



Picture courtesy of Gas Connect Austria

Joint ENTSOG, EASEE-Gas, GIE 5th Data Exchange Workshop

Wednesday, 1st October 2025
ENTSOG offices, Brussels

Hybrid

1. Welcome



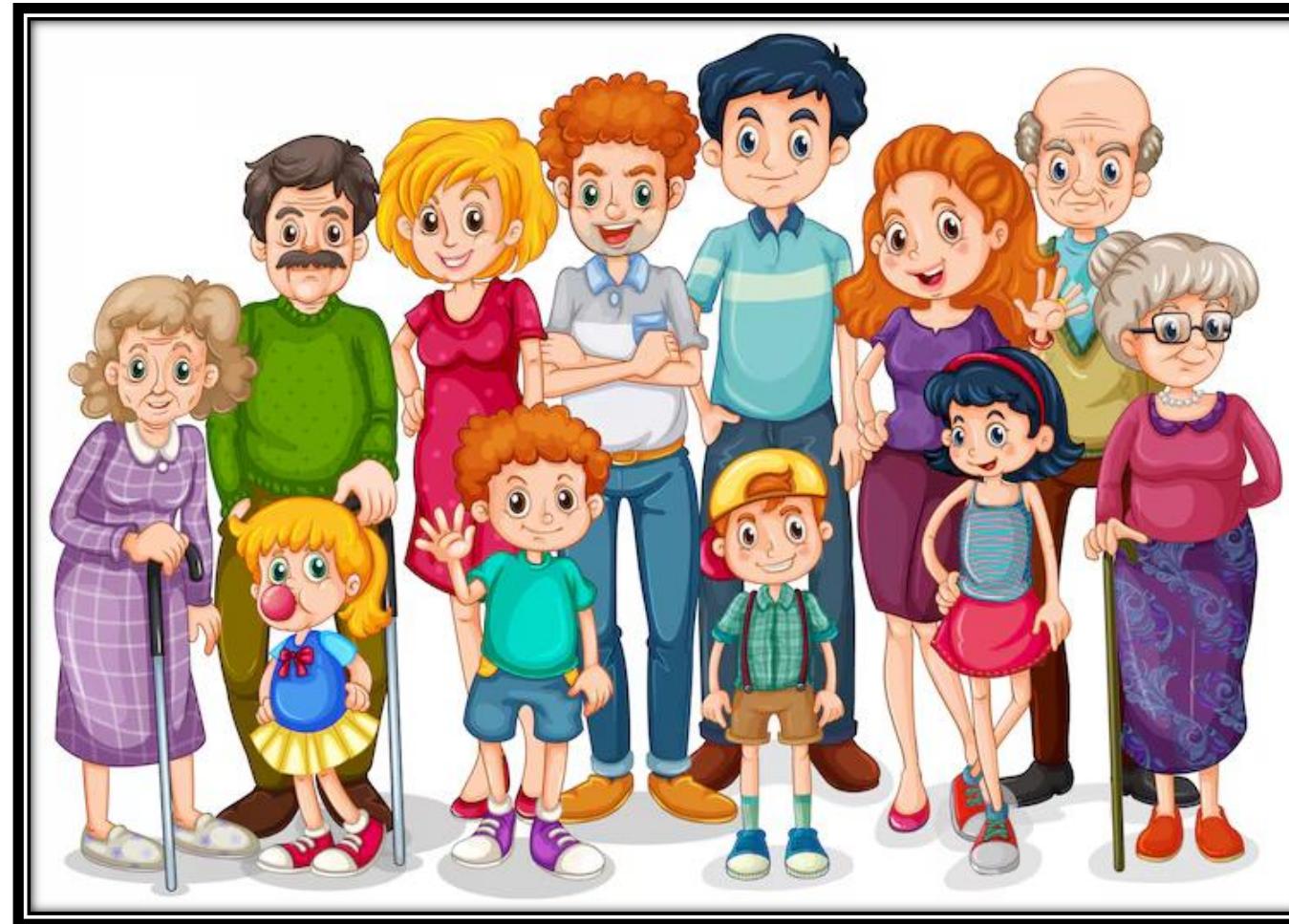
Panagiotis Panousos
Director,
System Operations Business Area
ENTSOG

2. Info & Agenda

Host for the wksp - Douglas Walker Hill
Interoperability & Data Exchange Advisor, ENTSOG



Day 1 - Family photo, end of today's session 16:00 hrs



To be used for social media and marketing etc...

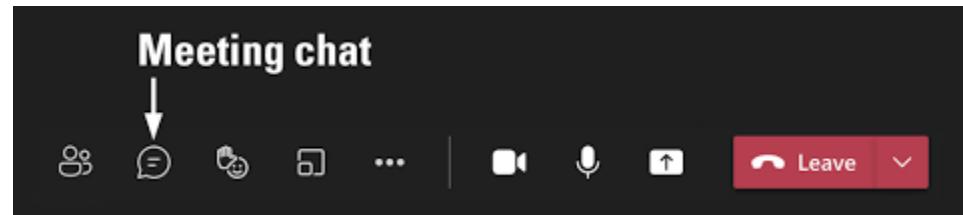
Data Exchange Session Agenda



Event point	Presentation topics for Data Exchange 1st October 2025	Presenter	Affiliation	From	To	Duration
1	Welcome, Day 1 - Data exchange	Panagiotis Panousos	ENTSOG	13:00:00	13:05:00	00:05:00
2	Agenda	Douglas Hill	ENTSOG	13:05:00	13:10:00	00:05:00
3	GIE REMIT updates	David Defour	GIE	13:10:00	13:25:00	00:15:00
4	edig@s XML Validation tool and schematron	Pim vd Eijk Magdalena Glebocka	Sonnenglanz/GAZ-SYSTEM	13:25:00	13:50:00	00:25:00
5	EASEE-gas - edig@s updates	Oliver Schirok	EASEE-gas (edigas WG Chair) (VNG)	13:50:00	14:05:00	00:15:00
6	EASEE-gas - Migration of certificates	Dirk Serruys	EASEE-gas (TSWG Chair - Fluxys)	14:05:00	14:20:00	00:15:00
7	EASEE-gas - EASEE-connect updates	Jean-Francois van Snick	EASEE-gas (Fluxys)	14:20:00	14:35:00	00:15:00
8	Break		ALL	14:35:00	14:50:00	00:15:00
9	AS4: ENTSOG AS4 V4.0 update	Pim vd Eijk	Sonnenglanz	14:50:00	15:20:00	00:30:00
10	AS4: ENTSOG's profile from Navitasoft, an AS4 service provider perspective	Christoph Malzer	Navitasoft	15:20:00	15:35:00	00:15:00
11	AS4: eDel EC AS4 V2.0 tools and updates	Bogdan Dumitriu	EC eDel	15:35:00	15:55:00	00:20:00
12	Wrap up Q&A, reflections on the CNOT road map	Douglas Hill	ENTSOG	15:55:00	16:00:00	00:05:00

Small change to the agenda, one SP will not present, you get 10 minutes more Pim & AS4 and 5 minutes of extra coffee break

Questions



- *Online please ask your questions via the Teams chat*
- *Physical attendance please ask questions at the end of the presentation*



3. REMIT Updates



David Defour
CTO
GIE

WORKSHOP ON DATA EXCHANGE
AND DATA SECURITY

1 October 2025

REMIT reporting

GIE as REMIT Reporting Mechanism (**RRM**)

GIE as REMIT Inside Information Platform (**IIP**)

David Defour | GIE CTO – REMIT Administrator



Storage reporting



<https://agsi.gie.eu>

LNG reporting



<https://alsi.gie.eu>

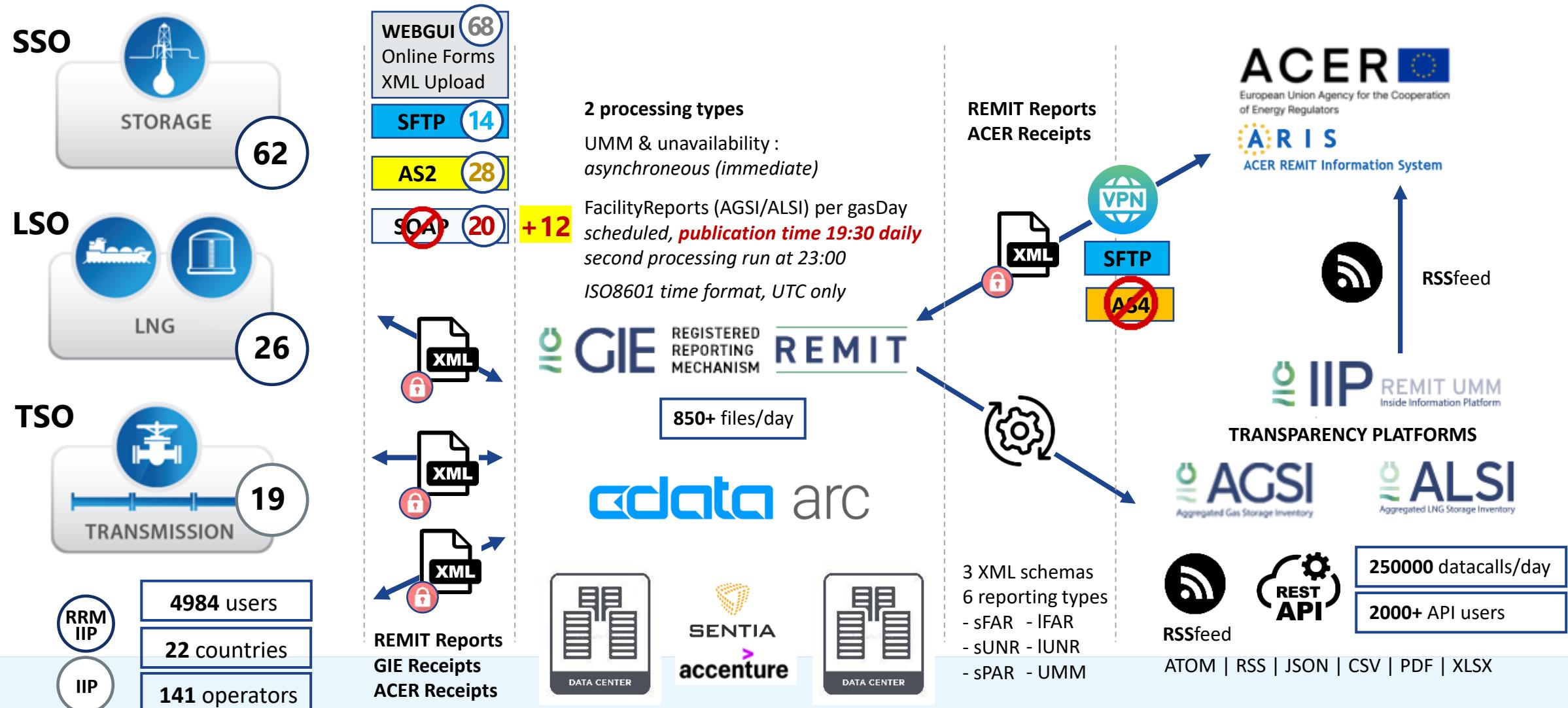
UMM publication



<https://iip.gie.eu>

REMIT & Transparency Platforms

Data processing



REMIT & Transparency Platforms

Communication standards status

 RRM IIP	4984 users
 IIP	22 countries
 IIP	141 operators



Data exchange mechanisms By infrastructure type

	SFTP	AS2	AS4	WEBGUI
SSO	13	22	16	29
LSO	1	6	4	22
TSO	-	-	-	17
	14	28	20	68

TSO : WEBGUI only access (online forms & XML upload) for IIP back-up contingency procedure with ENTSOG IIP

AS4 transition:
+12 in progress
(4 LSO – 8 SSO)

Switch to AS4 impacts multiple operators
because of proxy reporting
(one Operator reporting on behalf of other SSO/LSO)

REMIT & Transparency Platforms

Communication standards status



Data exchange mechanisms By country (SSO/LSO only)

	SFTP	AS2	AS4	AS4 setup	WEBGUI
Austria		3	1	1	1
Belgium		1		1	1
Bulgaria			1		
Croatia	1		1		
Czech Rep.		1	3	1	
Denmark			1		
Finland					2
France		4		1	2
Germany	4	10	4**	3	17
Greece		1		1	1
Hungary	2				
Italy	1		2	2	4

NOTE : PROXY reporting to be taken into account

All TSO connections are type WEBGUI for GIE IIP reporting

	SFTP	AS2	AS4	AS4 setup	WEBGUI
Latvia			1		
Lithuania					1
Netherlands		4	2		1
Poland	1		1		
Portugal	2				
Romania	1				2
Slovakia		2		1	
Spain	1				6
Sweden			1		
UK	1	2	1	1	2
Ukraine			1		1
TOTAL	14	28	20	12	39*

* + Each account has WEBGUI access as back-up channel

** Additional accounts switched to AS4 in 2025

11 new FSRU

1 new landbased

since 01.06.2025
 Commissioning phase since 23.05.2025
 Start of Comm. Operations 29.08.2025

2 expected

since 06.10.2022		FI	Hamina LNG terminal	(landbased – small scale)
since 19.09.2022		NL	EemsEnergy LNG terminal	(FSRU Eemshaven LNG)
since 23.03.2023		DE	Wilhelmshaven LNG terminal	(FSRU Hoegh Esperanza)
since 13.01.2023		DE	Brunsbüttel LNG terminal	(FSRU Hoegh Gannet)
since 21.04.2023		FI	Inkoo LNG Terminal	(FSRU Exemplar)
From 24.04.2023 to 13.05.2024		DE	Ostsee LNG Terminal / Lubmin *	(FSRU Neptune)
since 03.07.2023		ES	El Musel LNG Terminal	(landbased)
since 12.07.2023		IT	Piombino LNG terminal	(FSRU Golar Tundra)
since 18.10.2023		FR	Le Havre LNG Terminal	(FSRU Cape Ann)
since 09.04.2024		DE	Mukran LNG Terminal <i>moved from Lubmin > Mukran*</i>	(FSRU Energos Power – 1 st) (FSRU Neptune – 2 nd)
since 01.10.2024		GR	Alexandroupolis LNG terminal	(FSRU Alexandroupolis)
since 01.06.2025		IT	Ravenna LNG terminal	(FSRU BW Singapore)
Commissioning phase since 23.05.2025 Start of Comm. Operations 29.08.2025		DE	Wilhelmshaven LNG Terminal	(FSRU Excelsior Excelsior)
No timeline available		DE	Stade LNG Terminal	(FSRU Energos Force)
No timeline available		DE	Brunsbüttel LNG Terminal	(landbased)

Rapid deployment & new reporting different IT environments / new players



since 03.03.2025	IT	Stogit Adriatica takes over Edison Stoccaggio UGS
since 25.03.2025	DE	EWE UGS Nüttermoor H-1 decommissioned, transfer to H-4
since 28.03.2025	DE	VNG transfers shares UGS Jemgum H to SEFE Storage
since 01.07.2025	DE	KGE becomes MET Epe Speicher
As of 01.04.2027	DE	Uniper ES potential decommissioning UGS Breitbrunn



Since 06.02.2025

AGSI Filling level status – color range extended

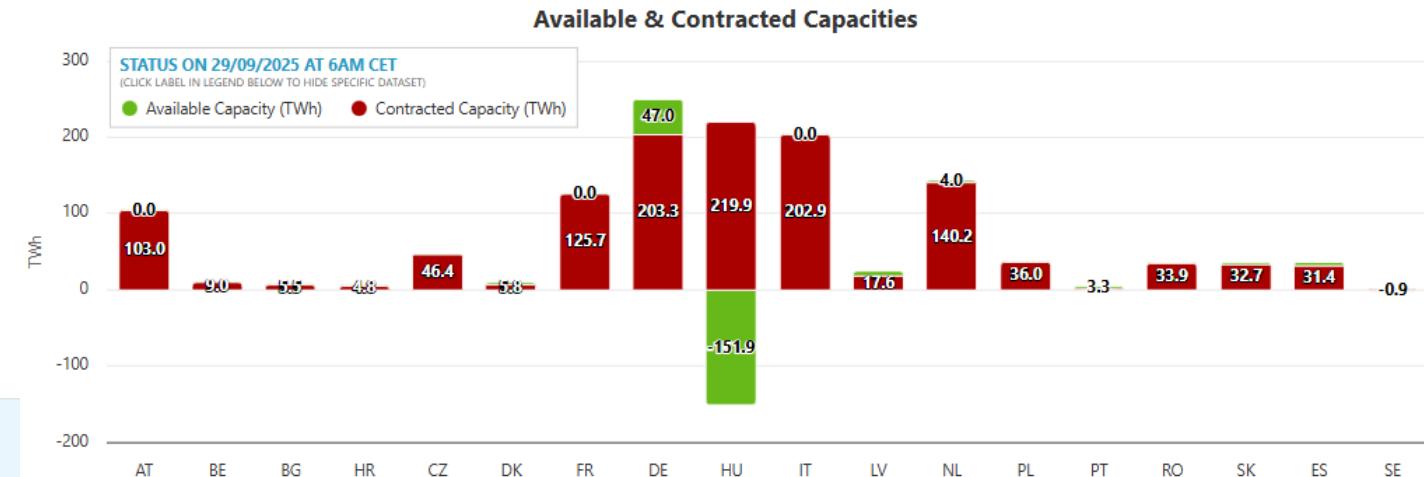
FULL%: 1 - 10 | 11 - 20 | 21 - 30 | 31 - 40 | 41 - 50 | 51 - 60 | 61 - 70 | 71 - 80 | 81 - 90 | 91 - 100

Since 06.03.2025

IIP API service added / UMM disclosure

Since 01.04.2025

Publication of **contracted and available capacities** on AGSI/ALSI
Art. (34) of EU Regulation 2024/1789 (not applicable for non-EU countries or oper.)



