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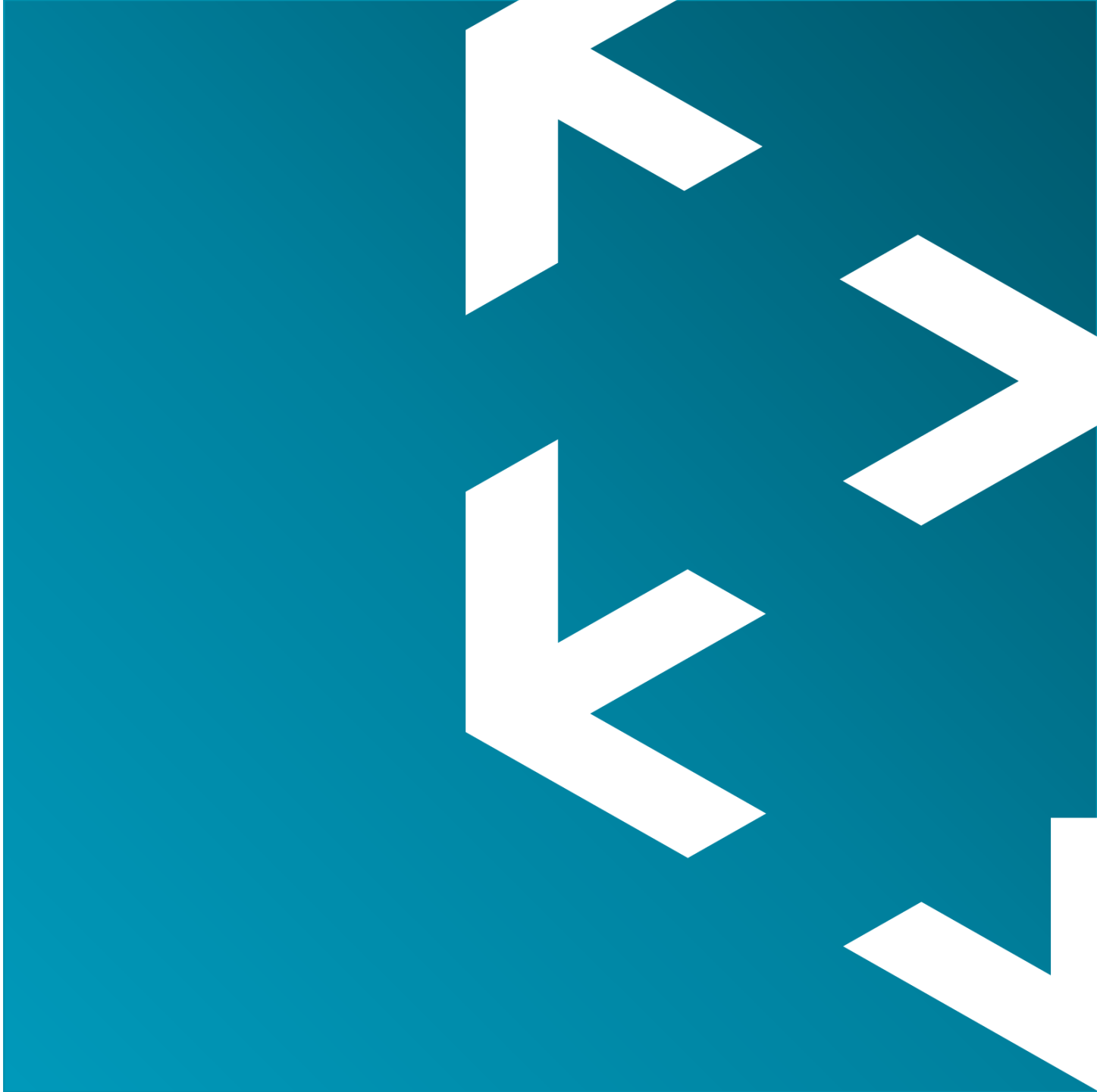
HUNGARIAN POWER EXCHANGE

ETS API Introduction

EPEX

API Customer Services
& Market Operations

2024. 03. 28.



