the maintenance, the vehicle must be prepared for charging and old data must be handled accordingly.</p>	Customer EV Maintenance Shop (Personnel)	Monitoring & Life-Cycle (SIT)	EMAID	EV - Secure Storage/ Security Module?	?
DELTA-UC-036	Salvage EV	Sometimes vehicles / EVs are sold to special vendors to salvage usable parts which may also include components that hold privacy related and contract specific data. This data needs to be removed before the parts are extracted and sold.	Customer Salvaging Personnel (May be customer in case of private salvaging) EV	Monitoring & Life-Cycle (SIT)	EMAID	EV - Secure Storage/ Security Module?	?
DELTA-UC-037	(Remotely) Recover EV	<p>In case it was detected that EV (hardware/software) was manipulated a recovery procedure needs to be performed. It should include a rollback to the latest secure state/ installation of a new firmware version. Certificates and keys needs to be protected during this process.</p> <p>If there is a suspicion that the cryptographic material was compromised reinitialisation of EV must be performed.</p>	Customer EV	Monitoring & Life-Cycle (SIT)	Recovery-Kommando	EV - Secure Storage/ Security Module?	?
DELTA-UC-039	EVSE Logging	In order to analyse problems with regards to access control, configurations, charging attempts and process, the CPO may have in interest in Logging of events and information that need to be stored.	EVSE CPO	Monitoring & Life-Cycle (SIT)	Log-Events		



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DELTA-UC-040	Monitoring of EVSE	As EVSE / CPs are planned to be deployed in many different locations, it may be useful to have some means to monitor EVSEs with regards to manipulation of EVSEs.	EVSE CPO	Monitoring & Life-Cycle (SIT)	Audit-Log		
DELTA-UC-041	Storage of charging data	In case of possible connection loss with the backend it may be necessary / useful to store charging related data in a secure way on the charging point to prohibit tampering or destruction of the data until it could be collected by authorized personnel or send to the respective backend components.	EVSE CPO	Monitoring & Life-Cycle (SIT)	EMAID, Zählerstände, ChargeRecord, ....		
DELTA-UC-042	(Remote) Update CP / EVSE	In order to fix known software issues a CPO may want to update the software on a CP / EVSE remotely in order to save costs.	EVSE CPO	Monitoring & Life-Cycle (SIT)	Software Update / New Software Package	EVSE	IF_EVSE_CPO
DELTA-UC-043	Update CP / EVSE	In order to fix known software issues a CPO may want to update the software on a CP / EVSE by sending special maintenance teams that locally update the software.	CPO, ServiceTechnician (CPO)	Monitoring & Life-Cycle (SIT)	Software Update / New Software Package	EVSE	IF_EVSE_SRV
DELTA-UC-046	Maintain CP / EVSE	<p>In case an EVSE has been damaged or parts are failing, the CPO will need to repair and maintain the CP / EVSE. Since this may also involve replacing components that may hold critical data such as charging information or certificates and key material that needs to be handled and destroyed accordingly.</p> <p>Further, the CP / EVSE needs to be prepared to handle charging requests again (adding new certificates, prepare keys etc..).</p>	EVSE CPO Possible third party maintenance staff	Monitoring & Life-Cycle (SIT)	EMAID, Delete / Destroy Command, CSRs for all required certificates ( See DELTA-UC-095), keys (depending on technology of parts and key distribution scheme), might need processes described for DELTA-UC-051		IF_EVSE_SRV



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DELTA-UC-049	(Remotely) Recover CP / EVSE	After an attack or technical failures it may be necessary to remotely recover an EVSE / CP to a previously known and secure state.	EVSE CPO	Monitoring & Life-Cycle (SIT)	Reset-Command		IF_EVSE_WAN
DELTA-UC-051	Provision CP / EVSE	During manufacturing and installation, a new CP / EVSE needs to be provisioned respectively. This means that the software needs to be installed, the CP needs to be registered with the CPO and needs to be prepared with the respective certificates and key materials in order to be ready for charging events.	EVSE CPO EVSE Manufacturer (Could differ from CPO)	Monitoring & Life-Cycle (SIT)	Needs CSR for non-Root certificates (See DELTA-UC-95), Software, Keys (depending on distribution scheme)		IF_EVSE_SRV, IF_EVSE_MFCT
DELTA-UC-052	Logging (charging) critical data	This use case aims at the logging and storage of (charging) critical information that may be used for failure analysis etc.	EV OEM / Maintenance	Monitoring & Life-Cycle (SIT)	Log-Events		IF_EV_OBD/IF_EV_SRV, IF_EV_OEM, IF_EV_U?
DELTA-UC-053	Software Update	In case of software bugs or security related issues the software of an EV may need to be updated.	EV OEM / Maintenance	Monitoring & Life-Cycle (SIT)	Software, Update Command		IF_EV_OBD/IF_EV_SRV
DELTA-UC-054	Remote Software Update	In case of software bugs or security related issues the software of an EV may need to be updated. In order to save costs, an OEM may decide to deploy updates remotely.	EV OEM	Monitoring & Life-Cycle (SIT)	Software, Update Command		IF_EV_OEM, IF_EV_C2X?, IF_EV_EVSE
DELTA-UC-055	Provision EV	A new EV needs to be provisioned as a preparation to be ready for charging at CPs / EVSE respectively. This means that necessary software, certificates and keys need to be installed. In case of problems a vehicle may also need to be re-provisioned (for example in case of key compromise or during maintenance and exchange of necessary parts).	EV OEM, EVSE (MO, CPO)	Monitoring & Life-Cycle (SIT)	Needs CSR for non-Root certificates (See DELTA-UC-92, 95, 96), Software, Keys (depending on distribution scheme)		IF_EV_SRV, IF_EV_EVSE, IF_EV_OEM



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DELTA-UC-058	Archiving Charging Information / Data	<p>In order to bill his clients an MO may need to archive charging related information for some possibly legally required time.</p> <p>A customer may lose his certificates keys during accidents, maintenance or car theft for example.</p>	EV CPO MO	Monitoring & Life-Cycle (SIT)	(Signed) Charge Detail Records	MO	IF_EV_EVSE(zum CPO, MO), IF_EV_OEM(zum CPO, MO)
DELTA-UC-059	Archiving Certificates / Key Material	<p>In order to bill his clients and in order to proof his client has signed the charging information, an MO may need to archive certificates that correspond to signed charging data for some possibly legally required time.</p> <p>It may also be necessary to also store key material depending on the implementation. A customer may lose his certificates keys during accidents, maintenance or car theft for example.</p>	EV MO	Monitoring & Life-Cycle (SIT)	(Contract)Certificates und zugehörige verschlüsselte KeyPairs	MO	IF_EV_EVSE(zum CPO, MO), IF_EV_OEM(zum CPO, MO)
DELTA-UC-060	CH-1: Issuing process (on-boarding of CPOs and EMPs)	<p>Some information needs to be exchanged between the CPO and the Clearing House (CH) platform and EMP and CH platform respectively to be able to identify and authorize the contractual partner at the CH platform.</p> <p>This onboarding process may include the exchange of cryptographic material, such as a certificate signing request (CSR) as a basis for a digitally signed certificate for the CPO or EMP, as well as certificate chains to check digital signatures and fixed IP addresses for firewall rules.</p>	CPO, EMP, Clearing House	Clearing House (Mültin)	CSR, ContractID, PKCS12-Container, (CA-)Zertifikate		OU_EMPs)_SRV