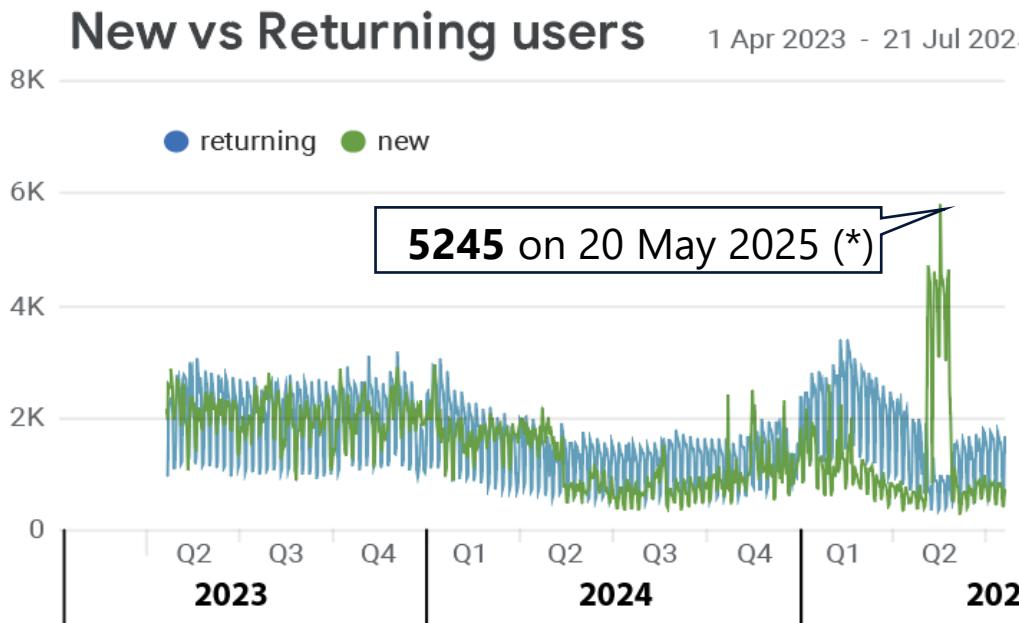
Data usage / Status July 2025



 Based on Google Analytics 4 data as of 01/04/2023

- **AGSI** traffic
2022 / supply crisis up to **18479** / day
- July 2025 : ~**1600** users/day – global

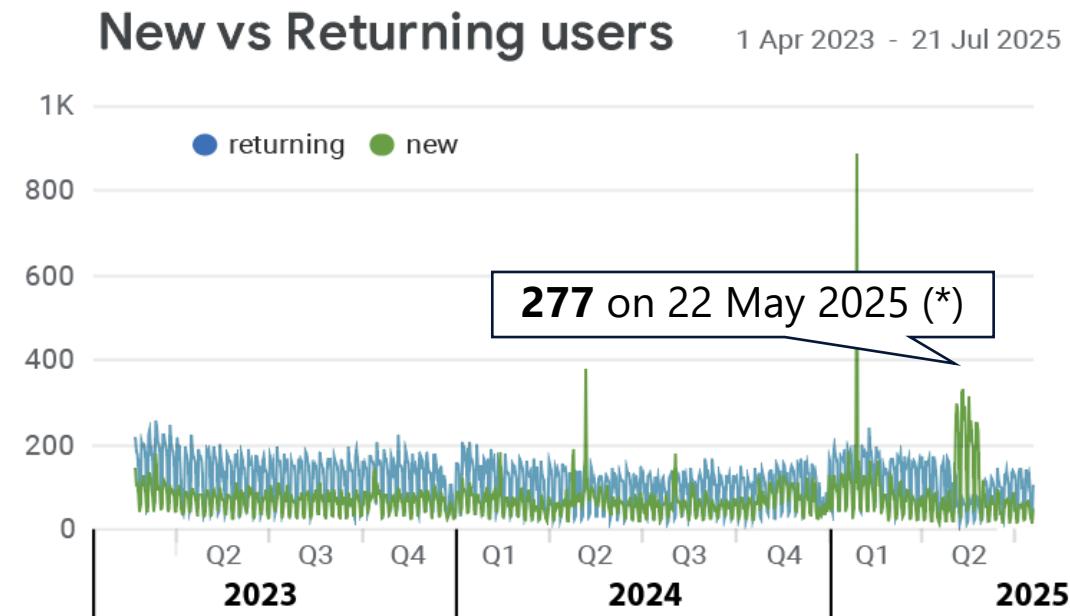
AGS



Most users switched to using automated pull-in of data
GIE API service : **250000+** data calls / day by 2000+ API users

- **ALSI** traffic
2022 / supply crisis up to **649** / day
- July 2025 : ~**140** users/day – global

ALS



(*) EU Commission 'Roadmap towards ending Russian energy imports' **6 May 2025** and 38th Madrid Forum / European Gas Regulatory forum on **21-23 May 2025**

Challenges

Technical setup & maintenance

AS4/AS2 automation

- AS2 / AS4 : indicated as cost inhibitive for small operators (non-standard hosting, IT setup)
- AS2 / AS4 : not always well known (to small or new operators – learning curve / accredited suppliers)

Recommendation: Publish list of standard-compliant / reputable / accredited solution providers per country

Technical setup

- **IP whitelisting issues**, following implementation of CloudFlare environment
- **Certificate issues** (test/production diff., encryption algorythm selection, secure methods of transfer)
- **Filenaming convention issues** (hashing during transfer, adherence to prescribed formatting)
- **SFTP setup issues** : access to counterparty systems (pull & push from SFTP server setup)
- **Documentation and regulatory guidance** : complexity growing
- **Reporting types** : multiple connections to reporting mechanisms to cover all REMIT reporting types
- **Quick start** : initial reporting phase always starts via WEBGUI tools, CDATA Arc enables quick automation
- **Proxy reporting** : new operators contracting an existing / experienced operator to report on their behalf

Security

- Attacks :
 - Brute-force botnet attack at GIE (failed) / impersonation scam attempts
 - Cyberattack at reporting accounts (successful) and also ACER (blocked)
- Mitigation :
 - VPN access to ARIS (ACER REMIT Information System)
 - CloudFlare & additional resources deployed on GIE systems





Gas Infrastructure Europe

REMIT II

Impact on GIE as RRM and IIP

Revision of REMIT

Implementing Regulation on Data Reporting

On 18 August 2025, the European Commission launched two public consultations related to REMIT:

New draft Delegated Regulation on authorisation and supervision of inside information platforms and registered reporting mechanisms

Draft revision of the REMIT Implementing Regulation on data reporting

The consultations ran **from 18 August 2025 until 15 September 2025 (midnight Brussels time)**.



Key topics for SSO and LSO reporting to GIE



1 Reporting obligation of Fundamental Data solely falls on LSO and SSO

Impact on SSO / LSO : see next slides – SSO/LSO will be reporting on behalf of their customers

2 UMM reporting schema extended

7 new data fields see next slides of which 5 related to 'curve-type reporting' might be optional

3 Fundamental Data reporting of unavailability replaced by UMM disclosure on IIP

Publication of SSO/LSO **outages** on AGSI / ALSI will end – replaced by disclosure via UMM on GIE IIP

4 Avoidance double reporting via UMM on IIP

- IIPs can only publish UMM after confirming that such information has not already been published on the platform
- Implement validation system to detect if the information has not already been published by the same IIP

Avoid double reporting of same event via UMM

Clarification needed what 'information' means (which data fields to check within the UMM)

Reporting obligation of Fundamental Data solely falls on LSO and SSO

Impact on SSO

Storage data reporting			
dataset	data type	frequency	deadline
storageFacilityReport IA Art. 9(7) a + b	movement of gas into and out of the facility within a gas day	daily IA Art. 9(8)	to be received by 14:00 (CET)* if not possible, by 19:00 (CET)
storageParticipantActivityReport IA Art. 9(9)	movement of gas into and out of the facility within a gas day by a market participant	daily IA Art. 9(9)	to be received by 14:00 (CET)* if not possible, by 19:00 (CET)
storageUnavailabilityReport IA Art. 9(7) c	unavailability of the facility, planned or unplanned outages, for a gas day or a period within a gas day	multiple status updates per day possible IA Art. 9(8)	as soon as the information becomes available (ad hoc)

(a) **storageParticipantActivityReport** mandatory to cover by all SSO – report storage held for customers

(b) **storageUnavailabilityReport** removed / replaced by UMM publication of outages

(a) **storageParticipantActivityReport** mandatory to cover by all SSO – report storage held for customers

(b) **storageUnavailabilityReport** removed / replaced by UMM publication of outages

Reporting obligation of Fundamental Data solely falls on LSO and SSO

Impact on LSO

LNG data reporting			
dataset	data type	frequency	deadline
IngFacilityReport IA Art. 9(3) a + b	movement of LNG into and out of the facility within a gas day	daily IA Art. 9(4)	to be received by 14:00 (CET)* if not possible, by 19:00 (CET)
IngParticipantActivityReport IA Art. 9(5) a	movement of LNG into and out of the facility within a gas day by a market participant	no later than the working day following unloading or reloading IA Art. 9(6)	not handled by GIE RRM
IngPlannedUsageReport IA Art. 9(5) b	monthly forecast of expected usage of the facility for the month ahead	provided in daily resolution IA Art. 9(6)	not handled by GIE RRM in advance of the month to which it relates
IngUnavailabilityReport IA Art. 9(3) c	unavailability of the facility, planned or unplanned outages, for a gas day or a period within a gas day	multiple status updates per day possible IA Art. 9(4)	as soon as the information becomes available (ad hoc)

(a)

(b)

(c)

(a)(b) IngParticipantActivityReport and IngPlannedUsageReport mandatory to cover by all LSO
 ** will be covered by GIE **

(c) IngUnavailabilityReport removed / replaced by UMM publication of outages

Reporting obligation of Fundamental Data solely falls on LSO and SSO

Impact on LSO

2 additional report sub-types that are not (yet) covered by LSO or have been delegated to shippers

Both report sub-types will be added by GIE as RRM so that all Fundamental Data types are covered

IngParticipantActivityReport

- daily reporting
- identification of each terminal customer
- ship size, ship name
- reloaded and unloaded volume in GWh

> will NOT be published on ALSI – reporting to ACER only

IngPlannedUsageReport

- monthly forecast
- identification of each terminal customer
- reporting the volume of LNG (in GWh) intended for unloading or reloading

> will NOT be published on ALSI – reporting to ACER only

> do not confuse with Bookable Regasification Forecast on ALSI (voluntary initiative)

No	Field Identifier	Description
1	Message ID	The field indicates the identification code of the inside information report.
2	Event status	The field indicates the position of the inside information report and its relevance for trading decisions.
3	Type of information	The field indicates the type of inside information being disclosed.
4	Type of unavailability	The field indicates whether the unavailability event was planned or unplanned.
5	Type of event	The field indicates the type of the subject or the assets/units affected by the unavailability.
6	Date and time of publication	The field indicates the date and time when the inside information report was made publicly available.
7	Date and time of the beginning of event	The field indicates the estimated/actual starting date and time of the relevant event.
8	Date and time of the end of event	The field indicates the estimated/actual ending date and time of the relevant event.
9	Unit of measurement	The field indicates the unit of measure in which the capacity is expressed.
10	Unavailable capacity	The field indicates the unavailable capacity of the affected asset or unit due to the reported event.
11	Available capacity	The field indicates the remaining available capacity of the affected asset or unit.
12	Installed capacity (applicable for electricity unavailability)	The field indicates the nominal generating, transmission, or consumption capacity of the affected asset or unit.
13	Technical capacity (applicable for gas unavailability)	The field indicates the maximum net sustained (flow) capacity that the affected asset or unit can produce, transmit, store, or consume continuously throughout a long period of operation in normal conditions, under relevant security standards.
14	Reason for the unavailability	The field indicates the explanation of the reason(s) behind the unavailability event.

15	Remarks	The field indicates any other information that facilitates the full understanding of the potential impact of the event on wholesale energy prices.
16	Type of fuel	The field indicates the classification of electricity production types (applicable to electricity unavailability events).
17	Bidding or balancing zone	The field identifies the bidding or balancing zone(s) where the affected asset or unit is located or feeds into.
18	Affected asset or unit	The field identifies the official name of the generation or production unit, consumption unit, transmission, or other – gas or electricity – asset.
19	Affected asset or unit EIC code	The field indicates the applicable unique identifier (EIC code) of the affected asset or unit.
20	Market participant	The field indicates the official name of the market participant(s) or authority with obligations regarding the specific event under Article 4 or 3(4) of Regulation (EU) No 1227/2011, respectively.
21	Market participant ID	The field identifies the market participant(s) or authority indicated in field 20 by using a unique code.
22	Inside Information Platform ID	The field identifies the inside information platform by using a unique code.
23	Direction	The field indicates whether the outage is at the entry or exit direction in relation to a specified balancing zone, or from which of the indicated bidding zones the electricity flows.
24	Curve type	The field indicates the type of the curve that is being provided for intervals in question, such as variable sized block or fixed sized block or point.
25	Interval start	The field indicates the estimated/actual starting date and time of the sub-interval of relevant event.
26	Interval stop	The field indicates the estimated/actual ending date and time of the sub-interval of relevant event.
27	Resolution	The field indicates the resolution defining the number of periods that the time interval is divided (ISO 8601).
28	Position	The field indicates the relative

5 new UMM datafields
 on 'curve-type reporting' might be optional

introduced: the **indication of the IIP (Inside Information Platform ID)**, as well as the **possibility** to use the so-called curve-type reporting for a precise representation of varying capacity values (Curve type, Resolution, Position).

Key topics for GIE as RRM and IIP

g

5 RRM Data Reporting Register and Annual Report

- Maintain a register > report the number of invalid data records
- Maintain a register > report the number of invalid data records that have been successfully corrected
- report containing the above data to be submitted no later than 31 March, covering the full previous calendar / reference year

> implementation of **ticketing / tracking system** with unique case ID for technical reporting

6 Re-Authorisation & accreditation as RRM and IIP

- 'fast-track' procedure for re-authorisation (to be used by GIE as established RRM/IIP)
- Data retention period set to 5 years for IIP and RRM (already covered by GIE)

7 (Automated) alert systems

- Notification of clients on ACER Receipt
 - + transmit a copy of the UMM / original XML report as submitted to ACER
- Notification on website to clients on planned maintenance activities on IIP, 5 working days in advance
- Notification of each IIP client individually on any unplanned downtime or disruption
- Notification to the public on the alternative means of disclosure that IIP clients can use in case of downtime
 - > add explicit information on ENTSOG IIP as back-up on GIE IIP
- Add automated monitoring and alert systems to track availability of all systems, components and services ('health monitor' status on IIP)
- Add version control system on IIP

Key topics for GIE as RRM and IIP

8 Exposure reporting

related to trading activity > not covered by GIE

9 Business Continuity

- May include contractual arrangement with another IIP, at no additional cost to the IIP client
(Cooperation of GIE IIP in place with ENTSOG IIP)
- Establishment of failover and fallback procedures that specify the automated redirection of IIP clients
- IIP shall provide clients with instructions on the use of back-up facilities and issue periodic reminders

10 Content responsibility

Data flagging of inaccurate or incomplete information by IIP - Art. 24(4)

11 Entry into force

12 months

Next event



Aggregated Gas Storage Inventory



Aggregated LNG System Inventory



REMIT UMM
Inside Information Platform

GIE Transparency Roundtable IV

November 2025 | Online

GIE TRA RT 2022 – 27 April 2022 / 15:30-16:30 CET

https://www.gie.eu/download/2022/GIE_TRA_ROUNDTABLE_012.pdf

GIE TRA RT 2022 – 8 November 2022 / 15:30-16:30 CET

https://www.gie.eu/download/2022/GIE_TRA_ROUNDTABLE_II_018.pdf

GIE TRA RT 2023 – 1 June 2023 / 15:30-16:30 CET

https://www.gie.eu/download/2023/230601_GIE_TRA_ROUNDTABLE_III_v2.pdf



Gas
Infrastructure
Europe



THANK YOU
For your attention

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4. Edig@s XML validation tool & schematron



Magdalena Glebocka

GAZ-SYSTEM

Pim vd Eijk

Consultant, Sonnenglanz

Edig@s: The European message format for the gas market

Edig@s is a comprehensive electronic data interchange (EDI) format for the commercial information exchange by electronic means between partners involved in the European gas industry.