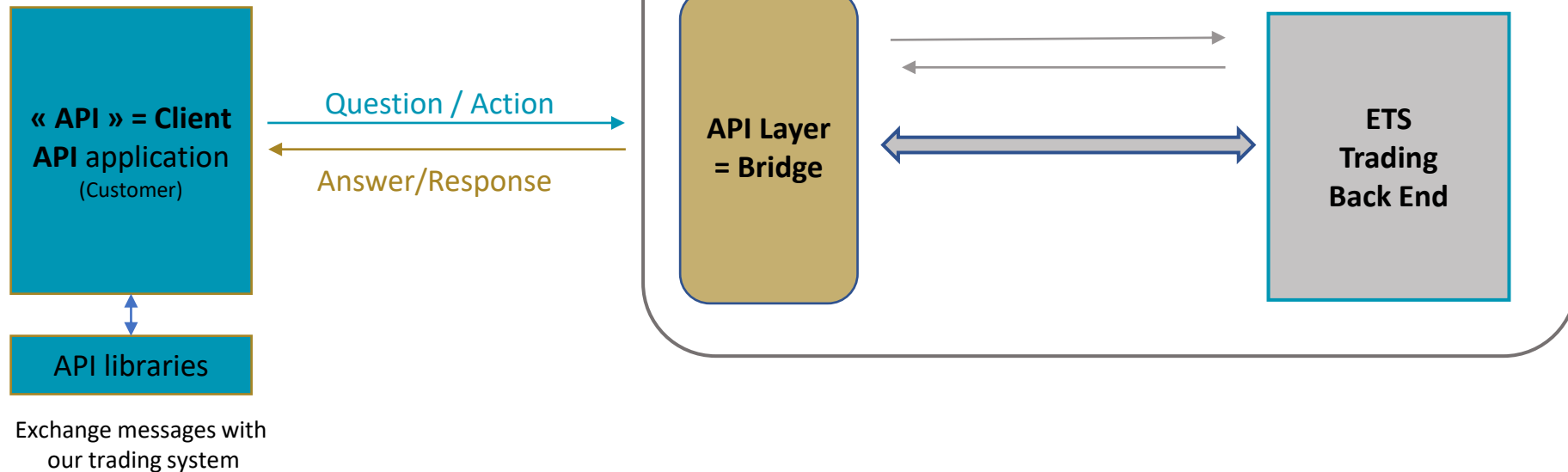
TOPIC/CONTENT

- 1 Introduction - What is an API?
- 2 ETS API basics - requests/responses
- 3 What can you do with the ETS API?
- 4 ETS API Test Client overview
- 5 API Customer's journey
- 6 Get familiar with the ETS API: API Package
- 7 Certificates
- 8 Q & A

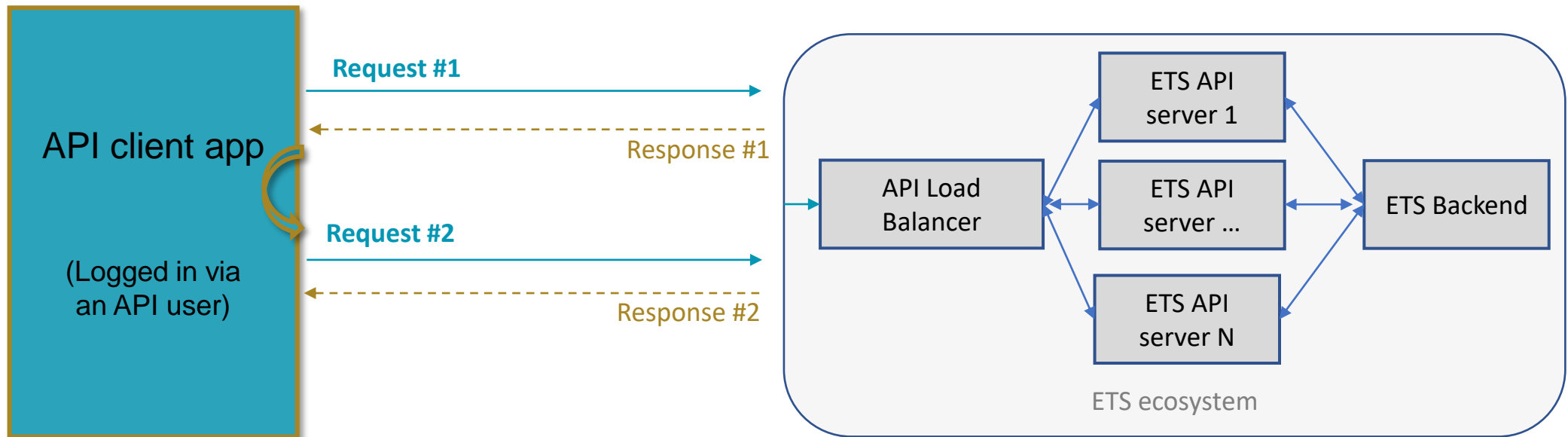
API = « Application Programming Interface »

- a decoupling « Bridge » layer,
- enabling customers' applications to communicate with our trading system

- Manage orders
- Collect public and private Market Results
- Collect own orders
- Check Trading limit



- The ETS API is **Web Service based**, using **SOAP 1.1** (Simple Object Access Protocol) over HTTPS.
- It is a **synchronous API**, using requests/responses.
- **Security** : TLS v1.2 protocol,
- There is no push/broadcast functionality: **periodic requests** must be used (**loops**).