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DELTA-UC-062	CH-3: Storage and handling of roaming contracts	<p>Each contract conditions which an EMP or CPO is uploading to the Clearing House's server needs to be stored safely in order to avoid integrity issues and unwanted changes in the agreed conditions.</p> <p>To make the roaming process in terms of contractual relationships more scalable, a CPO can make a general so-called offer which can be subscribed by any EMP and an EMP can subscribe to any CPO offer. Additionally, to make contractual relationships more flexible, a specialized contract between two partners (CPO and EMP) can be agreed on.</p>	Clearing House, EMP, CPO	Clearing House (Mültin)	Contract Data(EMAID)	EMP(MO) or CPO	OU_contracts_SRV



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DELTA-UC-063	CH-4: Authorisation	<p>An end customer wants to authorize himself at a charging station in order to charge his/her electric vehicle.</p> <p>If the CPO is the same as the EMP, then the authorization can be done either offline or within the backend system of the CPO.</p> <p>If the CPO and the EMP are two different companies, then an authorization request is sent from the CPO to the Clearing House (CH) platform. The CH checks whether the CPO is registered with the platform and has a valid contract, reads the appropriate EMP from the authorization ID (aka contract ID) provided with the authorization request and checks if the EMP is registered with the platform. If the respective EMP of the end customer is registered with the CH platform, it asks the EMP for authorization.</p> <p>The authorization response coming from the EMP is then sent via the CH to the CPO.</p> <p>According to the response code, the authorisation is either successful or it failed (e.g. not authorized, no valid contract, no EMP found, etc. ...).</p> <p>If authorisation is successful, the charge process can start. This authorisation can be either triggered by the CPO, or remote by the EMP (e.g. via a smart phone app of the EMP).</p>	CPO, EMP, Clearing House, End Customer	Clearing House (Mültin)	contract-Certificate, contract-ID/EMAID, MO-ID,		OU_Authorisation_SRV



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DELTA-UC-065	CH-6: Charge detail records (CDR) exchange	<p>After a charging session has finished, a so called charge detail record - holding the amount of energy charged, timestamps, smart meter readings – is created by the charging station/CPO and uploaded to the Clearing House platform.</p> <p>The EMP can pull the CDR on a regular basis from the Clearing House platform to trigger the billing process with his end customer.</p> <p>The CDR might be signed right at the charging station (or a smart meter gateway admin) and may not be altered in order to guarantee data integrity.</p>	CPO, EMP, Clearing House	Clearing House (Mültin)	CDR/SDR, Tarif-Information		OU_exchange_SRV
DELTA-UC-066	CH-7: Uploading/ downloading authentication data for faster/offline authentication	<p>CPOs may have the need to download authentication data (information about which authentication IDs/contract IDs are associated with the respective EMP) in order to faster process the authentication of the end customer at the charging station.</p> <p>In order for This to happen, EMPs need to upload this information to the Clearing House Platform.</p>	EMP, CPO, Clearing House	Clearing House (Mültin)	contract-ID, authentication data		OU_authentication_SRV



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DELTA-UC-067	CPO-1: Local authorization of an end user trying to charge at an EVSE	<p>In order for a user to get access to an EVSE, the person needs to provide some credentials to get authorized.</p> <p>These credentials can be a contract based authentication medium (e.g. RFID-card, Plug&amp;Charge) or a direct payment method (e.g. PayPal, credit card). Either way, the charge point operator (or E-Mobility Service Enabler -&gt; see Roles_Mültin.doc) needs to be able to verify the credentials (if no local whitelist authorizes directly) by forwarding those credentials to the E-Mobility Provider/Clearing House which then acknowledges or rejects the authorization.</p>	End User, CPO, EMP, Clearing House, EV, EVSE	CPO (Mültin)	contract-ID/EMAID, (RFID-ID: UID), Payment Authorisation Data		ÜL_EVSE_SRV
DELTA-UC-068	CPO-2: Finding the corresponding E-Mobility Provider by means of contract based credentials	<p>Complementary to use-case CPO-1, the backend needs to find the E-Mobility Provider (EMP) associated with the provided credentials, i.e. the contract ID.</p> <p>Since the role of the CPO and EMP are separate, the CPO must not know which user (personal identity) is holding the contract. Thus, the CPO backend needs to extract the EMP from the contractual ID delivered with e.g. the RFID-card or contract certificate and either address the EMP directly or contact a Clearing House by providing the EMP identifier and contract ID.</p> <p>Only the EMP can identify the user by its contract id and tell if the user is allowed to charge at the chosen EVSE.</p>	End User, CPO, EMP, Clearing House, EV, EVSE	CPO (Mültin)	contract-Certificate, contract-ID/EMAID, MO-ID		ÜL_credentials_SRV



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DELTA-UC-069	CPO-3: Reserving an EVSE	<p>A user would like to make a reservation for a dedicated EVSE for a certain time span or just for a certain point in time in the future.</p> <p>If the user uses a contract based authorization, the user needs to be authorized according to CPO-1 and CPO-2. The reservation may be done via a HMI in the EV, a smart phone or a web interface.</p>	End User, CPO, EVSE, EMP, Clearing House, EV	CPO (Mültin)	EVSE-ID, reservation time, contract-ID		ÜL_EVSE_SRV
DELTA-UC-070	CPO-4: Reading smart meter data	<p>Upon starting and when finishing the charging process, the absolute energy value of the smart meter which is assigned to the respective EVSE needs to be retrieved.</p> <p>During the charge process, smart meter values (at least the relative energy value, i.e. energy consumed since start of charge process, and maybe amperage and voltage across all three phases) are to be retrieved in a predefined time interval given in minutes.</p>	EVSE, Smart Meter, Gateway Admin, CPO	CPO (Mültin)	Meter-ID, Energy-amount, time, Meter-status		ÜL_data_SRV
DELTA-UC-073	CPO-7: Load management through DSO	Similar to CPO-6, instead that not an aggregator is communicating a load profile, but the DSO is communication a grid overload or a surplus of renewable energy.	Charge Station (EVSE), CPO, DSO	CPO (Mültin)	load profile, EVSE-ID, DSO-ID		ÜL_DSO_SRV