Widely recognised and used by the industry, Edig@s had become the de facto electronic message format for gas information exchange.



Edig@s-XML is the data format mentioned in the Network Code on interoperability and data exchange rules (INT NC)

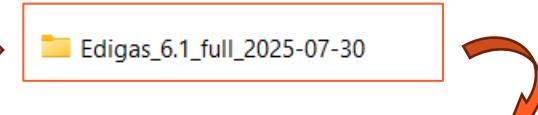
Edig@s version 6.1

<https://edigas.org/edigas/downloads/>

Edig@s Downloads

Version 6.1 - Recommended

Title	Size	Version
 <u>Edig@s Version 5.1 and 6.1 Comparison</u>	3 MB	30/07/2025
 <u>Deprecated items</u>	110 KB	30/09/2024
 <u>Version 6.1: Whole package</u>	19 MB	30/07/2025
 <u>Edigas 6.1 - Document Overview.xlsx</u>	114 KB	30/07/2025



 Documents
 Message-Examples
 Schemas
 Edigas 6.1 - Document Overview
 Edigas Release Notes 2024-09-30
 Edigas Release Notes 2025-07-30
 Edigas-Best-Practices_v2-2024-10-29
 Edigas-gas Version 5.1 and 6.1 Comparison - 2025-07-30

Edig@s 6.1 documentation package

Documents - Edig@s implementation guidelines

- **Basic Ground Rules** for Model Documentation
- **Model Documentation for each Edig@s process**

Nomination and Matching process, Balancing and Settlement Process, Gas Trading Process, System Operation,...

Schemas

- XSD files for each Document (XSD + restricted codes + local restrictions)
- XSD with the Codelist

Message Examples

- XML examples for each documentCode in each Edig@s process

New in version 6.1.

Edig@s Best Practices

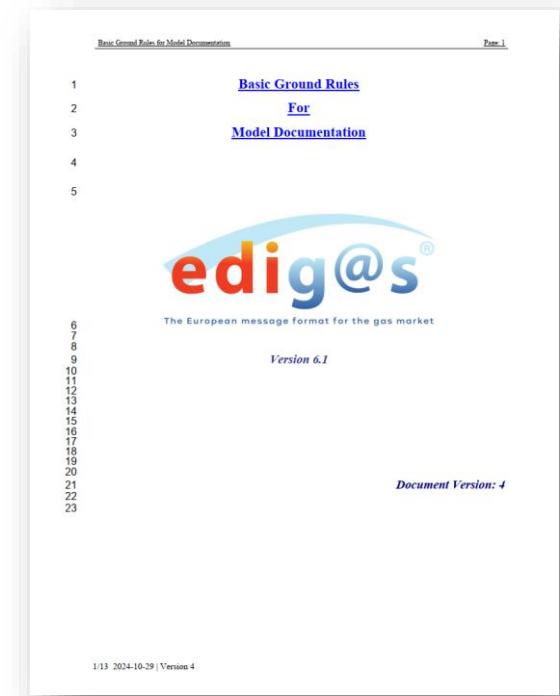
Release notes

Version 5.1. and 6.1. comparison

Basic ground rules

General rules valid for all messages in version 6.1, like:

- Time identification in the messages
- Document uniqueness (rules of identification and version)
- Validity period scope
- Flow direction convention
- Debit and credit definition
- Internal and external account definitions
- ...
- Details about the XSD setup
- Use of net values



2.18 Use of net values

In Edig@s 6 it has been decided to only permit net-values in nomination messages. This means that for a given timeseries (for the same connection point) in a Nomination & Matching message (NOMINT, NOMRES, DELORD, DELRES) only one value and one direction code should be present.

There is an exception for messages that are exchanged between systems that matches with different granularity. When a nomination message is exchanged from a daily system to a system that is matching on an hourly basis (and both input and output nominations is possible), the daily message needs to have both directions present in the message.

The Edig@s version 6 does not provide any provisions for validation of the usage of net values in the XSD, so even though it is possible to provide both directions in the messages through the Edig@s schemas, the guidelines presented here are mandatory to follow.

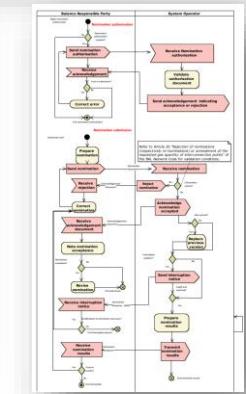
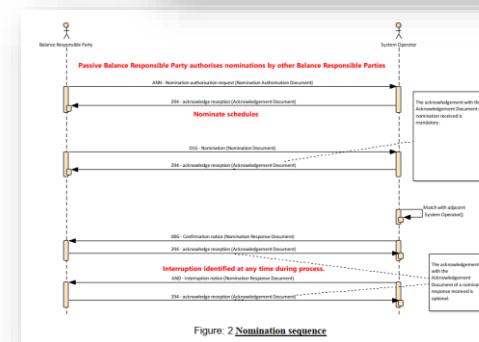
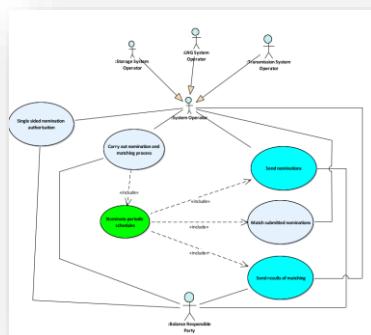
Model Documentation

Content of edig@s 6.1 Model Documentation:

● **Document usage decision tables** (for each edig@s document)

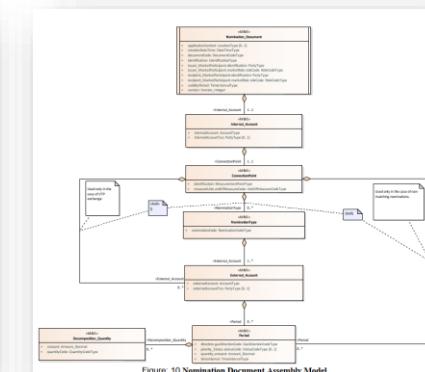
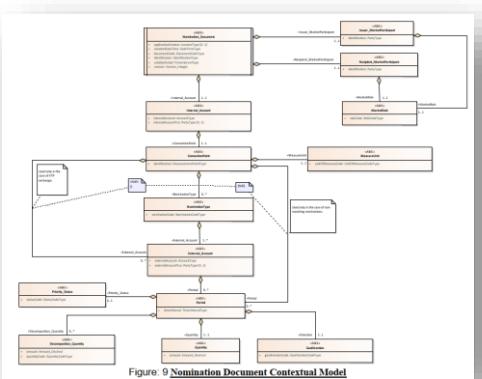
● Business process description:

- Use case
- Sequence diagram
- Workflow



● XML document detailed description

- Contextual model
- Assembly model
- Description of all attributes



1.2 Nomination Document				
Nomination document	Connection Point	VTP OTC	VTP exchange	Non matching nomination
identification			Mandatory.	
version			Mandatory.	
documentCode	01G = Nomination.	02G = VTP OTC nomination.	03G = VTP exchange nomination.	04G = Non matching nomination.
creationDateTime			Mandatory.	
validityPeriod			Mandatory.	
applicationContext	May be used. Deprecated attribute which will be removed in the next version of Edig@s.			
issuer_MarketParticipant	Mandatory; codingScheme = 305 (EIC Party X code).			
identification				
issuer_MarketParticipant	ZSH = Balance Responsible Party.	ZSH = Balance Responsible Party.	ZUM = Clearing Responsible Party.	ZSH = Balance Responsible Party.
marketRole.roleCode				
recipient_MarketParticipant	Mandatory; codingScheme = 305 (EIC Party X code).			
identification				
recipient_MarketParticipant	ZSO = System Operator.	ZUK = Area Coordinator.	ZUK = Area Coordinator.	ZSO = System Operator.
antMarketRole.roleCode	Mandatory; codingScheme = 305 (EIC Account Y code) or ZSO (System Operator).			
internal_Account.interna				
internal_Account.interna	Used if the account identification is ambiguous; codingScheme = 305 (EIC Party X code).			
internal_Account.interna				
internal_Account.interna				
connectionPoint.identific	Mandatory; codingScheme = 305 (EIC Measurement Point Z or Y code) or ZSO (System Operator).			
connectionPoint.measur				
eUnit/unitOfMeasureCod	KW1 = Kilowatt-hour per hour (kWh/h). KW2 = Kilowatt-hour per day (kWh/d). A15 = Kilogram per hour (kg/h)			
nominationCode	A01 = Single sided. A02 = Double sided.	A02 = Double sided.	Not used.	Not used.
NominationType.nomina				

Decision table – how to read it (NOMINT example)

1.2 Nomination Document

Nomination document	Connection Point	VTP OTC	VTP exchange	Non matching nomination
identification			Mandatory.	
version			Mandatory.	
documentCode	01G = Nomination.	02G = VTP OTC nomination.	03G = VTP exchange nomination.	04G = Non matching nomination.
creationDateTime			Mandatory.	
validityPeriod			Mandatory.	
applicationContext	May be used. Deprecated attribute which will be removed in the next version of Edig@s.			
issuer_MarketParticipant.identification		Mandatory; codingScheme = 305 (EIC Party X code).		
issuer_MarketParticipant.marketRole.roleCode	ZSH = Balance Responsible Party.	ZSH = Balance Responsible Party.	ZUM = Clearing Responsible	ZSH = Balance Responsible Party.
recipient_MarketParticipant.identification		Mandatory; codingScheme = 305 (EIC Party X code).		
recipient_MarketParticipant.marketRole.roleCode	ZSO = System Operator.	ZUK = Area Coordinator.	ZUK = Area Coordinator.	ZSO = System Operator.
Internal_Account.internalAccount		Mandatory; codingScheme = 305 (EIC Account Y code) or ZSO (System Operator).		
Internal_Account.internalAccountTso		Used if the account identification is ambiguous; codingScheme = 305 (EIC Party X code).		
connectionPoint.identification	Mandatory; codingScheme = 305 (EIC Measurement Point Z or Y code) or ZSO (System Operator).			
ConnectionPoint.measureUnit.unitOfMeasureCode		KW1 = Kilowatt-hour per hour (kWh/h). KW2 = Kilowatt-hour per day (kWh/d). A15 = Kilogram per hour (Kg/h)		
NominationType.nominationCode	A01 = Single sided. A02 = Double sided.	A02 = Double sided.	Not used.	Not used.

(...)

Decision table – how to read it (NOMRES example)

1.3 Nomination Response Document

Nomination Response	Connection Point	VTP OTC	VTP exchange	Non matching nomination
identification			Mandatory.	
version			Mandatory.	
applicationContext	May be used.	Deprecated attribute which will be removed in the next version of Edig@s.		
documentCode	08G = Confirmation notice. AND = Interruption notice.	08G = Confirmation notice.	08G = Confirmation notice.	08G = Confirmation notice.
creationDateTime		Mandatory.		
issuer_MarketParticipant.identification		Mandatory; codingScheme = 305 (EIC Party X code).		
issuer_MarketParticipant.marketRole.roleCode	ZSO = System Operator.	ZUK = Area Coordinator.	ZUK = Area Coordinator.	ZSO = System Operator.
recipient_MarketParticipant.identification		Mandatory; codingScheme = 305 (EIC Party X code).		
recipient_MarketParticipant.marketRole.roleCode	ZSH = Balance Responsible Party.	ZSH = Balancing Responsible Party.	ZUM = Clearing Responsible Party.	ZSH = Balance Responsible Party.
validityPeriod		Mandatory.		
nomination_Document.identification		Mandatory with the nomination identification if provided. If not provided this identification should have the text "MISSING" ..		
Nomination_Document.version		Mandatory with the nomination version. If the identification have the text "MISSING" this shall always have the value 1.		
Nomination_Document.documentCode	01G = Nomination.	02G = VTP OTC nomination	03G = VTP exchange nomination.	04G = Non matching nomination.
Nomination_Document.singleSidedBpSource_MarketParticipant.identification	codingScheme = 305 (EIC Party X code). The identification of the active Balance Responsible Party that submitted a single sided nomination to the System Operator. This is only used to inform the passive Balance Responsible Party of the nomination submitted. Otherwise this information is not provided.		Not used.	

Decision table – how to read it (NOMRES example)

(...)

Nomination Response	Connection Point	VTP OTC	VTP exchange	Non matching nomination
InformationOrigin_TimeSeries.businessCode	<p>Mandatory, all of the following codes should be provided.</p> <p>14G = Processed by System Operator.</p> <p>15G = Processed by adjacent System Operator (the direction shall always be that submitted by the counter party). (NOTE: Not used in an Interruption Notice)</p> <p>16G = Confirmed. (NOTE: Not used in an Interruption Notice)</p> <p>18G = Counterpart nomination. The original counterpart Balance Responsible Party nomination that was submitted to the neighboring System Operator (the direction shall always be that submitted by the counter party) (NOTE: Not used in an Interruption Notice)</p>	<p>Mandatory, all of the following codes should be provided.</p> <p>16G = Confirmed.</p> <p>18G = The original counterpart Balance Responsible Party nomination that was submitted to the Area Coordinator (the direction shall always be that submitted by the counter party)</p> <p>18G is mandatory in NOMRES when the Area Coordinator received the nomination from the counterpart Balance Responsible Party.</p>	<p>16G ≠ Confirmed.</p>	<p>16G = Confirmed.</p>

(...)

Edig@s implementation – challenges how to make sure that XML messages are compliant with the guidelines

- Edig@s XML document shall respect the details defined in the whole documentation package
- **XSD validation is not enough** to make sure that the edig@s document is correct
- **Additional verifying mechanisms are necessary** to check if the XML document meets the rules and requirements specified in the implementation guidelines (decision table)

01/07/2025

Breaking EDI validation tool news

To all users of Edig@s XML 6.1 in the natural gas or hydrogen sector!! ENTSOG in conjunction with EASEE-gas have launched a fantastic new online tool for validating Edig@s XML 6.1 messages for natural gas and hydrogen market participants.

Check out the edigas XML validation platform: (<https://edigas.validex.net>)
(Registration takes just a minute then you're ready to start testing... it's free and adds value!)

Why should you check out our validation tool?

- Ensures compliance with Edig@s 6.1 XML guidelines
- Eliminates errors in your Edig@s 6.1 XML implementations
- Simplifies implementation of Edig@s 6.1 XML with your partners
- Validates your XML files against XSD validations and schematron rules, ensuring adherence to Edig@s xsds and Edig@s guidelines

Supported messages: NOMINT, NOMRES, DELORD, DELRES - in production, LIMITS, INVENT, MARSIT, REMIT on the way... and more message types to come!

The need for an edigas 6.1 XML validation tool



Joint venture between EASEE-gas and ENTSOG collaboration

- TSOs requested a tool to help XML instance checking against Edig@s 6.1
- Increase the level of conformance to edig@s 6.1 XSDs and implementation guidelines
- Make standardised Schematron validation rules available to users
- Encourage and facilitate uptake of 6.1 in the gas sector (inc new gases)

The edigas XML validation service website

Validex



edig@s
The de facto message standard for the European gas market

DISCLAIMER ON RESPONSIBILITY AND LIABILITY

Whilst every effort has been taken to ensure the validity of the edig@s validation, USERS accept that neither the service provider, Midran Ltd nor EASEE-gas (the owner of the edig@s tenant) hold any responsibility or liability for any losses arising from using the tool.