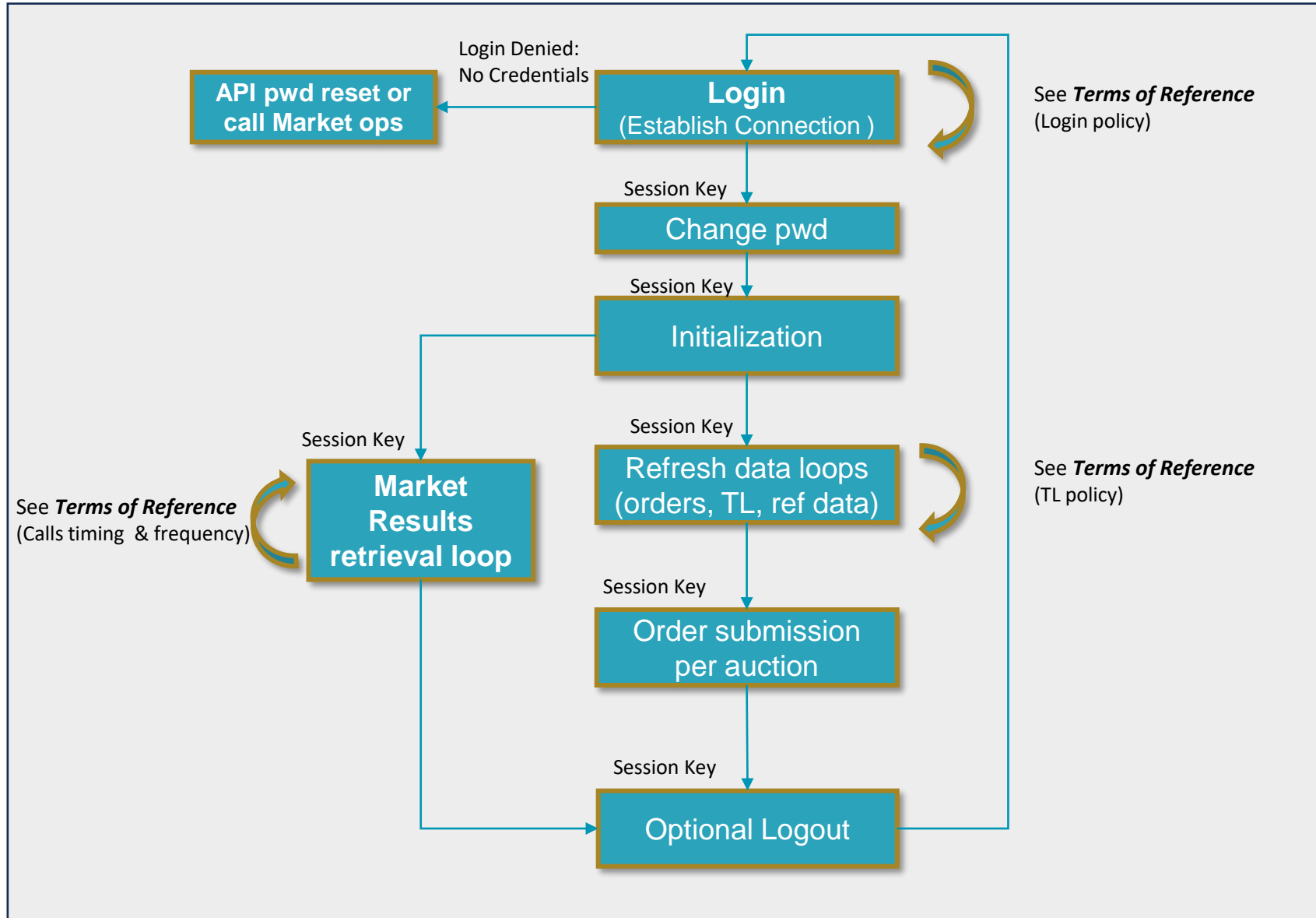


Messages content:

- SOAP header (Soap action, ...)
- XML format

Backward compatibility:

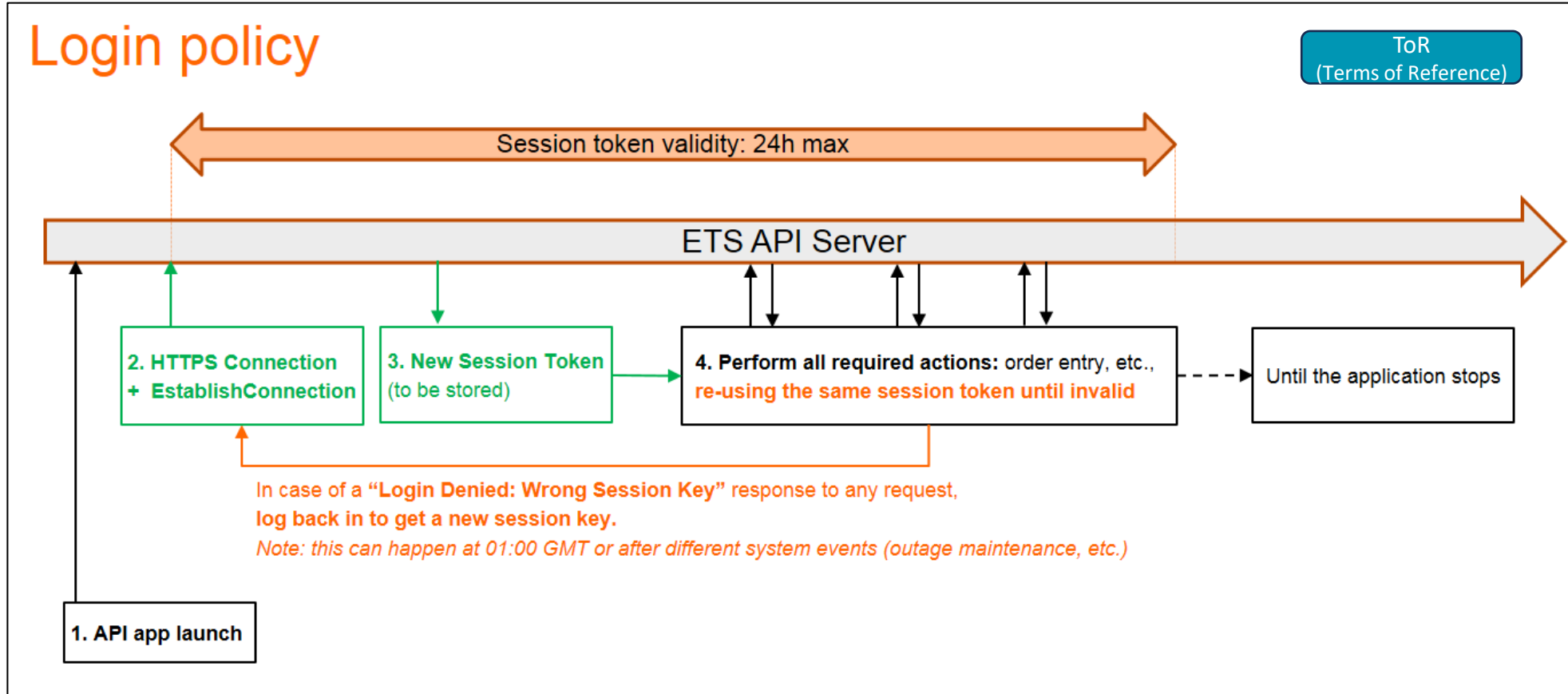
- Always support API schemas version N, N-1, N-2.
- The client app indicates in its requests which version is used.