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DELTA-UC-075	CPO-9: Gathering data for creation of Charge Detail Record (CDR)	<p>A charge process is finished when a user unplugs his EV from the charge station.</p> <p>This action is followed by terminating the charging session between the charge station and CPO backend. A final smart meter reading takes place in order for the CPO backend to create the Charge Detail Record (CDR) - holding the amount of energy charged, timestamps, smart meter readings - which is sent directly to the user's EMP or to a Clearing House.</p> <p>It is of question whether the selected tariff (the user might choose between different tariffs offered by the EMP) should be part of the CDR (probably not) for billing purposes or if the tariff information is not to be layed open to the CPO (probably). In either case, the EMP must be informed of the tariff which was chosen for the respective charging session.</p>	Charge station (EVSE), CPO, Clearing House, EMP	CPO (Mültin)	Energy Charged, Timestamps, Meter Readings, Meter-ID/EVSE-ID		ÜL_CDR)_SRV
DELTA-UC-076	CPO-10: Remote start/stop of a charging process	<p>A user may want to remotely start/pause/stop a charging process with the help of e.g. his smartphone or a web interface. Reasons might be updated tariff information ("if you charge/pause now for X minutes you will earn Y Euros").</p>	CPO, end user, charge station / EVSE	CPO (Mültin)	user-ID/credentials or contract-ID, authentication data, start/stop command,		ÜL_process_SRV



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DELTA-UC-078	CPO-12: Administration of charge station/ EVSE data	<p>In order for a charge station and its EVSEs to be manageable and usable in a CPO backend, it must be first added to the system with the respective information needed to establish a communication session.</p> <p>This data includes at least an IP-Address, maybe a port, username and password. Further information needed encompasses a name, the location, the EVSE-ID, the used communication protocol, contact person, circuit constraints type of outlets, etc.</p>	CPO	CPO (Mültin)	Konfigurations- Status und Firmwaredaten der EVSE		
DELTA-UC-079	CPO-11: Administration of users, and groups	Each user who wants to get access to the CPO's web interface needs to be registered before, including his username, password, individual or group rights (see use-case 'Rights management') and possible further information (such as the tenant to which the user should have access to).	CPO, Mitarbeiter des CPO's	CPO (Mültin)	Username/Credentials		ÜL_groups_SRV



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DELTA-UC-080	EMP-1: Offering contract tariffs	<p>An EMP has the possibility to create a wide variety of tariffs, including time-of-use pricing, critical peak pricing, real-time pricing, flatrates, etc. When connecting his/her EV to an EVSE, the user should be able to choose between a possible list of offered tariffs.</p> <p>This choice Could made via the HMI (human machine interface) in the EV or a smartphone app or the HMI of the charging station.</p> <p>The EMP must find ways to support the tariff selection in each case (contractual relationship with car manufacturer (OEM) or CPO, provide an own smartphone app, etc.).</p> <p>A Clearing House might be the platform from where the tariff information can be retrieved. By identifying the user, the pricing policy at the respective location (public charging station, friend's house) is replaced by the user-chosen tariff. The respective owner of the charging location must then be payed by the EMP for offering the charging service. Therefore the EMP must do a mixed calculation for his tariffs. The EMP can be a utility, an OEM, a car pool operator, or any other player providing contract based tariffs and billing.</p> <p>The End User may need to be able to choose between a predefined set of offered tariffs which are to be used as default tariffs for charging processes. This choice could be offered via a web interface / smart phone application.</p>	End User, EMP, EV, Charge station, CPO, OEM, Clearing House	EMP (Mültin)	Tariff Information, Tariff Selection		ÜL_tariffs_SRV





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DELTA-UC-081	EMP-2: Administration of customer base	An EMP needs to provide a process for new customers to register themselves on a portal. Next to username, password and address, contact data and banking data is required for the billing process. These highly personal data needs to be protected. Furthermore, the user needs to be able to change his settings at any time.	EMP, End User	EMP (Mültin)	Username/Credentials, Bank Account No, Address (for Billing)		ÜL_base_SRV
DELTA-UC-082	EMP-3: Management of RFID cards	In case the EMP issues RFID cards for its customers, those cards can be either personalized or not previously registered. In the latter case, the End User needs to activate an RFID card for his account. The End User can further disable an RFID card, e.g. in case of a loss. In order for the EMP to be able to manage family or corporate accounts, it should offer the possibility to register more than one RFID card to one account.	EMP, End User, RFID card manufacturer	EMP (Mültin)	username/credentials, RFID-ID(EMAID)		ÜL_cards_SRV
DELTA-UC-083	EMP-4: Providing billing data and statistical data of charge processes	In order for the End User to be able to keep track of his charge processes on the one hand and to get some statistical data on his charge behavior on the other hand, the EMP needs to provide a web interface / smart phone application where the End User can log in and view his charge history and billing information. The CDRs sent by the CPO need to be accessible via this interface as well.	EMP, End User	EMP (Mültin)	Billing data, CDR/statistical data		ÜL_processes_SRV



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DELTA-UC-085	Payment-1: Direct Payment	<p>This Use case describes how an EV driver can use a charge point and pay for the service without a subscription.</p> <p>The user scans a QR-Code printed on the charge station A mobile website offered by a CPO or EMP is displayed.</p> <p>The user selects charge duration and tariff.</p> <p>The user selects payment method (e.g. PayPal, Credit card). For Credit Card payment the following information must be entered by the user:</p> <ul style="list-style-type: none"> <li>- Name</li> <li>- CC Number</li> <li>- Check digit</li> <li>- Validity date</li> </ul> <p>For PayPal payment the following information must be entered:</p> <ul style="list-style-type: none"> <li>- Email or Username</li> <li>- Password</li> </ul> <p>If the entered data is correct, the charge point will be activated and the user account is charged.</p>	User, CPO, EMP, Payment Service Provider, Paypal	Payment (RWE)	<p>Nicht im Scope: Name, Kreditkartennummer, Check digit, Validity date, Email, Password</p> <p>Im Scope: Payment Provider Transaction ID, Session ID, EVSE ID, Preis</p>		



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DELTA-UC-087	Payment-3: Terminal	The user swipes his Credit Card at the Terminal. The Terminal reads the CC data and send it to a Payment service Provider. The CC data is checked. If the CC data is valid, the charge point is activated. The user stops the session by unplugging the cable from his car. The cost for the session is calculated and the Credit Card is charged	User, Payment service Provider	Payment (RWE)	Nicht im Scope: Kreditkartennummer, Terminal ID, ...  Im Scope: Payment Provider Transaction ID, Session ID, EVSE ID, Preis		
DELTA-UC-091	Issue new certificate of CA	This use case describes the scenario of renewing the V2G Root Sub CA certificate	CA operations, Root / Parent CA (and operations)	PKI (SIT)	Vetting information (Subject Info, Adress, etc), Algorithm Information, CertUses, PublicKey, Validity Period, TypelInfo... (nach CertificatePolicy)		IF_CA_xx
DELTA-UC-092	Register Identity and generate CSR for EV	This use case aims at the registration and CSR generation process for new vehicles. This step is required to apply for certificates.	Customer / EV, Corresponding leaf CA	PKI (SIT)	Vetting information (PCID, (Subject Info), etc), Algorithm Information, CertUses, PublicKey, Validity Period, TypelInfo... (nach CertificatePolicy)		IF_OEM_CA, IF_EV_MFCT