Full disclaimer in 'more details'

[More Info](#)

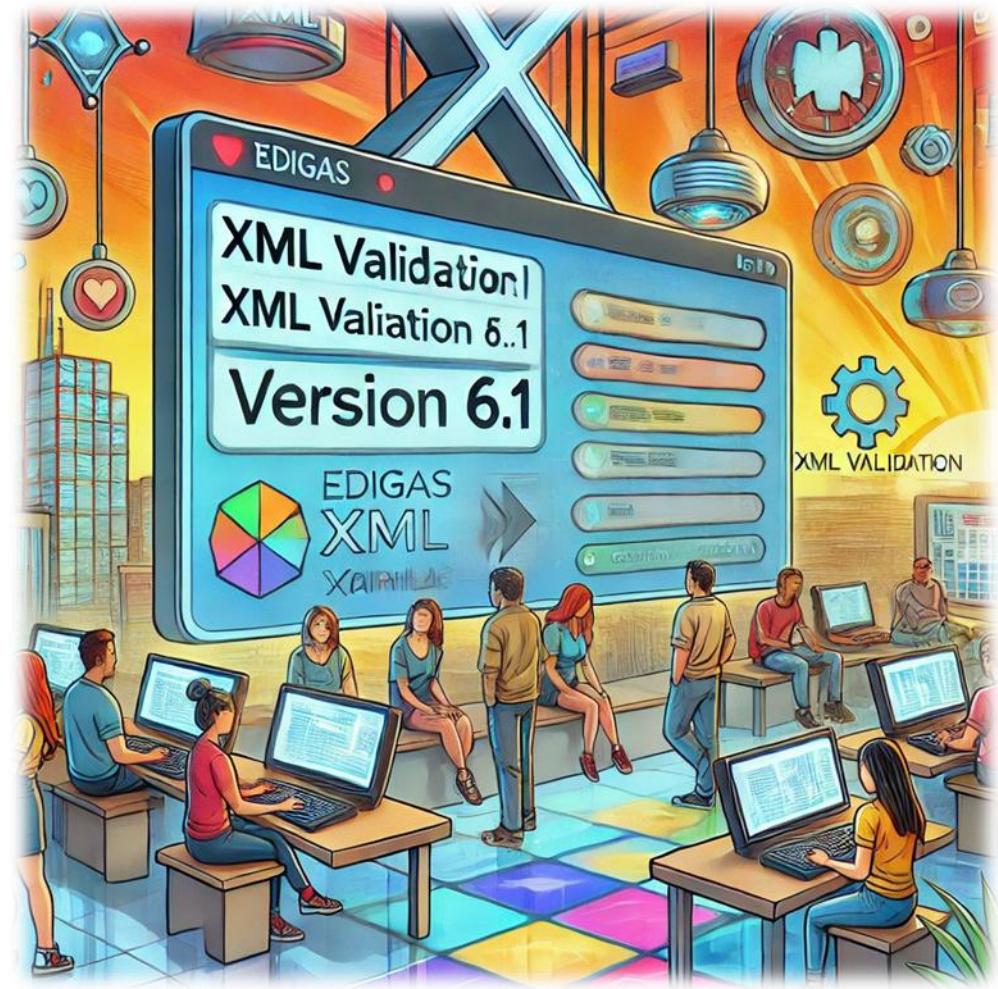
Sign In

Email
.....

Remember Me [Forgot Password](#)

Log in

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Status of support for EASEE-gas in validation portal



Document	XSD and guidelines available?	XSD deployed on portal?	Schematron developed?	Tested?
NOMINT	Yes	Yes	Yes	Yes
NOMRES	Yes	Yes	Yes	Yes
NOMAUT	Yes	Yes`	No	No
DELORD	Yes	Yes	Yes	Yes
DELRES	Yes	Yes	Yes	Yes
LIMITS	Yes	Yes	No	No
STOREQ	Yes	Yes	No	No
MARSIT	No – xsd is being updated	No	No	No

Status of support for EASEE-gas in validation portal



XML schema (XSD)

- XSD is the W3C standard for syntax definitions for XML document
- Edig@s XSDs are provided and maintained by Edig@s
- Provide core validation of XML structure (order, nesting) and text values
- Useful for code generation and basic validation
- Suited for run-time validation

Schematron (SCH)

- SCH is an ISO standard for validation based on rules and assertions
- Can capture many dependencies that cannot be expressed in XSD
- Newly developed for this service (currently around two hundred rules)
- Uploaded as XSLT to Validex, available in source form if requested
- Primarily aimed at supporting validation during development

Ex 1: time series associated with types of NOMRES and associated NOMINT

```

<documentCode>08G</documentCode>
<creationDateTime>2021-02-01T13:30:47Z</creationDateTime>
<validityPeriod>2021-02-02T05:00Z/2021-02-03T05:00Z</validityPeriod>
<issuer_MarketParticipant.identification codingScheme="305">21x000000000111Z</issuer_MarketParticipant.identification>
<issuer_MarketParticipant.marketRole.roleCode>ZSO</issuer_MarketParticipant.marketRole.roleCode>
<recipient_MarketParticipant.identification codingScheme="305">21y000000000222Z</recipient_MarketParticipant.identification>
<recipient_MarketParticipant.marketRole.roleCode>ZSH</recipient_MarketParticipant.marketRole.roleCode>
<nomination_Document.identification>20200201D761999</nomination_Document.identification>
<nomination_Document.version>1</nomination_Document.version>
<nomination_Document.documentCode>01G</nomination_Document.documentCode>
<nomination_Document.singleSidedBrpSource_MarketParticipant.identification>
<Internal_Account>
  <internalAccount codingScheme="ZSO">InternalAccount</internalAccount>
<ConnectionPoint>
  <identification codingScheme="305">21z000000000399Z</identification>
  <measureUnit.unitOfMeasureCode>KW1</measureUnit.unitOfMeasureCode>
  <NominationType>
    <nominationCode>A02</nominationCode>
    <External_Account>
      <externalAccount codingScheme="ZSO">ExternalAccount</externalAccount>
      <InformationOrigin_TimeSeries>
        <businessCode>14G</businessCode>
        <Period>
          <timeInterval>2021-02-02T05:00Z/2021-02-03T05:00Z</timeInterval>
          <direction.gasDirectionCode>Z02</direction.gasDirectionCode>
          <quantity.amount>0</quantity.amount>
          <Status>
            <statusCode>07G</statusCode>
          </Status>
        </Period>
      </InformationOrigin_TimeSeries>
      <InformationOrigin_TimeSeries>
        <businessCode>16G</businessCode>
        <Period>
          <timeInterval>2021-02-02T05:00Z/2021-02-03T05:00Z</timeInterval>
          <direction.gasDirectionCode>Z02</direction.gasDirectionCode>
          <quantity.amount>0</quantity.amount>
        </Period>
      </InformationOrigin_TimeSeries>
    </External_Account>
  </NominationType>
</ConnectionPoint>

```

NOMRES schematron rules

Flag	Rule id	Info	Query	Message	Loc
R-	EDIGAS-A16-NOMRES-015D		?	Nomination document single sided BRP source market participant is only specified when there are no Nomination Types with code A02 (Double-sided)	.../n
R-	EDIGAS-A16-NOMRES-023A		?	If document code is 08G (Confirmation notice) and the nomination document type code is 01G (Nomination), four timeseries are required: 14G (Processed by SO), 15G (Processed by adjacent System Operator), 16G (Confirmed) and 18G (Counterpart nomination)	/No

Text here

Ex 2: check on use of net values when using hourly nominations

```

<ConnectionPoint>
  <identification codingScheme="305">21Z000000000399Z</identification>
  <measureUnit.unitOfMeasureCode>KW1</measureUnit.unitOfMeasureCode>
  <NominationType>
    <nominationCode>A01</nominationCode>
    <External_Account> [16 lines]
    <External_Account>
      <externalAccount codingScheme="ZS0">efgh</externalAccount>
      <!-- -data for this externalAccount is incorrect
           - two values with different direction for each hour in timeinterval
      <Period>
        <!-- 100 kWh/h exit - in the first 12 hours of a gas day -->
        <timeInterval>2025-01-08T05:00Z/2025-01-08T17:00Z</timeInterval>
        <direction.gasDirectionCode>Z03</direction.gasDirectionCode>
        <quantity.amount>100</quantity.amount>
      </Period>
      <Period>
        <!-- 150 kWh/h exit - in the next 12 hours of a gas day -->
        <timeInterval>2025-01-08T17:00Z/2025-01-09T05:00Z</timeInterval>
        <direction.gasDirectionCode>Z03</direction.gasDirectionCode>
        <quantity.amount>150</quantity.amount>
      </Period>
      <Period>
        <!-- 200 kWh/h entry - in the first 12 hours of a gas day -->
        <timeInterval>2025-01-08T05:00Z/2025-01-08T17:00Z</timeInterval>
        <direction.gasDirectionCode>Z02</direction.gasDirectionCode>
        <quantity.amount>200</quantity.amount>
      </Period>
      <Period>
        <!-- 250 kWh/h entry - in the next 12 hours of a gas day -->
        <timeInterval>2025-01-08T17:00Z/2025-01-09T05:00Z</timeInterval>
        <direction.gasDirectionCode>Z02</direction.gasDirectionCode>
        <quantity.amount>250</quantity.amount>
      </Period>
    </External_Account>
  </NominationType>
</ConnectionPoint>

```

File id	Info	Query	Message
DIGAS .6-NO NT-MG- 1	?		With hourly nominations (KW1), for interval 2025-01-08T05:00Z/2025-01-08T17:00Z, found one entry period with volume 100 and an exit period with volume 200, use net value instead
DIGAS .6-NO NT-MG- 1	?		With hourly nominations (KW1), for interval 2025-01-08T17:00Z/2025-01-09T05:00Z, found one entry period with volume 150 and an exit period with volume 250, use net value instead

High level benefits of an Edig@s validation tool



Help market participants validate their Edig@s 6.1

- Encourage market participants to check their implementations against THE standard and also to give tools to help migration to 6.1
- Flag up where there are inconsistencies with a given implementation
- Reduce mistakes in interpretation of the usage of fields (reduce misuse)
- Facilitate upfront counterparty message testing (check before sending test file)

Value proposition of the Edig@s 6.1 xml validation portal



- **Target audience...**
 - *Gas market participants using, or intending to implement, edigas 6.1*
- **Opportunity...**
 - *Facilitate compliance to edigas 6.1 specs*
 - *Speed-up edigas implementations by self/counterparty testing*
 - *Provide a standardised set of schematron validation (business and context) rules for the market*
- **'As is' solution...**
 - *SPs, TSOs, LSOs and SSOs test bilaterally with human intervention*
 - *Guides are only provided in a static pdf format*
 - *Guides and testing environment are totally separate and require reconciliation when testing ongoing*
 - *No standard business schematron rules' checks are available, companies rely on varying internal validation*
- **Unique offer...**
 - *Online portal combines the library of edigas messages, guidelines, associated schematron (for download) in a central validation test portal for ease of use and facilitate edigas adoption. A standard set of schematron tests against edig@s 6.1*

High-level features of the XML validation portal



1. News

- Communication with the portal's user community over a news page. Inform users about corrections, updates, new versions and other topics.

2. Downloads

- SPOC. Publish and make available for download specifications, xsd files, XLST, schematron, guides, stylesheets..

3. Admin

- Configure the portal as an administrator.
- Add documentation to portal.
- Manage users.

4. Validation

- Supports user community to implement edigas and guideline rules identically and achieve real interoperability.

LIVE DEMO





The de facto message standard for the European gas market

DISCLAIMER ON RESPONSIBILITY AND LIABILITY

Whilst every effort has been taken to ensure the validity of the edig@s validation, USERS accept that neither the service provider, Midran Ltd nor EASSEE-gas (the owner of the edig@s tenant) hold any responsibility or liability for any losses arising from using the tool.

Full disclaimer in 'more details'

More Info

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Lessons Learned

- Schematron is well-suited for implementing Edig@'s implementation guidelines
- As coverage increases, user expectations increase
- 80/20 rule: most advanced functionality is hardest to implement

Next Steps

- Maintain coverage for NOMINT, NOMRES, DELORD, DELRES
- Add coverage for STOREQ, LIMITS
- Evaluate and plan

5. EDIG@S. 6.1 in use



Oliver Schirok
Data Exchange Manager & Chair
MWDWG (aka) edig@s WG
VNG Handel & Vertrieb

EDIG@s 6.1 Update



Oliver Schirok

VNG Handel & Vertrieb

Chairman MWDWG



About EASEE-gas



**FOUNDED IN
2002**



**69 Full members
and
16 service
provider members**

EASEE-gas
Streamlining the gas business

edig@s
The European message format for the gas market

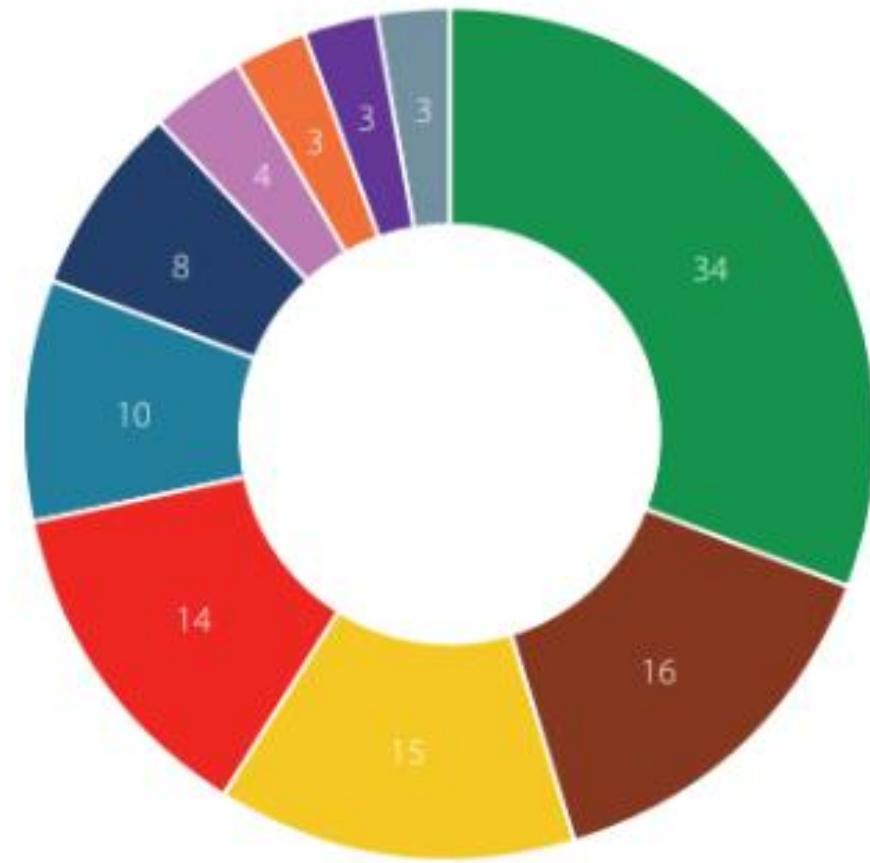
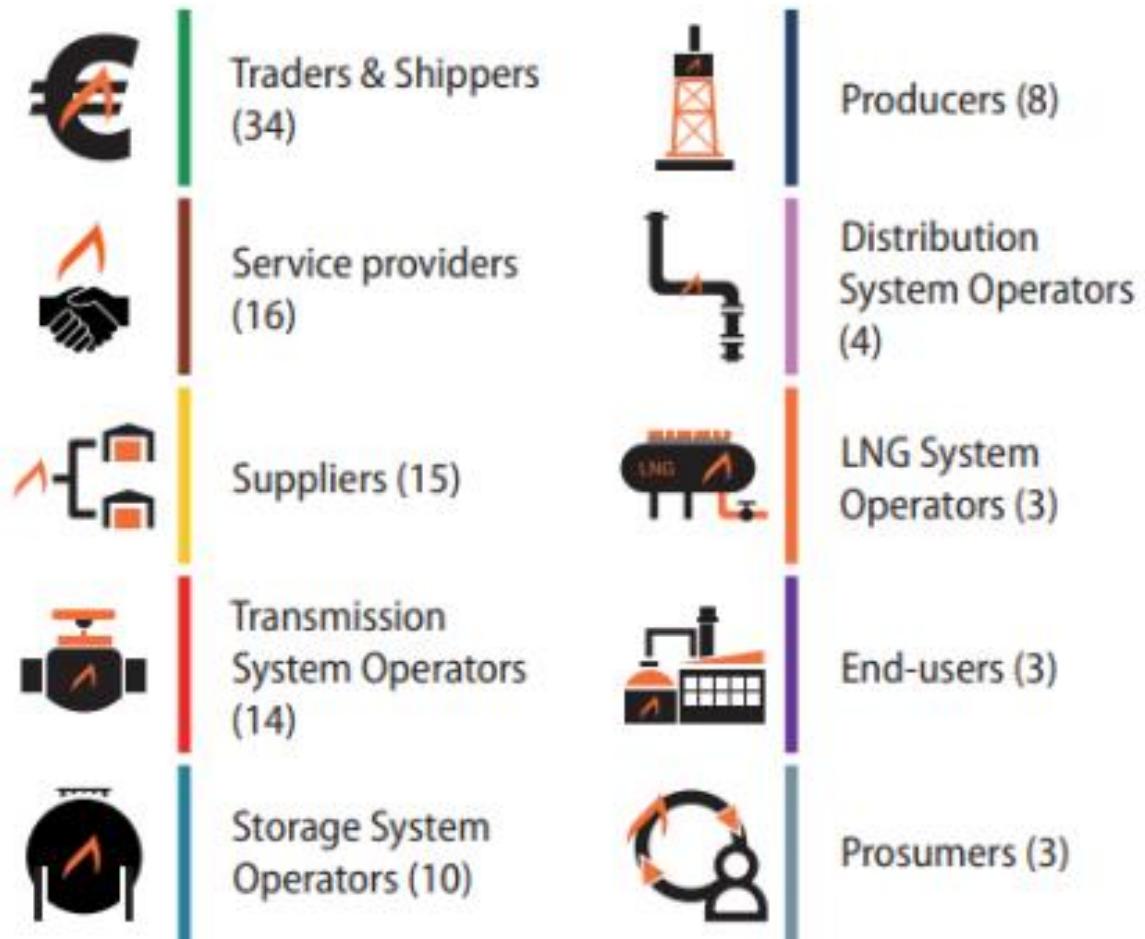


EASEE-gas promotes and develops solutions for the simplification and streamlining of the trading and physical transfer of gas.