WHAT CAN YOU DO WITH THE ETS API?

- **Market Participants** can access the below methods, for read-only and read-write applications:

Method	Design guide	Sample Requests	Read Only	Read Write
Log in / Log out			<p>Login policy:</p> <ul style="list-style-type: none"> • Get your initial session key • Store it to re-use it with all requests until invalid (<i>Login Denied: Wrong Session Key</i>) <p>Note: Session keys are automatically reset around 3am CET/CEST for security reasons.</p>	Terms of Reference
Password change or Reset			<ul style="list-style-type: none"> • You have 7 days to change the initial password provided by Market ops. • Changing a password automatically extends its validity to 90 days. • You can use the API to request an API password reset or directly Update the password. 	
Retrieve Reference data			<ul style="list-style-type: none"> • Auctions and areas characteristics, • Areas and Portfolios assignments and information 	
Retrieve market results			<ul style="list-style-type: none"> • 2 formats: <ul style="list-style-type: none"> • aggregated per portfolio (« market results »), • or trade by trade for the private part (trade report) 	Terms of Reference Terms of Reference
Retrieve your trading limit			<ul style="list-style-type: none"> • Global exposure, initial and current TL 	
Read ETS operational messages			<ul style="list-style-type: none"> • important information in case of maintenance info, decoupling, delay in market results publication, password expiry to come etc. 	
Read Write apps: orders			N/A	<ul style="list-style-type: none"> • Manage Orders • Retrieve orders (linear, blocks)



- **Market results must be retrieved automatically only when relevant:**
 - **Starting** at the **theoretical auction publication time**
 - **Stopping** once the auction results are **Final** (and thus cannot be cancelled anymore)
- } Given by the ETS API
- The shortest time interval between 2 Market result retrieval requests (*RetrieveMarketResultsFor* or *RetrieveTradesReportFor*) for the same area should be **30 seconds**.
 - In order to be able to handle any exceptional situation:
 - it is mandatory that your API application is able to **retrieve Market Results on demand/manually, at any time**.
 - Any deviation from the standard publication process would be explicitly mentioned by HUPX in ETS messages (ETS client and ETS API) or by email.

<input type="checkbox"/>	Name	Date modified	Type	Size
<input type="checkbox"/>	20231002_EPEX_APINIPROD.jks	02/10/2023 14:20	JKS File	3 KB
<input checked="" type="checkbox"/>	ETS_API_Test_Client_executable_v2.14	28/12/2023 11:52	Executable Jar File	54 KB
<input checked="" type="checkbox"/>	ETS_API_Config	27/12/2023 21:20	PROPERTIES File	1 KB
<input type="checkbox"/>	Persistent Session Key	29/12/2023 11:47	Text Document	1 KB

1



Put your credentials in the config file
(User, user password, certificate, certificate password, ...)

2 Launch the executable Java Client to watch the automatic initialization phase

ETS API Control Board

Connection Requests Delivery Areas Assigned Area/Portfolios Auctions Info

User Name: EPXSALESAPI01 *Change your default password* HTTPS status: **HTTPS Connected**

Password: **** **0. Update Password (when logged in)** ETS API Login status: **LOGGED IN**

1. Get Pwd reset Activation Code 2. Reset Pwd

API End Point: **** mu.epexspot.com:443/OpenAccess/3.7

```
2024/01/14 18:26:05.050ms: ETS API Sample app start
2024/01/14 18:26:05.787ms: Logged in ETS API, Session Key08916648265968127649600783920430127134543103532087365924150464898125805230543148
2024/01/14 18:26:06.312ms: Trying to sending request: RetrieveAreaPortfoliInformation
2024/01/14 18:26:06.554ms: App loop #1 : Login request : <?xml version="1.0" encoding="UTF-8"?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:urn="urn:openaccess"><soapenv:Header/><soapenv:Body><urn:EstablishConnection><userLoginName>EPXSALESAPI01</userLoginName></soapenv:Body></soapenv:Envelope>
2024/01/14 18:26:06.555ms: Trying to sending request: EstablishConnection
2024/01/14 18:26:10.273ms: Loop #1: *** SUCCESSFUL LOGIN ***
2024/01/14 18:26:10.278ms: Logged in ETS API, Session Key28042004152715964724589691383240457100200214564071644360905163266644471327634595
2024/01/14 18:26:11.806ms: Trying to sending request: RetrieveAreaPortfoliInformation
2024/01/14 18:26:11.872ms: Trying to sending request: RetrieveAuctionInformation
2024/01/14 18:26:11.918ms: Trying to sending request: RetrieveAuctionInformation
2024/01/14 18:26:11.951ms: Trying to sending request: RetrieveAuctionInformation
2024/01/14 18:26:11.992ms: Trying to sending request: RetrieveAuctionInformation
2024/01/14 18:26:12.030ms: Trying to sending request: RetrieveAuctionInformation
2024/01/14 18:26:12.065ms: Trying to sending request: RetrieveAuctionInformation
2024/01/14 18:26:12.100ms: Trying to sending request: RetrieveAuctionInformation
```