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DELTA-UC-093	Issue new Root CA Certificate	This use case describes the process to issue a new Root CA Certificate	Root CA, CA Operations	PKI (SIT)	Vetting information (Subject Info, Adress, etc), Algorithm Information, CertUses, PublicKey, Validity Period, TypeInfo... (nach CertificatePolicy)		IF_CA_xx
DELTA-UC-094	Install new Root CA Certificate	Once a new Root CA Certificate has been issued, it needs to be distributed and installed by all affected subjects	Root CA, Manufacturers, Customers / EV, Subjects...	PKI (SIT)	New Certificate, Installation Command / Order		IF_EV_MFCT/IF_EV_SRV
DELTA-UC-095	Issue Certificate	This use case describes the scenario of issuing a certificate based on a request	Subject, CA, CA Operations	PKI (SIT)	Vetting information (Subject Info, Adress, etc), Algorithm Information, CertUses, PublicKey, Validity Period, TypeInfo...		IF_CA_xx
DELTA-UC-096	Install Certificate	This use case aims at the distribution and installation process of certificates: How does the certificate get from the issuer to its subject	CA, EV, Customer, Manufacturer, ...	PKI (SIT)	New Certificate, Installation Command / Order		IF_EV_MFCT/IF_EV_SRV



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DELTA-UC-097	Update Certificate	This use case aims at updating certificates, which in this case means requesting, issuing a new certificate and providing it to the respective subject	CA, EV, Customer, Manufacturer, ...	PKI (SIT)	Vetting information (Subject Info, Adress, etc), Algorithm Information, CertUses, PublicKey, Validity Period, TypeInfo...		IF_EV_OEM, IF_EV_SRV
DELTA-UC-098	Revoke Certificate	This use case describes the scenario where certificates need to be revoked by a CA	CA, CA operations, OEM (EV-USER, MO)	PKI (SIT)	CertID, Reason, CRL		IF_OEM_CA
DELTA-UC-099	Issue new Sub CA	This use case describes the rollout of a new Sub CA	CA operations	PKI (SIT)	Vetting information (Subject Info, Adress, etc), Algorithm Information, CertUses, PublicKey, Validity Period, ...		IF_CA_xx
DELTA-UC-100	Revoke Sub CA	This use case describes the revokation of a Sub CA's certificate	CA operations (CA, OEM, RootCA, other CA, MO)	PKI (SIT)	CertID, Reason, CRL		IF_CA_xx
DELTA-UC-101	Update Sub CA Certificate	This use case aims at updating the CA certificate of a Sub CA, which in this case means requesting a new certificate and installing it	Sub CA, CA operations	PKI (SIT)	Vetting information (Subject Info, Adress, etc), Algorithm Information, CertUses, PublicKey, Validity Period, TypeInfo...		IF_CA_xx



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-102	Issue CRL	This use case describes the scenario of creating and distributing the CRL	CA	PKI (SIT)	-		IF_CA_xx
DELTA-UC-103	Distribute CRL	This use case describes the process for the distribution of a CRL	CA	PKI (SIT)	CRL		IF_CA_xx
DELTA-UC-104	Issue OCSP Responder	As an alternative to CRLs, this use case describes the scenario of providing an OCSP service and issuing a certificate for signing OCSP responses	CA, OCSP operator	PKI (SIT)	Vetting information for OCSP Responder, PubKey, CertUses, Validity Period, TypInfo,...		IF_CA_xx
DELTA-UC-105	Removing OCSP Responder	Describes the process of removing an OCSP Responder	CA, OCSP operator	PKI (SIT)	CertID, Reason, CRL		IF_CA_xx
DELTA-UC-116	Archive Data	Depending on the implementation on the overall system it may be necessary to either store and archive certificates or also key material. This is useful in scenarios where an EV / end user has lost his certificates and there still needs to be some way or form to check if an EV did sign charging receipts or other important information.	CA	PKI (SIT)	ArchiveData (e.g. RegistrationInfo, (Old)Certificates, Audit-Log)		CA-intern
DELTA-UC-117	Start AC/DC of charging process with forced High Level ommunication (ISO 15118 in compliance with IEC 61851-1) (A1)	Establishing of High Level Communication.	Primary: EV, EVSE, EVCC, SECC	ISO15118 (TUDO)	SLAC messages on Layer2		IF_EV_EVSE



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-118	Start of AC charging process with concurrent IEC 61851-1 and High Level Communication (A2)	Establish High Level Communication concurrently with IEC 61851-1 mode 3 charging.	Primary: EV, EVSE, EVCC, SECC	ISO15118 (TUDO)	SLAC messages on Layer2		IF_EV_EVSE
DELTA-UC-119	EVCC/SECC communication setup (B1)	Establish a communication link between EVCC and SECC and correct association.	Primary: EVCC, SECC	ISO15118 (TUDO)	V2GRoots, SECCCertChain		IF_EV_EVSE
DELTA-UC-120	Certificate update (C1)	Replace the valid or expired certificate in the EV with a new and valid certificate from the secondary actor.	Primary: EVCC, SECC; Secondary: EMOCH, FO, E-Mobility Operator	ISO15118 (TUDO)	ContractCertChain, EMAID, Updated Certificate data (several chains)		IF_EV_EVSE, IF_GW_WAN
DELTA-UC-121	Certificate installation (C2)	Installation of a new certificate from the secondary actor in the EV.	Primary: EVCC, SECC; Secondary: EMOCH, FO, E-Mobility Operator	ISO15118 (TUDO)	OEMProvCert, List of V2GRootCertIDs, New Certificate data		IF_EV_EVSE, IF_GW_WAN
DELTA-UC-122	Authorization using Contract Certificates performed at the EVSE (D1) [PnC]	Verify the validity of the contract by using the 15118-2 message set at the EVSE.	Primary: EV, EVCC, EVSE, SECC, HMI; Secondary: EMOCH, E-Mobility Operator	ISO15118 (TUDO)	EMAID, ContractCertificate, MO-SubCertificates		IF_EV_EVSE
DELTA-UC-123	Authorization using Contract Certificates performed with help of SA (D2) [PnC]	Verify the validity of the contract with a validation from a secondary actor by using the ISO 15118-2 message set.	Primary: EV, EVCC, EVSE, SECC, HMI; Secondary: EMOCH, E-Mobility Operator	ISO15118 (TUDO)	EMAID, ContractCertificate, MO-SubCertificates, EVSE ID		IF_EV_EVSE, IF_GW_WAN