Represents the entire gas value chain



Membership by category



Members across Europe

- Producers
- Transmission System Operators
- Distribution System Operators
- Storage System Operators
- LNG System Operators
- Traders & Shippers
- Suppliers
- End-users
- Prosumers
- Service Provider



Edig@s working group | Who are we?



Status of TSO Adoption

FACTS

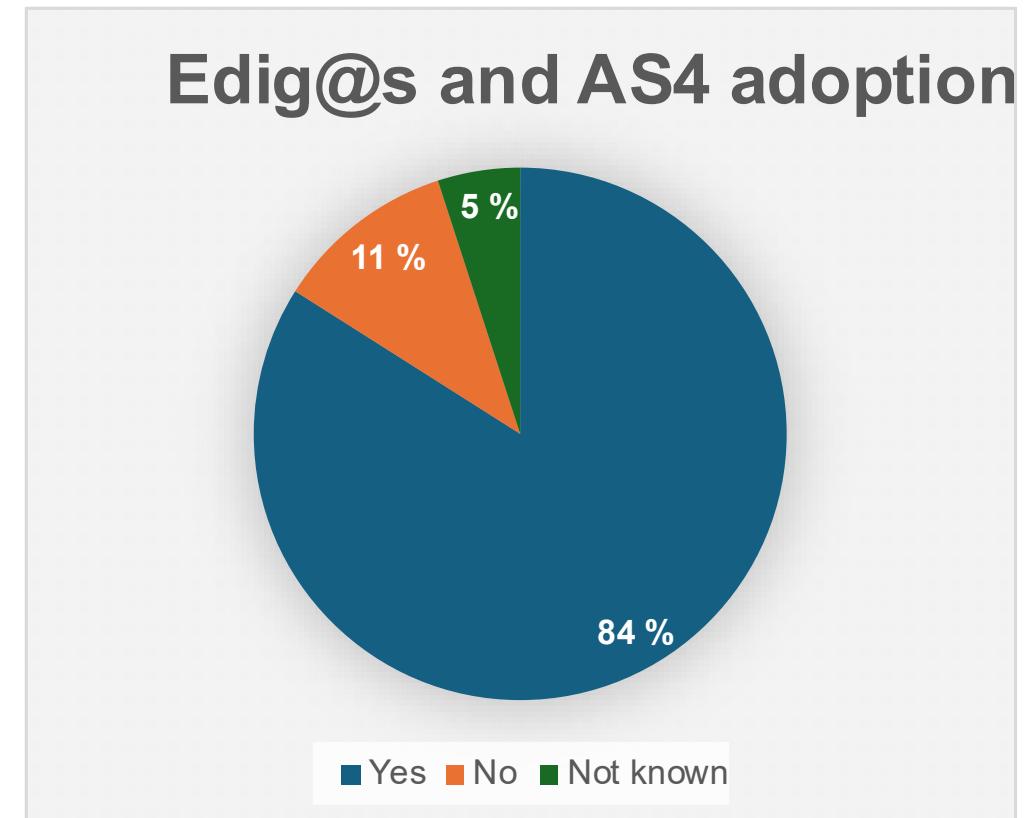
- 84% of TSOs implement AS4/Edig@s (document-based data exchange)
- 40,000,000 Edig@s XML messages exchanged annually
- 2,000+ AS4 access points

OPPORTUNITIES

- Full suite adoption of AS4/Edig@s features
- Reduce mis-interpretation of guidelines and messages
- Expand usage to other gases (Hydrogen and CO2)
- Expand usage to other processes (Storage and LNG)

EFFORTS TO ACHIEVE OPPORTUNITIES

- Edig@s XML validation tool/schematron/EASEE-gas scorecard
- ENTSOG / EASEE-gas workshops
- ACER data exchange recommendations
- EASEE-gas CBPs (Common business practice guides)
- EASEE-gas TF documentation improvements



Edig@s 6.1 Adoption 2026



1. Porthos project in Netherlands (CO2) – will use Edig@s messages for nomination and matching, and AS4 protocol for communication
2. EBL project in Germany (H2) - will use Edig@s messages for nomination and matching, and AS4 protocol for communication
3. Wider adoption of Edig@s 6.1 is progressing
4. Codelist updates have been implemented in Edig@s for new gases
5. Improvement of existing implementation guidelines (e.g. MARSIT)

Introducing EASEE-gas Scorecard



The EASEE-gas Scorecard is a structured evaluation tool designed to promote interoperability, transparency, and usability across European gas market interfaces.

Initial evaluation in 3 main categories, based on a predefined set of evaluation criteria.

1. Connectivity
2. Message Implementation
3. Documentation & Transparency

Category	Score
Connectivity	★★★★☆ (4/5)
Message Implementation	★★☆☆☆ (2/5)
Documentation & Transparency	★★☆☆☆ (2/5)

Edig@s 6.1 implementation status



- More than 1/3 of the members in MWDWG already implemented version 6.1.
- Most companies have implementation plans
- Plans for publication of Edig@s 6.1 readiness overview on our website
- Many TSO's, BRP's and Service Providers are ready and are willing to test with parties



Thank
you for your
attention! 😊



Stay updated:
EASEE-gas

6. Migration of Certificates (MoC)



Dirk Serruys (Fluxys)
Chair TSWG EASEE-gas

TSWG – MoC 2026

Dirk Serruys (Fluxys Belgium)

Chair EASEE-gas Technology Standards Working Group (TSWG)

EASEE-gas security certificates in support of your B2B messaging
are reaching **expiration** next year



Background

In 2009 EASEE-gas decided to provide security certificates to be used in the message exchange systems of market participants compliant to the requirements of AS2 in the beginning and to the ENTSOG AS4 profiles later

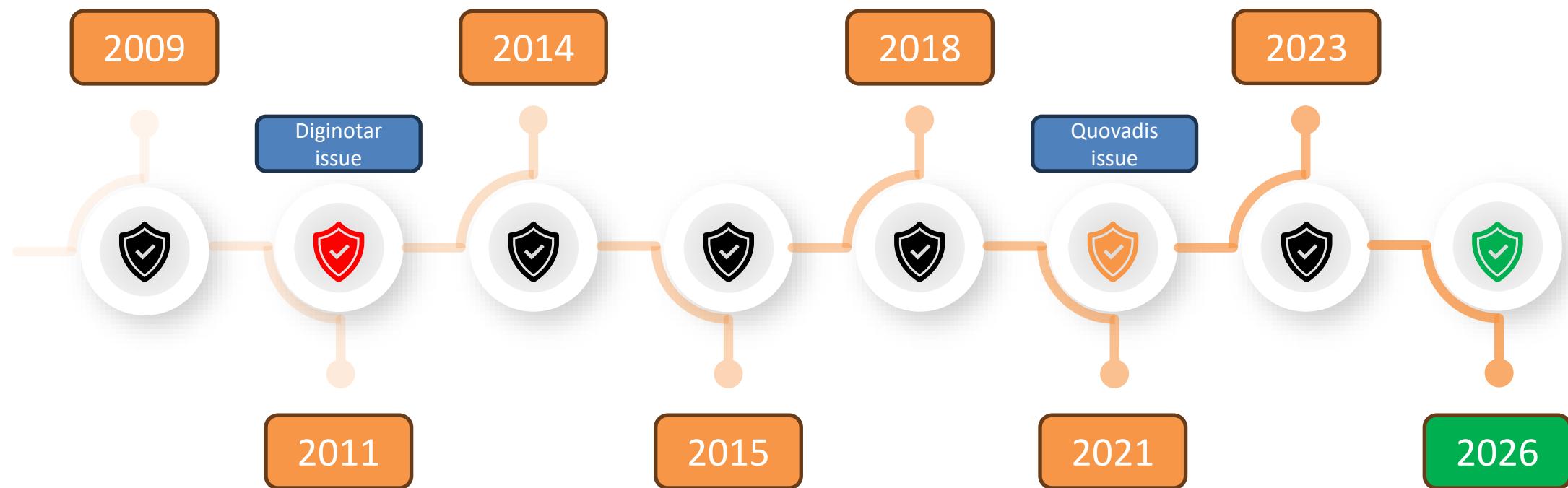
Security certificates are valid for 3 years and therefore need periodic renewal

Last renewal project was in 2023

$$2023 + 3 = 2026$$

So, we are preparing the next migration of certificates for 2026

A little history



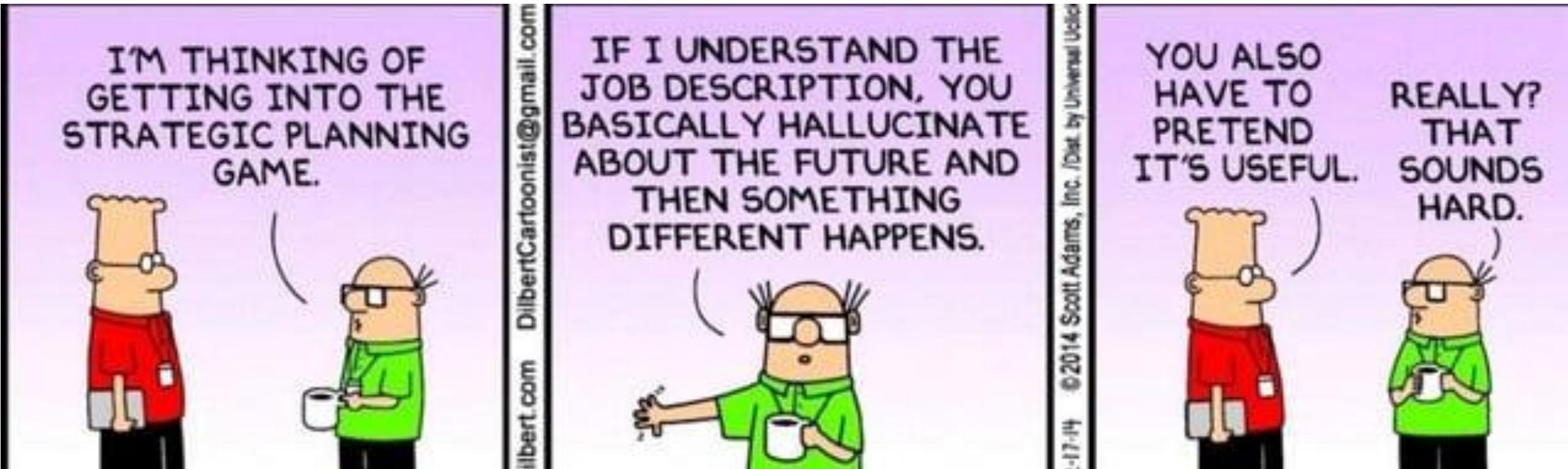
Approach

- EASEE-gas will set up a project team in the upcoming weeks
- A go-live date will be fixed. We have a proposal ready for September 2026, but this still needs validation by the EASEE-gas board
- All holders of EASEE-gas certificates will be contacted by the project team with clear instructions on how to proceed
- We urge all participants to follow up on the instructions of the project teams so transition will be as smooth as possible, and operations are guaranteed

What about compliance with AS4 v4.0?

- Because we do not want to put risk on the day-to-day operations, we propose following approach
 - For the renewal date we will be offering the same RSA certificates as today and this to guarantee interoperability as much as possible because v3.6 and v4.0 are not interoperable
- We will run a parallel track to be able to generate V4 compliant certificates, but we have still some work to do with our CA
 - Aim would be that as from next year we are able to generate and propose certificate pairs based on edDSA conformant to v4

What about Agreement Update & certificate exchange?



7. EASEE-connect updates & demo



Jean-Francois van Snick (Fluxys)
GSConnect Analyst
EASEE-gas TSWG

What is Easee-Connect?



The logo for Easee-Connect features the word "EASEE" in large, bold, red letters with a yellow-to-orange gradient. A blue curved swoosh graphic is positioned behind the letters. The word "connect" is written in a smaller, green, sans-serif font, with a green chain-link icon integrated into the letter "t".

Easee-Connect is an online platform for operators and stakeholders in the gas industry.

It allows the secure storage and exchange of AS2 and AS4 connection parameters.

Facilitates communication and electronic data exchange between business partners in the gas industry.

Easee-Connect Features



Why Use Easee-Connect?



- Simplifies the management of electronic exchanges in the gas industry.
- Ensures compliance with security and communication standards (AS2/AS4).
- Reduces the risk of errors during connection parameter configuration.
- Improves communication between operators, minimizing service interruptions.
- Facilitator in the Certificate Renewal Processes

Platform Evolution

New features in development, including integration of additional communication protocols.

Ongoing improvements in platform security and efficiency.

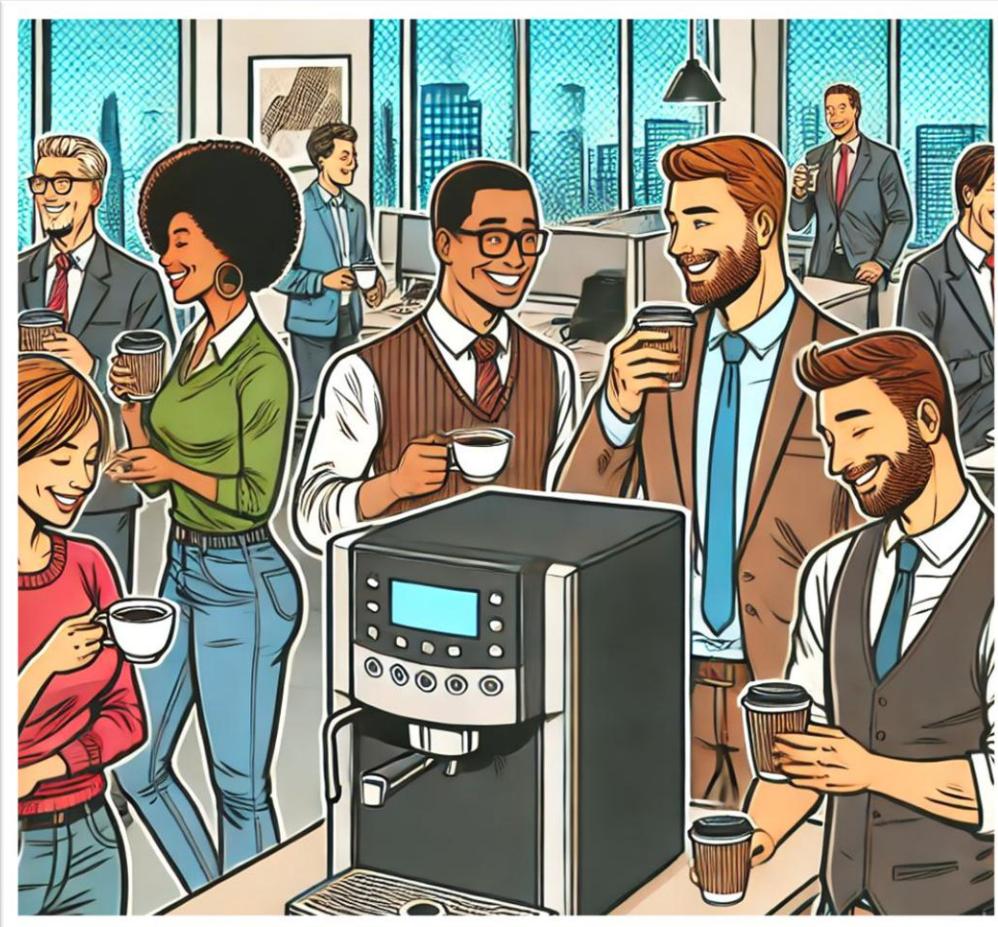
Increased interoperability with other data management systems in the gas industry.