3 Launch the executable Java Client to watch the automatic initialization phase

Control Board

Nb of request_responses = 38

Connection	Requests	Delivery Areas	Products	Own Orders	Messages	Errors	Statistics	
Type	Soap Action	State	Client RTT	Session Key	XML payload			
REQUEST	EstablishConnection	Sent	...	N/A	<?xml version="1.0" encoding="UTF-8"?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/			
RESPONSE	EstablishConnection	ACK	5,331 sec	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap			
REQUEST	RetrieveAreaPortfoliInformation	Sent	...	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schen			
RESPONSE	RetrieveAreaPortfoliInformation	ACK	0,089 sec	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap			
REQUEST	RetrieveAreaPortfoliInformation	Sent	...	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schen			
RESPONSE	RetrieveAreaPortfoliInformation	ACK	0,068 sec	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap			
REQUEST	RetrieveAreaPortfoliInformation	Sent	...	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schen			
RESPONSE	RetrieveAreaPortfoliInformation	ACK	0,075 sec	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap			
REQUEST	RetrieveAreaPortfoliInformation	Sent	...	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schen			
RESPONSE	RetrieveAreaPortfoliInformation	ACK	0,100 sec	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap			
REQUEST	RetrieveAreaPortfoliInformation	Sent	...	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schen			
RESPONSE	RetrieveAreaPortfoliInformation	ACK	0,223 sec	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap			
REQUEST	RetrieveAreaPortfoliInformation	Sent	...	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schen			
RESPONSE	RetrieveAreaPortfoliInformation	ACK	0,063 sec	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap			
REQUEST	RetrieveAreaPortfoliInformation	Sent	...	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schen			
RESPONSE	RetrieveAreaPortfoliInformation	ACK	0,085 sec	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap			
REQUEST	Logout	Sent	...	02977044732710151852569672248244444043523331157519446121748345490404296414414389	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schen			
RESPONSE	Logout	ACK	0,095 sec	N/A	<?xml version="1.0" encoding="UTF-8"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap			
REQUEST	EstablishConnection	Sent	...	N/A	<?xml version="1.0" encoding="UTF-8"?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/			

Request / Response name

Latency « RTT »

Technical data: Login session Key, required for each request

Click on a cell to see messages content (popup panel)

API ETS TEST CLIENT: Observe requests and responses

Name	Date modified	Type	Size
20231002_EPEX_APINIPROD.jks	02/10/2023 14:20	JKS File	3 KB
ETS API Test Client executable v2.14	28/12/2023 11:52	Executable Jar File	54 KB
ETS_API_Config	27/12/2023 21:20	PROPERTIES File	1 KB
Persistent Session Key	29/12/2023 11:47	Text Document	1 KB

Type	Soap Action (Header)	State	Client RTT	Session Key	XML payload
REQUEST	RetrieveAreaPortfoliInformation	Sent	...	31596557883034161957016053061306636040230455321396654636062409310283610604931250	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"><soapenv:Header/><soapenv:Body/></soapenv:Envelope>
RESPONSE	RetrieveAreaPortfoliInformation	NAK	0,231 sec		<?xml version="1.0" encoding="UTF-8" standalone="no"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"><SOAP-ENV:Header/><SOAP-ENV:Body/></SOAP-ENV:Envelope>
REQUEST	EstablishConnection	Sent	...	N/A	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"><soapenv:Header/><soapenv:Body/></soapenv:Envelope>
RESPONSE	EstablishConnection	ACK	0,087 sec	45916591853008408346199020803356872640695957434155085803236458684340753588165227	<?xml version="1.0" encoding="UTF-8" standalone="no"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"><SOAP-ENV:Header/><SOAP-ENV:Body/></SOAP-ENV:Envelope>
REQUEST	RetrieveAreaPortfoliInformation	Sent	...	45916591853008408346199020803356872640695957434155085803236458684340753588165227	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"><soapenv:Header/><soapenv:Body/></soapenv:Envelope>
RESPONSE	RetrieveAreaPortfoliInformation	ACK	0,032 sec		<?xml version="1.0" encoding="UTF-8" standalone="no"?><SOAP-ENV:Envelope xmlns:SOAP-ENV="http://schemas.xmlsoap.org/soap/envelope/"><SOAP-ENV:Header/><SOAP-ENV:Body/></SOAP-ENV:Envelope>
REQUEST	RetrieveAuctionInformation	Sent	...	45916591853008408346199020803356872640695957434155085803236458684340753588165227	<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/"><soapenv:Header/><soapenv:Body/></soapenv:Envelope>