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-124	Authorization at EVSE using external credentials performed at the EVSE (D3) [EIM: RFID]	Authorization at EVSE with credentials, which are external to the vehicle.	Primary: User, EVSE, HMI, SECC; Secondary: EMOCH, E-Mobility Operator	ISO15118 (TUDO)	Credentials for USER identification, "Charge-Enable-Signal"		IF_EV_EVSE
DELTA-UC-125	Authorization at EVSE using external credentials performed with help of SA (D4) [EIM: Credit Card]	Authorization at EVSE with credentials, which are external to the vehicle, with help of a secondary actor.	Primary: User, EVSE, HMI, SECC; Secondary: EMOCH, E-Mobility Operator	ISO15118 (TUDO)	Credentials for USER identification, EVSE ID, EMAID, "Charge-Enable-Signal"		IF_EV_EVSE, IF_GW_WAN
DELTA-UC-126	AC charging with load levelling based on High Level Communication (E1)	This use case covers only charging within local charging infrastructures. Dynamic adjustment of the maximum AC current to be drawn by the EV within the limits of the local installation.	Primary: USER, EVSE, SECC	ISO15118 (TUDO)	AC adjustment data (current limit)		IF_EV_EVSE
DELTA-UC-127	Optimized charging with scheduling to secondary actor (E2)	Dynamic adjustment of the maximum power to be drawn by the EV. Prognosis of the power drawn by the EV which can be dynamically adjusted.	Primary: EV, EVCC; EVSE, SECC Secondary: DCH, E-Mobility Operator	ISO15118 (TUDO)	Required energy amount, departure time, charging capability, Charging Schedule (time/value Profile)		IF_EV_EVSE, IF_GW_WAN





ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-128	Optimized charging with scheduling at EV (E3)	Dynamic adjustment of the maximum power to be drawn by the EV. Prognosis of the power drawn by the EV which can be dynamically adjusted.	Primary: EV, EVCC; EVSE, SECC Secondary: DCH, E-Mobility Operator	ISO15118 (TUDO)	Charging capability, Charging Schedule (time/value Profile), (relative) price indication		IF_EV_EVSE, IF_GW_WAN???
DELTA-UC-129	DC charging with load levelling based on High Level Communication (E4)	Charging without considering complex grid situations and secondary actors. Dynamic adjustment of the max. DC power to be drawn by the EV within the limits of the local installation.	Primary: EV, EVCC, EVSE, SECC	ISO15118 (TUDO)	DC adjustment data (current limit)		IF_EV_EVSE
DELTA-UC-130	Resume to Authorized Charge Schedule (E5)	Restart sleeping charging schedule.	Primary: EV, EVCC, EVSE, SECC	ISO15118 (TUDO)	Wake up trigger, Stored charging schedule, Stored SessionID		IF_EV_EVSE, IF_GW_WAN???
DELTA-UC-131	Charging loop (F0)	Continue charging process until success conditions reached and enable billing of transferred energy.	Primary: EV, EVCC, EVSE, SECC	ISO15118 (TUDO)	EV and EVSE Status data		IF_EV_EVSE
DELTA-UC-132	Charging loop with metering information exchange (F1)	Continue charging process until success conditions reached and enable billing of transferred energy.	Primary: EV, EVCC, EVSE, SECC	ISO15118 (TUDO)	EV and EVSE Status data, Metering Data		IF_EV_EVSE



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-133	Charging loop with interrupt from the SECC (F2)	Continue charging process until the SECC interrupts the charging loop.	Primary: EV, EVCC, EVSE, SECC	ISO15118 (TUDO)	EV and EVSE Status data, SECC interrupt signal, departure time by USER		IF_EV_EVSE
DELTA-UC-134	Charging loop with interrupt from the EVCC or user (F3)	Possibility for the EVCC or USER to interrupt the charging loop.	Primary: EV, EVCC, EVSE, SECC, USER	ISO15118 (TUDO)	EV and EVSE Status data, EVCC interrupt signal, departure time by USER		IF_EV_EVSE
DELTA-UC-135	Reactive power compensation (F4)	EV supports the EVSE in reducing reactive power in the grid.	Primary: EV, EVCC, EVSE, SECC	ISO15118 (TUDO)	Flag EV: Support of reactive power compensation incl. values; Flag EVSE: reactive power compensation necessary incl. Values		IF_EV_EVSE
DELTA-UC-136	Vehicle to grid support (F5)	EV can supply energy back to the grid.	Primary: EV, EVCC, EVSE, SECC Secondary: DSO, DCH, EMOCH	ISO15118 (TUDO)	Flag EV: V2G is supported incl. Values; Flag EVSE: V2G possible on SECC side		IF_EV_EVSE, IF_GW_WAN
DELTA-UC-137	Value added services (G1)	Value-added service (VAS) information exchange between the EVCC and SECC.		ISO15118 (TUDO)	VAS data (unspecific)		IF_EV_EVSE + IF_GW_WAN??



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-139	End of charging process (H1)	Closing down the charging process in a safe and secure way whilst exchanging all relevant information required for subsequent procedures.	Primary: EV, EVCC, EVSE, SECC, USER	ISO15118 (TUDO)	End charging process information, CDR		IF_EV_EVSE + IF_GW_WAN
DELTA-UC-145	UC_EMT_LIEF.01.01	Empfang und Entschlüsselung von Messwerten	SMGW, EMT-LIEF	iMSys(Webo)	Messwertliste (verschlüsselt für EMT-LIEF) mit Zweckbindung		IF_GW_LMN, IF_GW_WAN, (IF_GW_EMT_LIEF)
DELTA-UC-146	UC_EMT_LIEF.01.02	Abfrage und Entschlüsselung von Messwerten	SMGW, EMT-LIEF via GWA	iMSys(Webo)	Ausleseauftrag mit Zweck, Messwertliste verschlüsselt für EMT-LIEF mit Zweckbindung		IF_GW_LMN, IF_GW_WAN, (IF_GW_EMT_LIEF)
DELTA-UC-147	UC_EMT_LIEF.01.03	Behandlung fehlender Abrechnungs-Messwerte (Vergleichswertbildung)	SMGW, EMT-LIEF	iMSys(Webo)	Messwertliste (verschlüsselt für EMT-LIEF) mit Fehlenden Werten		IF_GW_LMN, IF_GW_WAN, (IF_GW_EMT_LIEF)
DELTA-UC-148	UC_EMT_LIEF.02.01	Abrechnung bezogener el.Energie A+ (Verschiedene Tarifmodelle) AC/DC	EMT-LIEF, MO, EVUser	iMSys(Webo)	Rechnungsdaten, Messwertliste (Energiebezug)		IF_GW_LMN, IF_GW_WAN, (IF_GW_EMT_LIEF)
DELTA-UC-149	UC_EMT_LIEF.02.02	Abrechnung ins Netz eingespeister el.Energie A- (Verschiedene Tarifmodelle) AC/DC	EMT-LIEF, MO, EVUser	iMSys(Webo)	Rechnungsdaten, Messwertliste (Einspeisedaten)		IF_GW_LMN, IF_GW_WAN, (IF_GW_EMT_LIEF)