Open-minded system to your suggestions for future evolutions.

EASEE-connect



8. Short break - 15 mins



9. ENTSOG's new AS4 profile & improved security features



Pim van der Eijk
Sonnenglanz Consultancy

- Technical specification from ENTSOG
 - Version 1.0 published in 09/2014
 - Current version in production use is 3.6 (03/2018)
 - Version 4.0 published this year: 05/2025
 - Available from the ENTSOG site
- In AS4, a Usage Profile is a combination of:
 - Technical profiling, such as the (non) use of AS4 features, algorithm choices etc.
 - Domain profiling, such as value constraints
 - Use of additional features, such as ebCore Agreement Update (since 2016)

Domain profiling has not changed



```
<eb3:PartyInfo>
  <eb3:From>
    <eb3:PartyId
      type="http://www.entsoe.eu/eic-
      codes/eic-party-codes-x"
      >21X-EU-A-X0A0Y-Z</eb3:PartyId>
      <eb3:Role>ZSH</eb3:Role>
    </eb3:From>
    <eb3:To>
      <eb3:PartyId
        type="http://www.entsoe.eu/eic-
        codes/eic-party-codes-x"
        >21X-EU-B-P0Q0R-S</eb3:PartyId>
        <eb3:Role>ZSO</eb3:Role>
      </eb3:To>
    </eb3:PartyInfo>
```

```
<eb3:CollaborationInfo>
  <eb3:AgreementRef>http://entsog.eu/communication/agreements/21X-
  EU-A-X0A0Y-Z/21X-EU-B-P0Q0R-S/3</eb3:AgreementRef>
  <eb3:Service type="http://edigas.org/service">A06</eb3:Service>
  <eb3:Action>http://docs.oasis-open.org/ebxml-
  msg/as4/200902/action</eb3:Action>
  <eb3:ConversationId/>
</eb3:CollaborationInfo>
<eb3:PayloadInfo>
  <eb3:PartInfo href="cid:0b960692-a3c6-4e85-80da-
  36009d3ae043@sender.example.com">
    <eb3:PartProperties>
      <eb3:Property
        name="MimeType">application/xml</eb3:Property>
        <eb3:Property name="CharacterSet">utf-8</eb3:Property>
        <eb3:Property
          name="CompressionType">application/gzip</eb3:Property>
          <eb3:Property
            name="EDIGASDocumentType">01G</eb3:Property>
          </eb3:PartProperties>
        </eb3:PartInfo>
      </eb3:PayloadInfo>
```

Summary of changes v3.6 to v4.0



Specification changes in the following sections:

- 2.2.3.3, compression is recommended instead of mandatory, and gateways should store messages to enable NR/NRR.
- 2.2.6.1, **TLS** specification updated to reflect state-of-the-art in transport layer security (versions, cipher suites).
- 2.2.6.2, WS-Security using XML signature: switch to **Ed25519** instead of RSA
- 2.2.6.3, WS-Security using XML Encryption: encryption using **X25519** instead of RSA
- 2.2.6.5, alternative Elliptic Curve Option using **ECDSA**.
- 2.3.4.4, guidelines on Certification Authorities updated
- 2.3.4.5, removed the details of (non-mandatory) EASEE-gas certificate profile.
- 2.4.3, some optional extensions to ebCore Agreement Update.

Changes are aligned with eDelivery AS4 v2.0 following continued collaboration

Message Layer Security in v4.0



Message signing

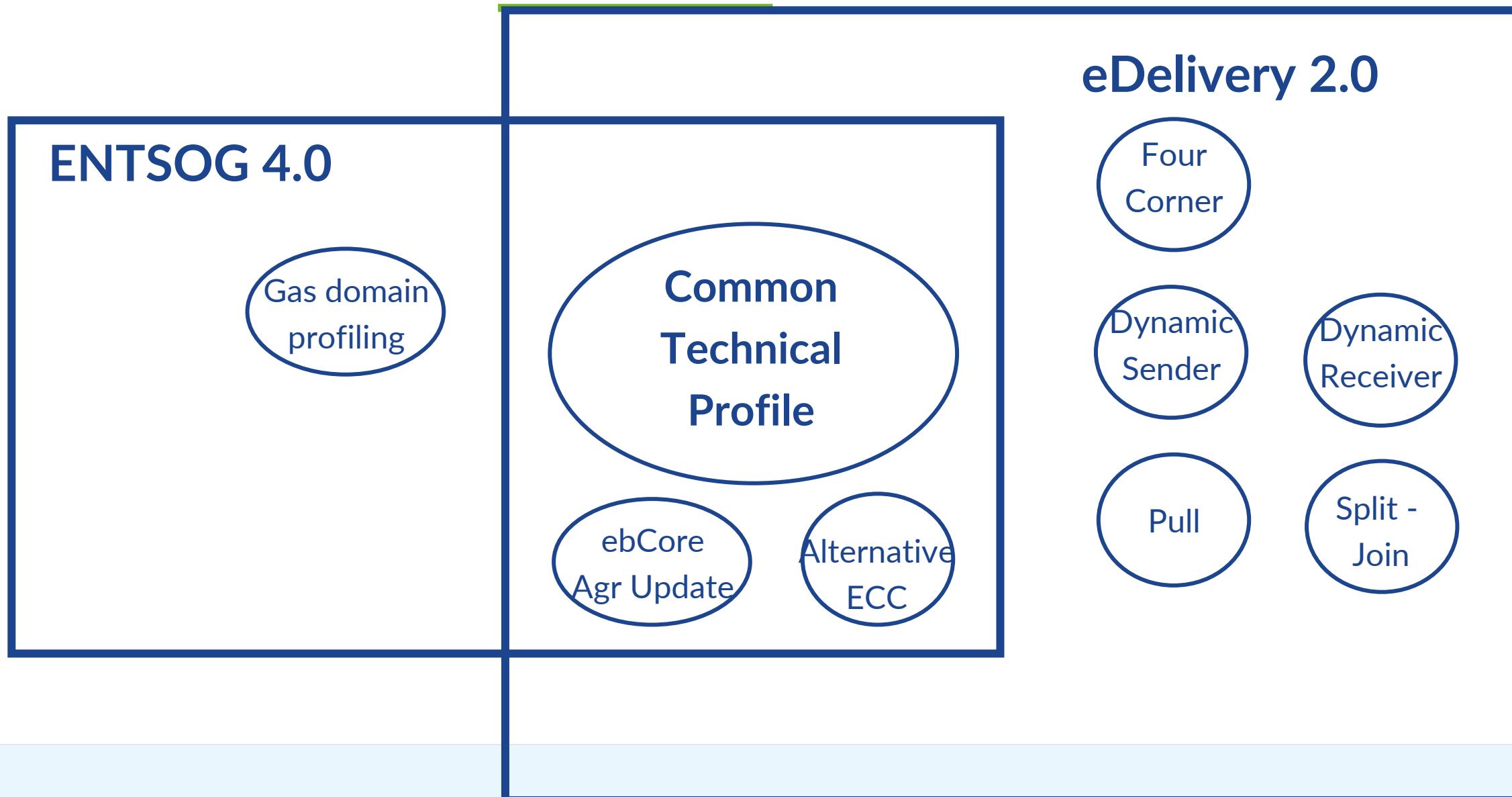
- Mandatory support (Common Profile) for **Ed25519** (elliptic curve signature algorithm using EdDSA and Curve25519)

Message encryption

- Mandatory support for key agreement for encryption using **X25519** (elliptic curve Diffie-Hellman key exchange using Curve25519). AES-128 continues to be used for encryption
- NB: **Ed25519** and **X25519** require different keys, so v4.0 requires sharing two public keys per partner instead of one

Alternative ECC option

- Optional support (enhancement) for **ECDSA** in situations where Ed25519/X25519 is not used
- MUST support the secp256r1, secp384r1, and secp521r1 curves and MAY support BrainpoolP256r1 curves



AS4 solution provider impact for v4.0 (1)



Solutions should offer ENTSOG v4.0 as (a) new protocol (variant) option(s)

- Could complement existing (unmodified) v3.6 and other protocol product options (BDEW, AS2 etc.)
- Could be the same as the eDelivery v2.0 Common Profile as they're technically the same
- Likely technically two sub-variants (one for Ed25519/X25519 and one for ECDSA)
- Allows customers to use both v3.6 and v4.0 in transition scenarios

Core protocol support

- Add support for Ed25519, X25519, ECDSA and required curves in the XML Security and WS-Security modules
- Core cryptography functionality is available in all modern platforms and programming languages
- If product is Java-based, some open-source XML Security / WS-Security libraries have all functionality
- Add support for TLS 1.3 in the HTTP transport module (if used)

Partner metadata management

- V4.0 profile requires separate certificates for signing and key agreement
- Ed25519, ECDSA and X25519 all require different keys
- V4.0 may use the same endpoint URL as v3.6 but could be different
- Admin UI should provide appropriate guidance for users
- Could also offer functionality to manage certificates (e.g. create CSR)

Domain specific profiling and tooling can be the same for v3.6 and v4.0

Implementation validation

- EC eDelivery will provide conformance testing for eDelivery 2.0
- ENTSOG and EC eDelivery will facilitate interoperability testing of solutions

ENTSOG support

- ITC KG will provide and maintain additional supporting documentation (FAQs)
- Will develop an implementation roadmap for the gas community, aligned with stakeholders and EASEE-gas

AS4 gateways deployed by TSOs and their partners



System update

- By upgrading your vendor's AS4 solution to a version that adds supports v4.0, you enable a gradual phase-in
- Already some solution providers have GA releases for ENTSOG AS4
- Contact your solution provider to know when they will support v4.0
- ITC KG: 5 will implement in 2026; 3 in discussion
- From eDelivery survey, we know several solution providers are working on implementation

Certificates

- Obtain certificates for use with v4.0 (Ed25519/X25519 or ECDSA for alternative)
- Two certificates instead of just one
- EASEE-gas "migration of certificates" may be opportunity to upgrade

Signature certificates for EdDSA

- EdDSA is widely supported technically
 - Security libraries for programming languages
 - CA software, PKCS #11 interface, HSM
- Standards and regulation:
 - For algorithms, CAs follow EC eIDAS related ETSI TS 119 612 (trusted lists)
 - ... which is linked to ETSI TS 119 312 (cryptographic suites)
 - ... which is linked to ECCG ACM (Agreed Cryptographic Mechanisms)
- European CCS Cybersecurity Certification Scheme on Common Criteria
 - Formerly SOGIS
 - ACM does not yet support EdDSA (for variety of non-technical reasons)
- Change requests in process:
 - To ECC expert group, update the ACM
 - To ETSI ESI, to update 119 312
 - CAs, to offer EdDSA certificates

ETSI TS 119 612 v2.4.1 (2025-08)



Electronic Signatures and Trust Infrastructures (ESI);
Trusted Lists

ETSI TS 119 312 v1.5.1 (2024-12)



Electronic Signatures and Trust Infrastructures (ESI);
Cryptographic Suites



Encryption certificates



- X25519
 - Unlike RSA, EC-DSA, X25519 keys are encryption-only,
 - If using CA, requires different workflow as it is not possible to create a self-signed certificate or CSR for an X25519 key
- Alternative:
 - Use signing certificate to sign encryption certificate
 - Advantage: allows more frequent updates when used with ebCore Certificate Update
- ECDSA:
 - Certification Authorities offer ECDSA certificates using NIST curves commercially

Links

ENTSOG AS4 profile v4.0

- https://www.entsog.eu/sites/default/files/2025-05/INT2819_25%20AS4%20Usage%20Profile_Version_4.0%20Final.pdf

FAQs

- Available from
<https://www.entsog.eu/interoperability-and-data-exchange-nc#as4-questions-and-answers>

Contact information

- ITC KG Chair - Douglas.hill@entsog.eu
- <https://www.entsog.eu/contact-us>



**ENTSOG
AS4 PROFILE
Version 4.0**

2025

10. ENTSOG AS4 a software provider perspective - Navitasoft



Christoph Malzer
Navitasoft

DID YOU EVER SEND AN ENCRYPTED
ZIP FILE ? AND YOU THOUGHT
IT WOULD BE SAFE ?

AS4 V4.0

Christoph Malzer



CONTENT

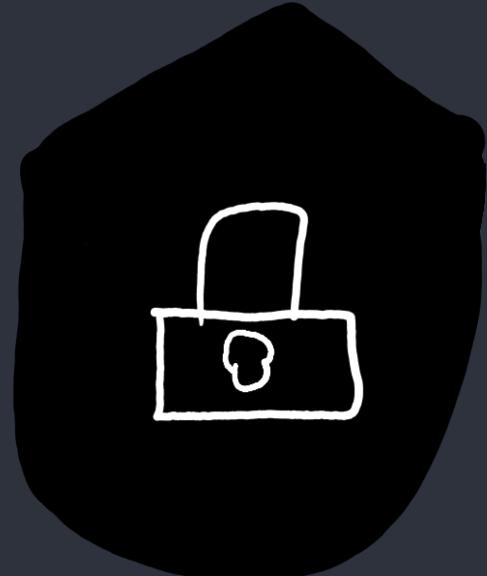
SIGNATURE VS. ENCRYPTION

DIFFERENT KEYS

USER INTERFACE

BENEFITS

SIGNATURE

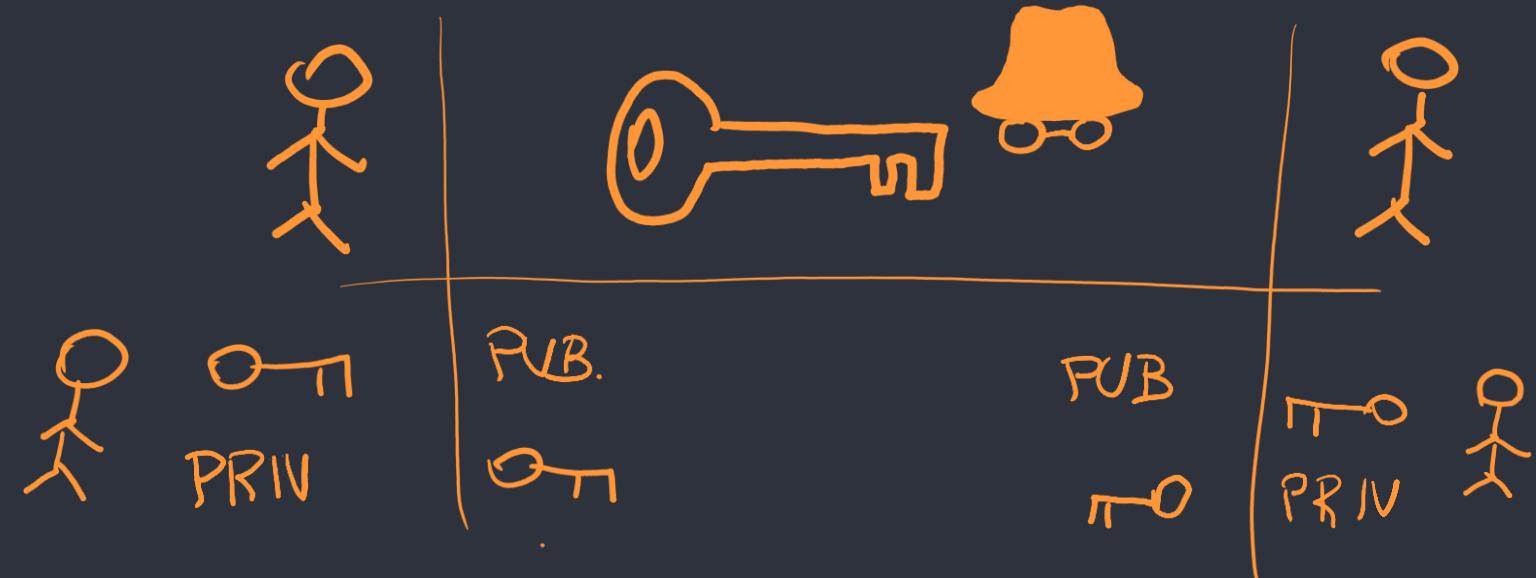


MESSAGE
ENCRYPTION

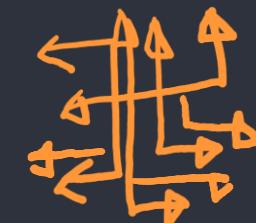
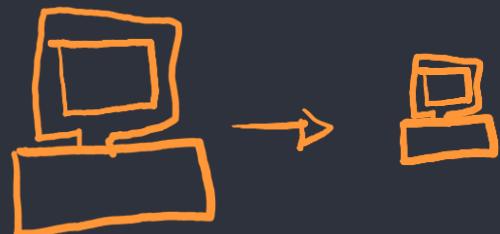