XML Payload EPXSALESAPI01

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?><soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:urn="urn:openaccess"><soapenv:Header><urn:ResponseLimitationHeader/></urn:ResponseLimitationHeader><urn:SessionToken><urn:userLoginName>EPXSALESAPI01</urn:userLoginName><urn:sessionKey>31596557883034161957016053061306636040230455321396654636062409310283610604931250</urn:sessionKey></urn:SessionToken><urn:AsynchronousResponseHeader><urn:asynchronousResponse>1</urn:asynchronousResponse><urn:responseToken>1</urn:responseToken></urn:AsynchronousResponseHeader></soapenv:Header><soapenv:Body><urn:RetrieveAreaPortfoliInformation><urn:AreaPortfoliInformationQuery></urn:AreaPortfoliInformationQuery></urn:RetrieveAreaPortfoliInformation></soapenv:Body></soapenv:Envelope>
```

Click on a cell to see its content in this panel

ETS API Action buttons

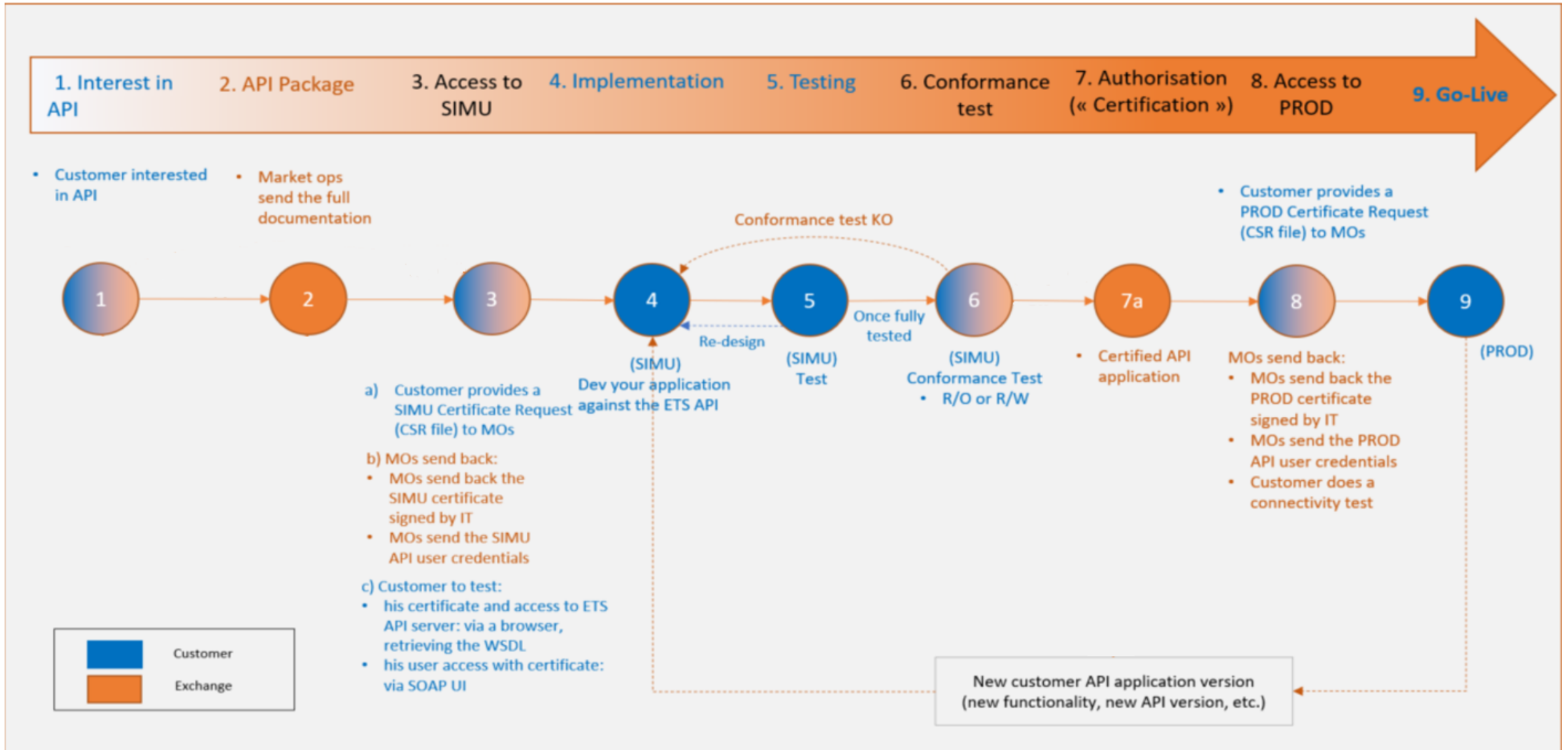
Log in (new token) Log out

Clear Session Key Retrieve Orders

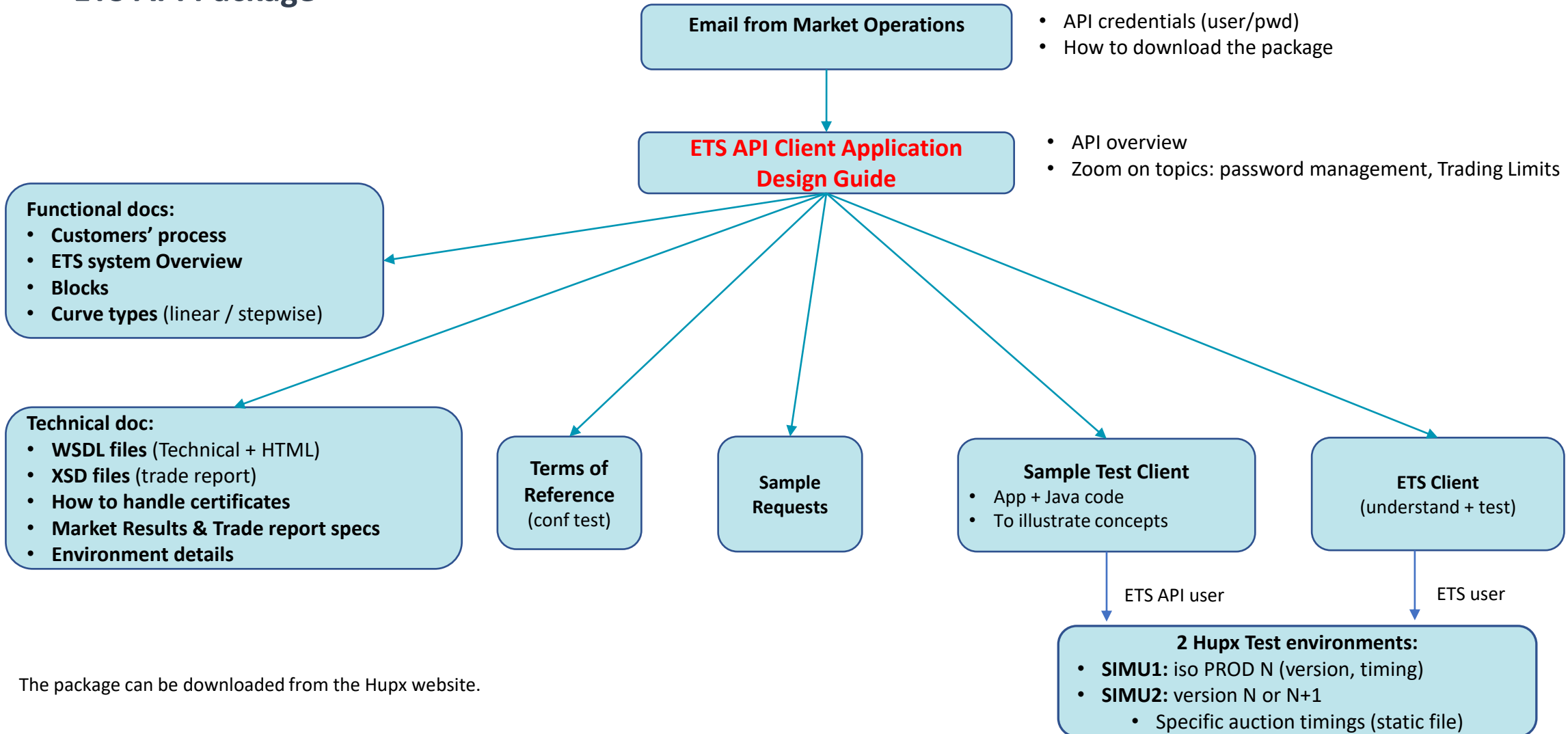
Trade Report D Trade Report D-1

Retrieve Area/Portfolio End of SessionKey = 489

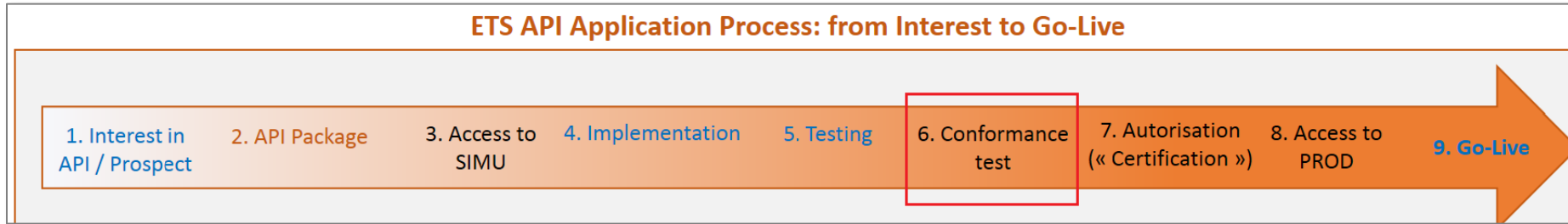
Experiment with action buttons, check how the session key is being used.



- ETS API Package



The package can be downloaded from the Hupx website.



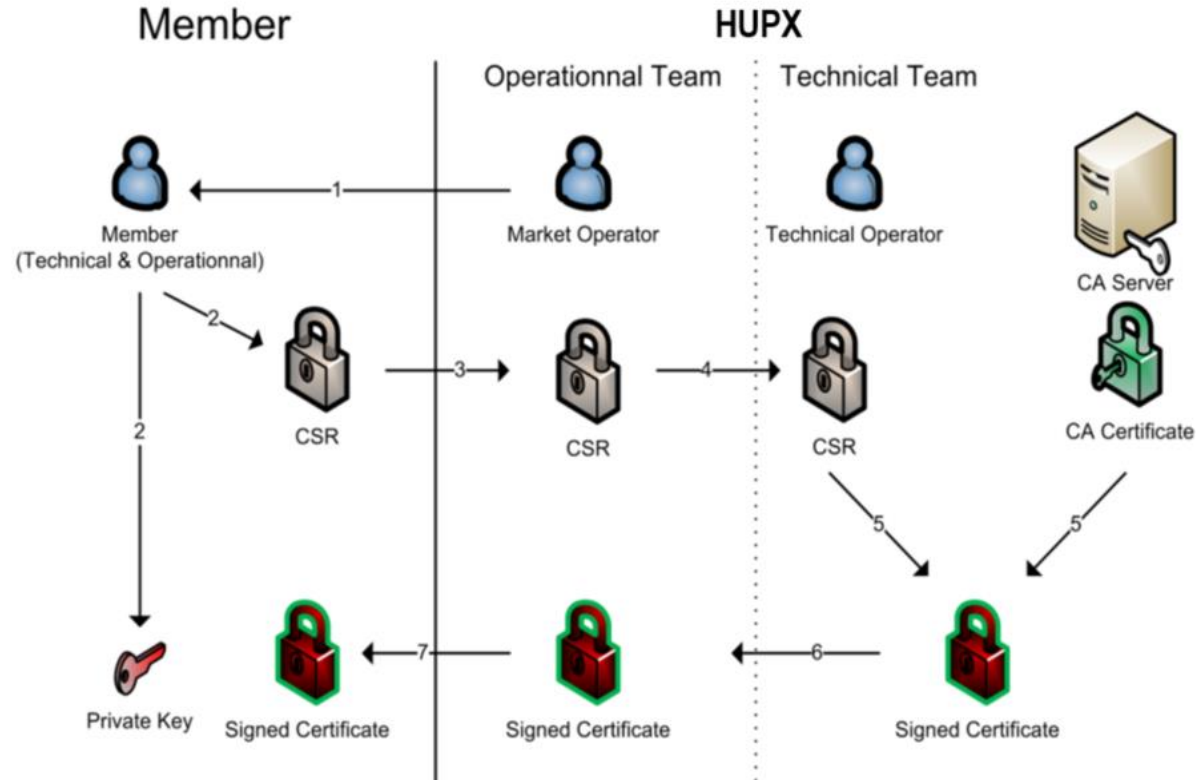
- Conformance to Our “**Terms of Reference**” document in the package.
- Objectives enable our customers to have the **best API experience** once in Production...