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-152	UC_EMT_BKV.01.01	Empfang und Entschlüsselung von Messwerten	SMGW, EMT-BKV	iMSys(Webo)	Messwertliste (Verschlüsselt für EMT-BKV) mit Zweckbindung		
DELTA-UC-153	UC_EMT_BKV.01.02	Abfrage und Entschlüsselung von Messwerten	SMGW, EMT-BKV via GWA	iMSys(Webo)	Ausleseauftrag mit Zweckbindung, Messwertliste(TAF6)		
DELTA-UC-154	UC_EMT_BKV.01.03	Behandlung fehlender Bilanzierungs-Messwerte	SMGW, EMT-BKV	iMSys(Webo)	Messwertliste mit Fehlenden Werten		
DELTA-UC-158	UC_GWA_EMT.01	Weiterleiten von nicht personenbezogenen Informationen an EMT	SMGW, GWA, EMT	iMSys(Webo)			IF_GW_LMN, IF_GW_WAN, (IF_GW_GWA/IF_GW_CPO), IF_GWA_LIEF/IF_CPO_LIEF
DELTA-UC-159	UC_GWA_EMT.01.01	Weiterleiten von verschlüsselten Messwertlisten an EMT	SMGW, GWA, EMT	iMSys(Webo)	Messwertliste (Verschlüsselt für EMT)		
DELTA-UC-160	UC_GWA_EMT.01.02	Weiterleiten von Ereignissen (Störungsmeldungen) an EMT	SMGW, GWA, EMT	iMSys(Webo)	Fehlerinformationen		
DELTA-UC-161	UC_GWA.01	Administration und Konfiguration des SMGW	SMGW, GWA	iMSys(Webo)			



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-162	UC_GWA.01.01	Aktualisierung der Firmware	SMGW, GWA, GWH	iMSys(Webo)	Durch GWH signierte Firmware inkl.Firmware-Beschreibung		
DELTA-UC-163	UC_GWA.01.02	Profile verwalten/Konfiguration (löschen, aktualisieren, lesen, einbringen)	SMGW, GWA	iMSys(Webo)	Konfigurationsprofile, Statusprofile		
DELTA-UC-164	UC_GWA.01.02.01	Erfassungsprofile (Zähler)	SMGW, GWA	iMSys(Webo)	Erfassungsprofil (Zähler-ID, Registrierintervall, Protokoll)		
DELTA-UC-165	UC_GWA.01.02.02	Kommunikationsprofile (Transport)	SMGW, GWA, EMT	iMSys(Webo)	Kommunikationsprofil (ID, TLS/SIG/ENC-Zertifikat, Adressen)		
DELTA-UC-166	UC_GWA.01.02.03	Nutzerprofile (Authentifizierung)	SMGW, GWA, EMT-LIEF	iMSys(Webo)	Letztverbraucher-ID,		



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-167	UC_GWA.01.02.04	Auswerteprofile (Verarbeitung)	SMGW, GWA, EMT (LIEF, BKV)	iMSys(Webo)	Auswerteprofil (ID, TAF/Zweckbindung, Zähler-ID, OBIS-Kennzahlen, Verarbeitungsregeln, Tansparenzregeln, Zeitpunkte)		
DELTA-UC-169	UC_GWA.01.02	Schlüssel- und Zertifikatsmanagement	SMGW, GWA, SUBCA,	iMSys(Webo)			
DELTA-UC-170	UC_GWA.01.02.01	GWA, SMGW Zertifikate rechtzeitig erneuern/beantragen	SUBCA, SMGW, GWA	iMSys(Webo)	CSR, Zertifikate (SMGW-SIG/ENC/TLS), Zählerzertifikate, HAN-Zertifikate		
DELTA-UC-171	UC_GWA.01.02.02	Zertifikate einbringen	SMGW	iMSys(Webo)	Zertifikat (SMGW-TLS/SIG/ENC), Zählerzertifikate, HAN-Zertifikate,		
DELTA-UC-172	UC_GWA.01.02.03	Zertifikate löschen	SMGW, GWA	iMSys(Webo)	Zertifikat-Fingerprint		



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-173	UC_GWA.01.02.04	Root-Zertifikat erneuern	SUBCA, SMGW, GWA	iMSys(Webo)	Zertifikat(RootCA)		
DELTA-UC-174	UC_GWA.01.02.05	Zertifikate auslesen	SMGW, GWA	iMSys(Webo)	Zertifikate		
DELTA-UC-175	UC_GWA.01.03	SMGW Callback veranlassen (Wake-Up)	SMGW, GWA	iMSys(Webo)	Wake-Up Message (SMGW-ID, Signatur, GWA-ZertFingerprint)		
DELTA-UC-176	UC_GWA.01.04	Anschlussnutzer am Zählpunkt zuordnen	SMGW, GWA, EMT-LIEF	iMSys(Webo)	Consumer-Profil, Erfassungsprofil/Auswerteprofil		
DELTA-UC-177	UC_GWA.01.04.01	Einem Zähler zuordnen	SMGW, GWA, EMT-LIEF	iMSys(Webo)	Consumer-Profil, Erfassungsprofil/Auswerteprofil		
DELTA-UC-178	UC_GWA.01.04.02	Zuordnung zum Zähler aufheben	SMGW, GWA	iMSys(Webo)			
DELTA-UC-179	UC_GWA.01.04.03	Zuordnung zu einem CLS (Tarifsignal)	SMGW, GWA	iMSys(Webo)			
DELTA-UC-180	UC_GWA.01.04.04	Zuordnung zu einem CLS aufheben	SMGW, GWA	iMSys(Webo)			



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DELTA-UC-181	UC_GWA.01.05	Bereitstellen der Initialen Konfigurationsdatei für die SMGW-Konfiguration zur Kontaktaufnahme mit dem GWA	GWA, GWH/Integrator	iMSys(Webo)			
DELTA-UC-182	UC_GWA.02	Fehlerbehandlung des SMGW		iMSys(Webo)			
DELTA-UC-183	UC_GWA.02.01	Monitoring des SMGW (siehe UC_GWA.03)	SMGW,GWA	iMSys(Webo)	Statusprofile, Log-Einträge		
DELTA-UC-184	UC_GWA.02.02	Benachrichtigen des berechtigten EMT	SMGW,GWA,EMT	iMSys(Webo)	Log-Einträge		
DELTA-UC-185	UC_GWA.02.03	Benachrichtigen des Service-Technikers	SMGW,GWA,SRV	iMSys(Webo)	Log-Einträge		
DELTA-UC-186	UC_GWA.02.04	Benachrichtigen des SMGW-Herstellers	SMGW,GWA,GWH	iMSys(Webo)	Log-Einträge		
DELTA-UC-187	UC_GWA.03	Monitoring zur Betriebsführung des SMGW	SMGW,GWA	iMSys(Webo)			