SYMMETRIC

ASYMMETRIC



BENEFITS



AS4 messages

tso-ip-central-test.tso.ag.ns.hu/as4-web/#/b2b/as4messages

navitasoft Administration Data exchange 9/25/2025 3:21 PM Signed in as admin

Data exchange > Messages

Agreement Name: Day: State: Sender: Receiver: Protocol:

2024.12.17. All All All

Message direction: Error state:

All All

Search

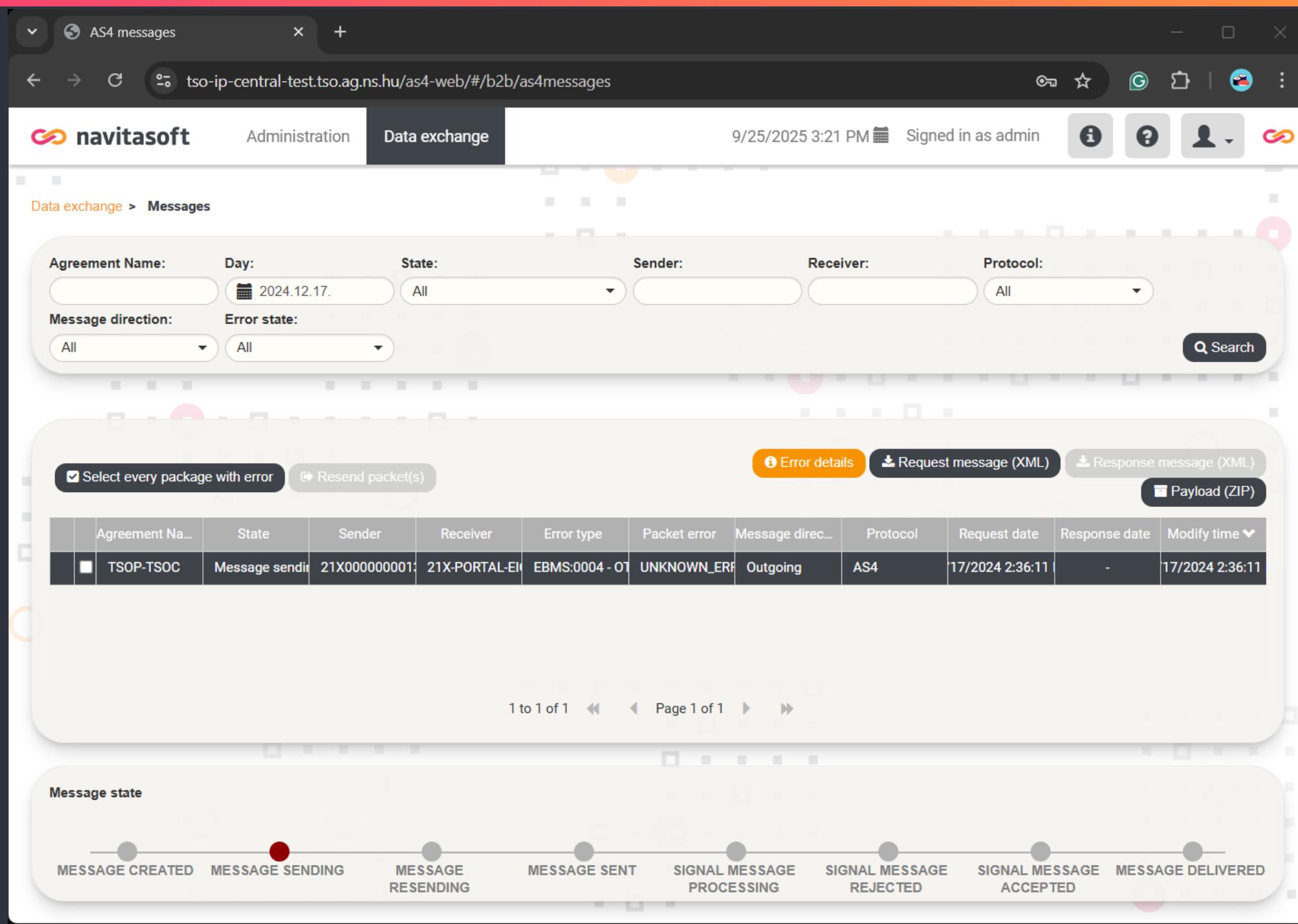
Select every package with error Resend packet(s) Error details Request message (XML) Response message (XML) Payload (ZIP)

Agreement Na...	State	Sender	Receiver	Error type	Packet error	Message direc...	Protocol	Request date	Response date	Modify time
TSOP-TSOC	Message sendin	21X000000001	21X-PORTAL-EI	EBMS:0004 - 01	UNKNOWN_ERP	Outgoing	AS4	17/2024 2:36:11	-	17/2024 2:36:11

1 to 1 of 1 ◀ ▶ Page 1 of 1 ▶

Message state

MESSAGE CREATED MESSAGE SENDING MESSAGE RESENDING MESSAGE SENT SIGNAL MESSAGE PROCESSING SIGNAL MESSAGE REJECTED SIGNAL MESSAGE ACCEPTED MESSAGE DELIVERED



AS4 messages

tso-ip-central-test.tso.ag.ns.hu/as4-web/#/

Administration Data exchange 9/25/2025 3:30 PM Signed in as admin

User administration

Role management

System parameters

Business log

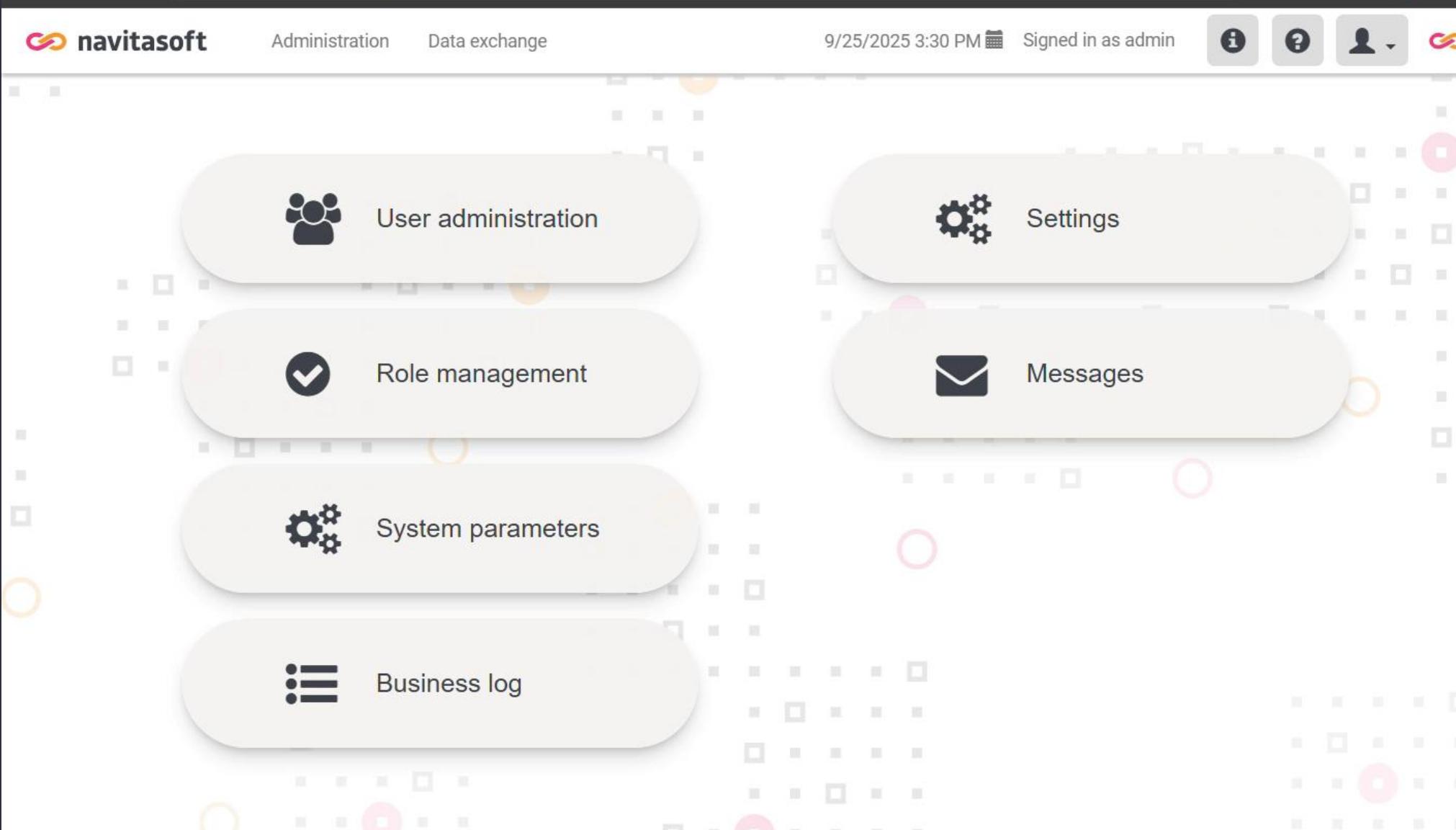
Settings

Messages

 **navitasoft**

tasoft



User Configuration

AS4 messages

tso-ip-central-test.tso.ag.ns.hu/as4-web/#/

Administration Data exchange 9/25/2025 3:17 PM Signed in as admin

navitasoft

User administration

Role management

System parameters

Business log

Settings

Messages

Route Definition

navitasoft Data exchange settings tso-ip-central-test.tso.ag.ns.hu/as4-web/#/b2b/settings

Administration Data exchange 9/25/2025 3:17 PM Signed in as admin

ECC-TEST-1 Show expired + New agreement

AS4 setting 

Direction	Incoming
Sender	20X-LU003-ECC-S
Sender role	ZEX
Receiver	21X000000001308D
Receiver role	ZSO
Service code	A99
Action URL	http://docs.oasis-open.org/ebxml-msg/as4/200902/ai
Protocol	AS4
Message format	application/xml

Test Reception Manual sending Export Edit Delete

AS4 setting 

Direction	Outgoing
Sender	21X000000001308D
Sender role	ZSO
Receiver	20X-LU003-ECC-S
Receiver role	ZEX
Service code	A99
Action URL	http://docs.oasis-open.org/ebxml-msg/as4/200902/ai
Protocol	AS4
Message format	application/xml

Test Reception Manual sending Export Edit Delete

AS4

as4-frontend-mssql.as4-dev.nscloud.hu/messages

navitasoft | Messages Certificates

DEV Click to view application versions

09/25/2025 05:32 pm

Messages

Day: 05/22/2023 | Status: All | Agreement: Agreement | Step: All

Sender: | Receiver: | Message direction: All | Protocol: All

Search | Reset filters | Resend selected

	Status	Agreement type	Step	Sender	Receiver	Error type	Packet error	Direction	Protocol	Request date	Response date	Modify time
<input type="checkbox"/>	SUCCESS	TSOP-T...	Signal r...	21X000...	21X-PO...			IN	AS4	05/22/...	05/22/...	05/22/...
<input type="checkbox"/>	SUCCESS	ELEKTR...	Signal r...	41XLAT...	21X-PO...			IN	AS4	05/22/...	05/22/...	05/22/...
<input type="checkbox"/>	SUCCESS	AB „Ami...	Signal r...	1470316...	21X-PO...			IN	AS4	05/22/...	05/22/...	05/22/...
<input type="checkbox"/>	SUCCESS	MB „AJ ...	Signal r...	41XAJT...	21X-PO...			IN	AS4	05/22/...	05/22/...	05/22/...
<input type="checkbox"/>	SUCCESS	MET LIT...	Signal r...	61X-GT...	21X-PO...			IN	AS4	05/22/...	05/22/...	05/22/...
<input type="checkbox"/>	SUCCESS	UAB "Ig...	Signal r...	23X-16...	21X-PO...			IN	AS4	05/22/...	05/22/...	05/22/...
<input type="checkbox"/>	SUCCESS	AB „Ami...	Messag...	21X-PO...	1470316...			OUT	AS4	05/22/...	05/22/...	05/22/...
<input type="checkbox"/>	SUCCESS	ELEKTR...	Messag...	21X-PO...	41XLAT...			OUT	AS4	05/22/...	05/22/...	05/22/...
<input type="checkbox"/>	SUCCESS	MB „AJ ...	Messag...	21X-PO...	41XAJT...			OUT	AS4	05/22/...	05/22/...	05/22/...

Certificates

Status	All	Name	File name
--------	-----	------	-----------

 New certificate

Status	Name	File name	Valid from	Valid to	Description	Added	Added by
VALID	Certificate name I.	cert.cert	01.01.2025. 00:00	31.12.2025. 23:59	Lorem ipsum dolor sit amet, consectetur adipiscing elit. Morbi mollis, leo sed euismod consectetur, elit arcu fermentum ligula...	01.01.2024. 12:32	Gabor Nyul

Connections

◀ < Page 1 of 10 > ▶

Status	Name	File name	Valid from	Valid to	Description	Added	Added by
VALID	Certificate name II	cert_and_crt	01.01.2025-00:00	21.12.2025-23:59	Uzun inquam delectat amet consectetur adipisicing elit. Modi mollie, lacus sed euismod consectetur elit erat fermentum liqui	01.01.2024	Cohen Nud

⚡ No connection to display

Name	File name	Valid from	Valid to	Description	Added	Added by
EXPIRED						

Who is Navitasoft?