- ...by detecting before production any **incorrect implementation**

Respect our ToR policies:



- **Login** policy
- **Market Results / Trade Report** retrieval policy
- **Trading limits** retrieval policy

- Document from the API implementation package : **04-ETS API Certificates v5.55**



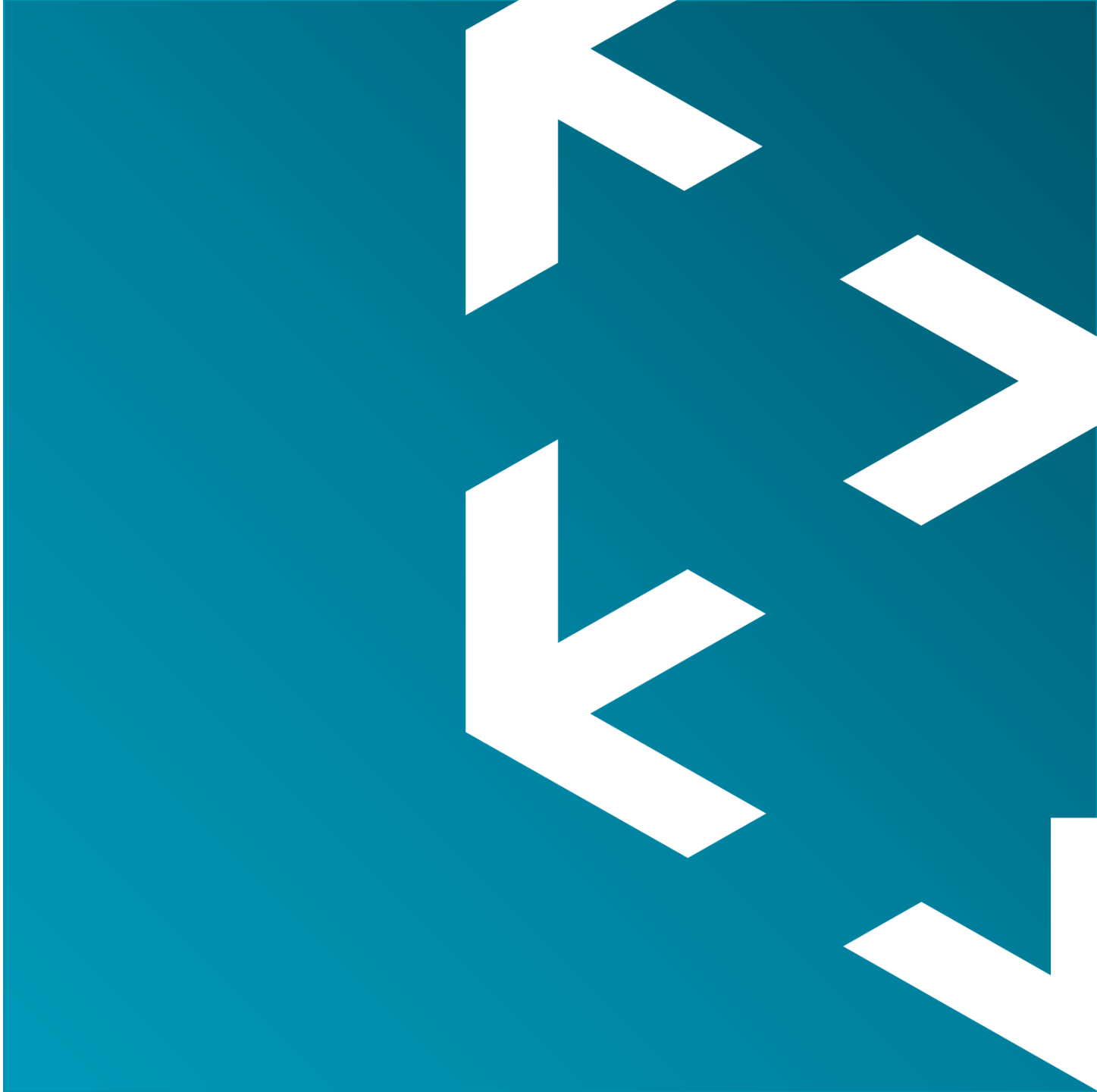
- Certificate for **PROD** and **SIMU** are valid for **2 years**.
- Email will be sent by MO **1 month** before certificate expiry.
- Member will need to send a new **Certificate Signing Request (CSR)** to renew the certificate.



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Q & A





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Thank you