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DELTA-UC-188	UC_GWA.03.01	Auswerten der SMGW-Nachrichten	SMGW,GWA	iMSys(Webo)	Log-Einträge		
DELTA-UC-189	UC_GWA.03.02	Lesen und Speichern des SMGW-Logs	SMGW,GWA	iMSys(Webo)	Log-Einträge		
DELTA-UC-190	UC_GWA.03.03	Selbsttest des SMGW anstoßen	SMGW,GWA	iMSys(Webo)	Statusprofile, Log-Einträge		
DELTA-UC-191	UC_GWA.03.04	Führen eines SMGW-Admin-Logs	GWA	iMSys(Webo)	Log-Einträge		
DELTA-UC-192	UC_GWA.03.05	Bereitstellung von Teilen für Diagnose des GWH	GWA, GWH	iMSys(Webo)	Log-Einträge		
DELTA-UC-193	UC_GWA.04	Unterstützung der Messwertverarbeitung	SMGW,GWA,(EMT)	iMSys(Webo)	S.u.		
DELTA-UC-194	UC_GWA.04.01	Für Datenumgangsberechtigten (EMT) verschlüsselte Messwerte über den GWA ausliefern	SMGW,GWA,EMT	iMSys(Webo)	Verschlüsselte Messwertliste		
DELTA-UC-195	UC_GWA.04.02	Für Datenumgangsberechtigten (EMT) verschlüsselte Messwerte an den Datenumgangsberechtigten ausliefern	SMGW,GWA,EMT	iMSys(Webo)	Verschlüsselte Messwertliste		
DELTA-UC-196	UC_GWA.04.03	Für Datenumgangsberechtigten (EMT) verschlüsselte Messwerte über den GWA pseudonymisiert ausliefern	SMGW,GWA,EMT	iMSys(Webo)	Verschlüsselte pseudonymisierte Messwertliste		
DELTA-UC-197	UC_GWA.04.04	Wechsel der Tarifstufe im SMGW (Externes Tarifsignal am WAN)	SMGW,GWA	iMSys(Webo)	Signiertes Schaltprofil		



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DELTA-UC-198	UC_GWA.04.05	Abruf der für Datenumgangsberechtigten (Lieferant) verschlüsselten Messwerte im Bedarfsfall	SMGW,GWA,EMT	iMSys(Webo)	Verschlüsselte Messwertliste		
DELTA-UC-200	UC_GWA.05	Dienste des GWA zum SMGW	SMGW,GWA	iMSys(Webo)	S.u.		
DELTA-UC-201	UC_GWA.05.01	Zeitsynchronisation des SMGW	SMGW,GWA	iMSys(Webo)	NTP-Request/Response		
DELTA-UC-202	UC_GWA.05.02	Empfangen und Ausliefern von verschlüsselten Daten für Datenumgangsberechtigte (Proxy-Funktion)	SMGW,GWA,EMT	iMSys(Webo)	Verschlüsselte Messwertliste		
DELTA-UC-203	UC_GWA.05.02.01	Mit Signaturersetzung zur Pseudonymisierung	SMGW,GWA,EMT	iMSys(Webo)	Verschlüsselte pseudonymisierte Messwertliste		
DELTA-UC-204	UC_GWA.05.03	Event-Notification des GWA	SMGW,GWA	iMSys(Webo)	Ereignisse (Log-Einträge)		
DELTA-UC-205	UC_GWA.05.04	Vermittlung der Kommunikation zwischen (Aktivem) EMT und CLS	SMGW,EMT,CLS,GWA	iMSys(Webo)	Transparente Daten		
DELTA-UC-206	UC_GWA.05.05	Firmware-Download	SMGW,GWA,GWH	iMSys(Webo)	Vom GWH signierte Firmware mit Firmware-Informationen		
DELTA-UC-207	UC_GWA.06	Wechselprozesse	SMGW, GWA, weitere	iMSys(Webo)	S.u.		
DELTA-UC-208	UC_GWA.06.01	Wechsel des Administrators	SMGW, GWA1(MSB1), GWA2(MSB2)	iMSys(Webo)	Konfigurationsprofile, Log-Einträge		



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-209	UC_GWA.06.02	Wechsel des SMGW (Abbau)	SMGW, GWA(MSB)	iMSys(Webo)	Konfigurationsprofile (auslesen), Log-Einträge, Löschbefehle		
DELTA-UC-210	UC_GWA.06.03	Wechsel des SMGW (Einbau)	SMGW, GWA(MSB)	iMSys(Webo)	Konfigurationsprofile		
DELTA-UC-211	UC_GWA.06.04	Wechsel des Zählers (Abbau)	SMGW, GWA(MSB)	iMSys(Webo)	Erfassungsprofile (ZählerID), Auswertepprofile (ZählerID)		
DELTA-UC-212	UC_GWA.06.05	Wechsel des Zählers (Einbau)	SMGW, GWA(MSB)	iMSys(Webo)	Erfassungsprofile (ZählerID), Auswertepprofile (ZählerID)		
DELTA-UC-213	UC_GWA.06.06	Ende der Anschlussnutzung	SMGW, GWA(MSB), EMT-LIEF	iMSys(Webo)	Consumer-Profil, Erfassungsprofil, Auswertepprofile		
DELTA-UC-214	UC_GWA.06.07	Beginn der Anschlussnutzung	SMGW, GWA(MSB), EMT-LIEF	iMSys(Webo)	Consumer-Profil, Erfassungsprofil, Auswertepprofile		
DELTA-UC-215	UC_GWA.06.08	Anbindung einer an das SMGW angeschlossenen Komponente	SMGW, GWA(MSB)	iMSys(Webo)	Kommunikationsprofil (HAN, LMN)		
DELTA-UC-216	UC_GWA.06.09	Entfernen der Anbindung einer an das SMGW angeschlossenen Komponente	SMGW, GWA(MSB)	iMSys(Webo)	Löschbefehl für Kommunikationsprofil		
DELTA-UC-250	Activating the charging station (public charging with a foreign car)	The customer authenticates himself and can use the charging station.	Customer Wallbox Fleetmanager EVSE operator	Enduser (DKE)	User-ID/contract-ID		



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-258	Reservation of EVSE	<p>Value added service the search function can be supported from different End user-Customer applications:</p> <ul style="list-style-type: none"> <li>The result can be shown on a Geo-Map (e.g. Google-Maps, Bing, Teleatlas) or/and in a text-table. All relevant information (e.g. address, plug type etc.) have to be included.</li> <li>To reserve an EVSE the EV driver has to choose a suitable EVSE and then reserve the relevant time frame.</li> <li>The reservation function can be with costs from the EVSP / EVSE for the EV driver.</li> <li>To confirm the reservation of the EVSE, the EV driver receives a confirmation message per email, sms or similar.</li> </ul> <p>The reservation function can be supported from different end user / customer de-vices:</p> <ul style="list-style-type: none"> <li>Smart Phone (e.g. iPhone, Android)</li> <li>Internet-Customer-Portal</li> <li>In-Car application (e.g. onboard-unit)</li> </ul>	Vehicle Driver EVSE EVSP	Enduser (DKE)	ReservationRequest, ContractID		
DELTA-UC-260	EV Identification, Authetication and Anthorization	<p>Basic end-user services. This use case covers identification of contract belonging to a user (own customer or roamer) at a charge spot or battery switch station, and his authentication and authorization to execute the process of charging or battery switching).</p> <p>Use case describes the interaction between EV/ EV driver, EVSP, EVSE operator and optionally the Clearinghouse (when roaming).</p>	Vehicle Driver EVCC EVSE SECC HMI Human Machine Interface EVSP Clearinghouse	Enduser (DKE)	User-ID/ contract-ID		



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-268	Charging Location Management	<p>Basic end user service. The Management of Charging Infrastructure (e.g. Charge point (EVSE). Basis for the use case is that the Charging spot master data (e.g. CP-ID, address, technical data) are registered within the Charging Location Management... The EVSE Op. will monitor the charging session with the following functionality:</p> <ul style="list-style-type: none"> <li>• actual status (e.g. free, charging, maintenance) of the EVSE</li> <li>• actual consumption of the EVSE / Session</li> <li>• actual status of charging spot environment (e.g. FI- / LS-switch, panel)</li> <li>• Alarms from the Charging Spot</li> </ul> <p>The EVSE Op. will control the charging spots with the following functionality:</p> <ul style="list-style-type: none"> <li>• Reboot of Charging Spot</li> <li>• Switching (e.g. FI / LS)</li> <li>• Start- / End of Charging Session</li> <li>• SW-Update (per remote connection)</li> </ul> <p>Configuration management / monitoring can be done by a context menu (tree, map and list). The Charging Location Management application need interfaces to the following applications to support the authentication of e-vehicle end-user and search / reservation of Charging spots (EVSE):</p> <ul style="list-style-type: none"> <li>• EVSE (bidirectional)</li> <li>• Clearinghouse (bidirectional)</li> <li>• e-Vehicle end-user customer portal</li> </ul> <p>For the reporting of the Charging Sessions, the EVSE operator can analyze the actual and historical data within the Charging Location Management application.</p>	EVSE EVSP DSO Distribution system operator Vehicle Driver	Enduser (DKE)	Configuration-, Status und Firmware-Data		IF_EVSE_CPO



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-286		Die zuständige Behörde überwacht und kontrolliert das bei ihr angezeigte Backendsystem.	NMB, CPO/MSB	Nutzen/Verwenden (PTB)	-		
DELTA-UC-288		Der Messwertverwender/ Messstellenbetreiber betreibt das Backendsystem so, dass der Letztverbraucher seinen Ladevorgang und seine Rechnung kontrollieren kann.	Messgeräteverwender= GWA bzw. CPO	Letztverbraucher (PTB)	-		
DELTA-UC-299		Die zuständige Behörde führt auf Verlangen eines Letztverbrauchers die Befundprüfung vom Backendsystem durch, (Befundprüfung).	NMB, USER	Befundprüfung (PTB)			
DELTA-UC-315		Die zuständige Behörde überwacht und kontrollierte den bei ihm angezeigten Zähler.	NMB, CPO/MSB	Nutzen/Verwenden (PTB)	Befundprüfungsauftrag, Befundprüfungsergebnis		
DELTA-UC-316		Die zuständige Behörde überwacht und kontrollierte die bei ihm angezeigte Zusatzeinrichtung.	NMB, CPO/MSB	Nutzen/Verwenden (PTB)	Befundprüfungsauftrag, Befundprüfungsergebnis		
DELTA-UC-318		Der Messgeräteverwender betreibt die Ladesäule so, dass der Kunde den Ladevorgang und nach dessen Abschluss seine Rechnung kontrollieren kann.	Messgeräteverwender= GWA bzw. CPO	Letztverbraucher (PTB)	-		



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-327		Die zuständige Behörde führt eine eichtechnische Prüfung des Zählers einer Ladesäule vor dem Ablauf der Eichfrist durch.	NMB, CPO/MSB	Eichgültigkeitsdauer (PTB)	Eichtechnische Prüfungsauftrag, Eichtechnisches Prüfungsergebnis		
DELTA-UC-328		Die zuständige Behörde führt eine verspätete eichtechnische Prüfung Zählers einer Ladesäule durch.	NMB, CPO/MSB	Eichgültigkeitsdauer (PTB)	Eichtechnische Prüfungsauftrag, Eichtechnisches Prüfungsergebnis		
DELTA-UC-329		Die zuständige Behörde führt eine eichtechnische Prüfung der Zusatzeinrichtung einer Ladesäule vor dem Ablauf der Eichfrist durch.	NMB, CPO/MSB	Eichgültigkeitsdauer (PTB)	Eichtechnische Prüfungsauftrag, Eichtechnisches Prüfungsergebnis		
DELTA-UC-330		Die zuständige Behörde führt eine verspätete eichtechnische Prüfung der Zusatzeinrichtung einer Ladesäule durch.	NMB, CPO/MSB	Eichgültigkeitsdauer (PTB)	Eichtechnische Prüfungsauftrag, Eichtechnisches Prüfungsergebnis		
DELTA-UC-335		Die zuständige Behörde überprüft einen Zähler.	NMB, CPO/MSB	Eichgültigkeitsdauer (PTB)	Prüfungsauftrag, Prüfungsergebnis		IF_NMB_GWA, IF_GW_GWA, F_GW_LMN, (NMB=NotifiedMetrological Body)
DELTA-UC-336		Die zuständige Behörde überprüft die Zusatzeinrichtung.	NMB, CPO/MSB	Eichgültigkeitsdauer (PTB)	Prüfungsauftrag, Prüfungsergebnis		IF_NMB_GWA, IF_GW_GWA, (NMB=NotifiedMetrological Body)



ID	Name of use case	Short description	Actors	Domain	Information Exchange	Data storage location	Interfaces (reference architecture)
DELTA-UC-341		Die zuständige Behörde führt eine eichtechnische Prüfung des Zählers einer Ladesäule beim vorzeitigen Ende der Eichfrist durch, (Befundprüfung).	NMB, CPO/MSB	Befundprüfung (PTB)	Eichtechnische Prüfungsauftrag, Eichtechnisches Prüfungsergebnis		IF_NMB_GWA, IF_GW_GWA, IF_GW_LMN (NMB=NotifiedMetrological Body)
DELTA-UC-342		Die zuständige Behörde führt eine eichtechnische Prüfung der Zusatzeinrichtung einer Ladesäule beim vorzeitigen Ende der Eichfrist durch, (Befundprüfung).	NMB, CPO/MSB	Befundprüfung (PTB)	Eichtechnische Prüfungsauftrag, Eichtechnisches Prüfungsergebnis		IF_NMB_GWA, IF_GW_GWA, (NMB=NotifiedMetrological Body)
DELTA-UC-343	Change ownership of EVSE	Ladesäule oder Wallbox wird Verkauft	CPO, Wallbox-Eigentümer	Customer premises			US_EVSE_SRV





# Unsere Partner

Das Projektkonsortium von DELTA besteht aus sieben renommierten Partnern aus der Wirtschaft und Beratung sowie Wissenschaft und Normung.



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