Operator Suite



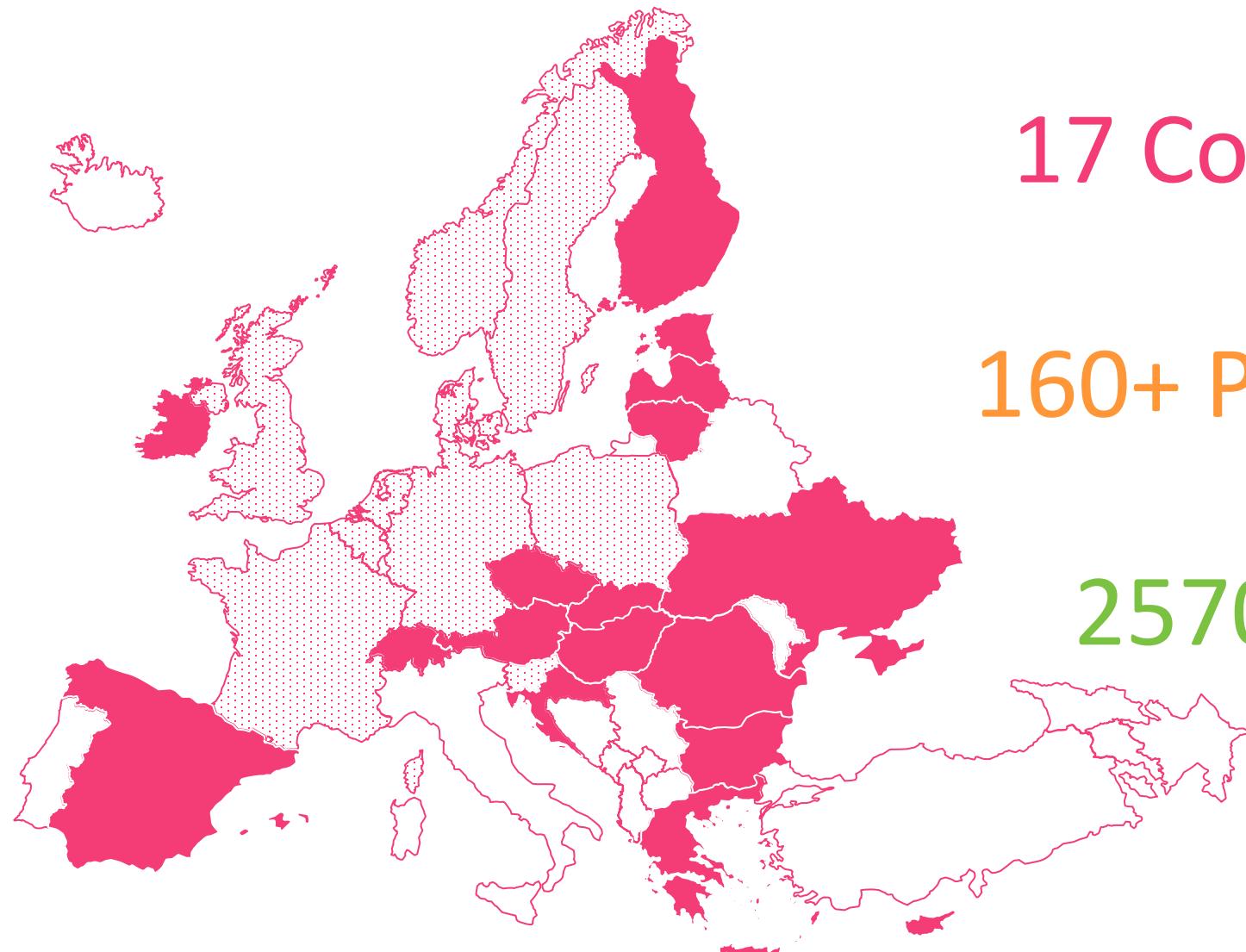
Trader Suite



Communicator
Suite



Energy Market
of Things



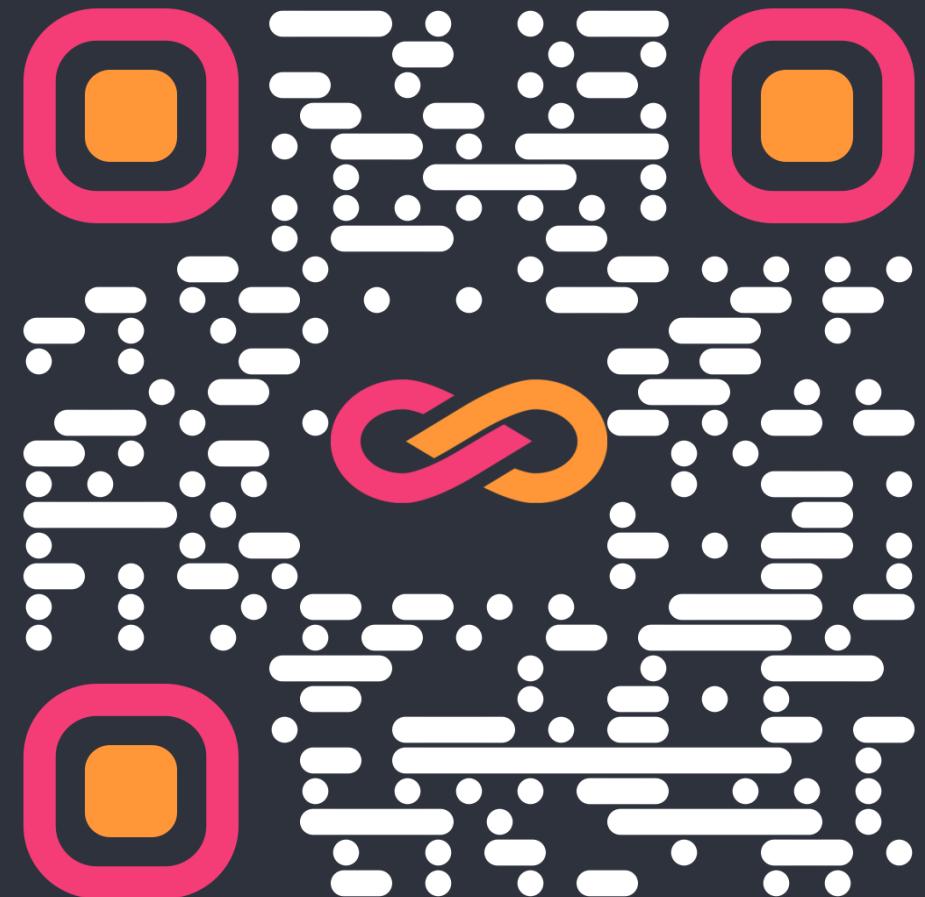
17 Countries

160+ Projects

2570 Users

Christoph Malzer

Business Development Manager
+43 660 9228 289
christoph.malzer@navitasoft.com



<https://linktr.ee/cmans>

11. eDelivery AS4 tools and status



Bogdan Dumitriu
EC eDelivery
Directorate-General for Digital
Services (DIGIT)

Implementation of eDelivery AS4 2.0

Bogdan Dumitriu
DIGIT, European Commission

10 September 2025
ENTSOG Workshop on the new AS4 version 4.0 profile



EDELIVERY: STANDARDISED EU-WIDE SECURE COMMUNICATION

Currently supporting (cumulative numbers):

- **36 eDelivery-based ecosystems**
- eDelivery is used in **35 countries in Europe**
- **888 eDelivery Access Points**
- **1828 Public and private organisations connected to eDelivery Access Points**
- **6 billion+ messages exchange**
- **4 million+ institutions in the eDelivery SML service**
- **3940 support requests**



IMPLEMENTATION OF EDELIVERY AS4 2.0

01 eDelivery specifications

02 How can we help? Services, tools and events

03 Supporting EdDSA adoption

CHAPTER 01

eDelivery specifications



EDELIVERY SPECIFICATIONS 2.0

The eDelivery 2.0 Specifications were **officially adopted on 4 December 2024** by the eDelivery Operational Management Board (OMB) members and published on 5 December 2024.

eDelivery AS4 Profile 2.0

Modern cryptography (elliptic curve cryptography)

More flexible Dynamic Discovery

Support for ebCore Agreement Update

Optional SBDH profile enhancement removed

eDelivery SMP Profile 2.0

Support for the latest OASIS SMP 2.0 standard (multiple certificates)

Support for eDelivery AS4 v2.0

eDelivery BDXL Profile 2.0

Support for publication of SMP 1.0/2.0 URLs

eDelivery ebCore Party Id 2.0

Clarified use

Aligned with updates to other eDelivery specifications

EDELIVERY SPECIFICATIONS 2.0

The eDelivery 2.0 Specifications were **officially adopted on 4 December 2024** by the eDelivery Operational Management Board (OMB) members and published on 5 December 2024.

eDelivery AS4 Profile 2.0

Modern cryptography (elliptic curve cryptography)

More flexible Dynamic Discovery

Support for ebCore Agreement Update

Optional SBDH profile enhancement removed

← aligned →

ENTSOG AS4 Profile 4.0

Refer to ENTSOG documentation for details

CHAPTER 02

How can we help?



SUPPORT FOR IMPLEMENTATION OF EDELIVERY AS4 2.0

How can we help? Services, tools and events

eDelivery Interoperability Forum

A platform to support the collaboration between the eDelivery Building Block and providers of **eDelivery-conformant solutions**.

Membership based.

Learn more:
<https://ec.europa.eu/digital-building-blocks/sites/x/-AR7Jg>

eDelivery Interoperability Event

Online sessions to **test connectivity** between implementations of eDelivery AS4 2.0 specifications.

Learn more:
<https://ec.europa.eu/digital-building-blocks/sites/x/2BmuN>

AS4 2.0 Security Header Validation Tool

A tool to generate and **verify the security headers** (signature and encryption) used in AS4 messages.

Learn more:
<https://ec.europa.eu/digital-building-blocks/code/projects/EDELIVERY/epos/edelivery2-as4-security-validator>

eDelivery Conformance Testing

The service offered by the eDelivery Building Block for providers of eDelivery-conformant solutions to **demonstrate conformance**.

Testing of eDelivery AS4 2.0 not yet available.

Learn more:
<https://ec.europa.eu/digital-building-blocks/sites/x/CKrXGw>

EDELIVERY 2.0 PROFILE: SUPPORTING ROLL-OUT



eDELIVERY INTEROPERABILITY FORUM

Objective

Engage private sector to improve market support for eDelivery.

Membership

In the past two years, membership increased from some tens of members to more than 200.

New initiatives

Support solution providers with new conformance testing platform, new page presenting conformant solutions, presentation of eDelivery-based ecosystems, etc.



eDELIVERY INTEROPERABILITY EVENT

What?

Online sessions to test connectivity between implementations of eDelivery AS4 2.0 specifications.

Post-event report

A report and news article, featuring the names of organisations that successfully tested the new profile was published in March 2025. Available [here](#).

Next session

In December 2025. This session will provide another opportunity for implementers to test their implementations against each other.



<https://ec.europa.eu/digital-building-blocks/sites/x/2BmuN>

EDELIVERY2-AS4-SECURITY-VALIDATOR

What?

A tool to generate and verify the security headers (signature and encryption) used in AS4 messages.

For whom?

- Vendors building or updating eDelivery AS4 2.0 Access Points.
- Teams preparing for the eDelivery Interoperability Event.
- System integrators & further who need to validate installations.



EDELIVERY2-AS4-SECURITY-VALIDATOR

Lightweight Access Point implemented as Spring Boot application

Can send valid eDelivery AS4 2.0 UserMessages to preconfigured URL, using EdDSA or

Can receive, validate and log details of eDelivery AS4 2.0 UserMessages

Provides easy-to-understand validation errors (XSD & Schematron validation)

-----Receiving message using the following properties:

Signature Algorithm: [<http://www.w3.org/2021/04/xmldsig-more#eddsa-ed25519>]

Signature Digest Algorithm: [<http://www.w3.org/2001/04/xmlenc#sha256>]

Content Encryption Algorithm: [<http://www.w3.org/2009/xmlenc11#aes128-gcm>]

Encryption Key Agreement Method: [<http://www.w3.org/2021/04/xmldsig-more#x25519>]

Encryption Key Derivation Function: [<http://www.w3.org/2021/04/xmldsig-more#hkdf>]

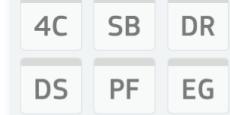
Encryption Key Wrapping Algorithm: [<http://www.w3.org/2001/04/xmlenc#kw-aes128>]

EDELIVERY CONFORMANCE TESTING

When?
Support for eDelivery AS4 2.0
expected as of mid-2026.

<https://ec.europa.eu/digital-building-blocks/sites/x/CKrXGw>



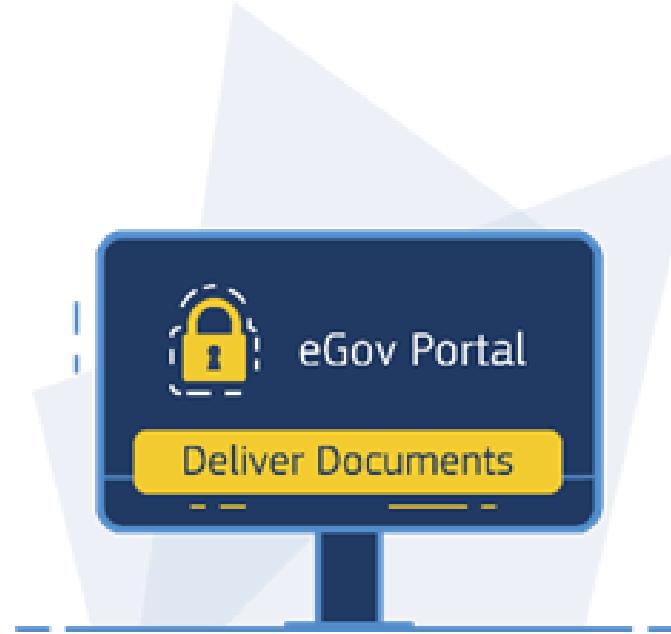
Product	Testing	Conformance	Reports	Actions
Descartes 	Tested on 15 Sep 2022	eDelivery AS4 2023.06 1.15 	Download report	 
DESCARTES				
Domibus 5.1.x (EC sample implementation) 	Tested on 4 Jun 2025	eDelivery AS4 2023.06 1.15 	Download report	 
Conformant since 17 Jul 2019				
Harmony eDelivery Access 2.6.0 	Tested on 13 Aug 2025	eDelivery AS4 2023.06 1.15 	Download report	 
Conformant since 14 Jan 2022			Previous versions	
Ida Infront iipax.com 	Tested on 7 Feb 2022	eDelivery AS4 2023.06 1.15 	Download report	 
IDA INFRONT				

CHAPTER 03

Supporting EdDSA adoption



Have a question?



eDelivery
Exchange data and
documents
online reliably and securely



Bogdan Dumitriu



To continue the conversation,
contact our team via email

Emails:

EC-digital-building-blocks@ec.europa.eu



EC-eDelivery-support@ec.europa.eu



Thank you

& stay in touch



12. Wrap-up and reflections



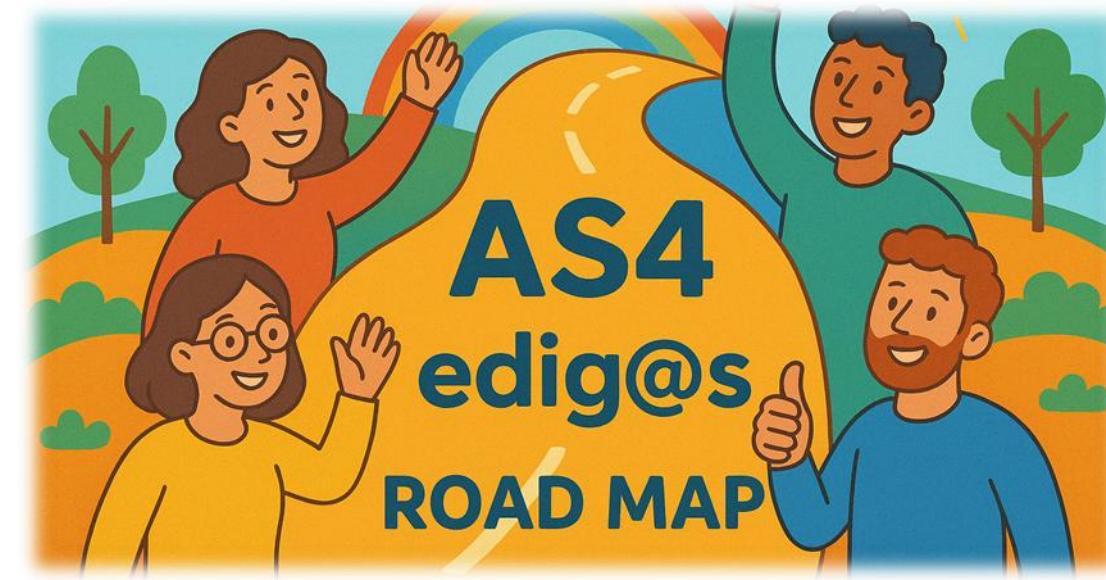
Douglas Walker Hill
Interoperability & Data Exchange Advisor
ENTSOG

- **AS4 ENTSOG profile – in a pre-rollout phase – push adoption for EOB 2026**
 - ENTSOG running wksps, info sessions, liaison with EC/CA/SP/TSOs
 - EASEE-connect –data exchange for AS4 parameters
 - SPs creating new updated offerings for the ENTSOG profile & implementation
 - EC eDelivery creating implementation artefacts for ease of implementation
- **Edigas XML 6.1**
 - New gases 'ready' H2 etc.
 - New validation tool with strong schematron validation in place
 - Strong support from ENTSOG ITC KG/EASEE-gas edigas WG
- **BRS**
 - CAM NC ongoing revision and INT NC updates in planning

Roadmap what to look forward to? 'TO BE' scenario



- **AS4 ENTSOG profile – in a rollout phase – adoption EOB 2026**
 - Improved security in the core
 - Improved usage of the agreement reference feature
 - Updated eDelivery validation artefacts
- **Edigas XML 6.1**
 - Broader adoption of edigas XML in natural gas and new gases
 - Better edigas conformance via validation tool with strong schematron validation
- **BRS updates from revised NCs**
 - CAM NC revision
 - INT NC revision



Tomorrow's session: Cybersecurity

09:30-12:00



Event point	Presentation topics for Cybersecurity 2nd October 2025	Presenter	Affiliation	From	To	Duration
1	Welcome, Day 2 - Cybersecurity	Dr. Andrea Chittaro	SNAM (Chair of CS task force)	09:30:00	09:35:00	00:05:00
2	Agenda	Douglas Hill	ENTSOG	09:35:00	09:40:00	00:05:00
3	Cybersecurity Stress Tests - info session	Ricardo Figueiredo	ENISA	09:40:00	09:55:00	00:15:00
4	NIS2 updates	Konstantinos Moulinos	ENISA	09:55:00	10:10:00	00:15:00
5	Situational update energy sector	Eleni Philippou	ENISA	10:10:00	10:25:00	00:15:00
6	EC update on security issues and legislation timelines.	Felipe Castro	DG ENER	10:25:00	10:40:00	00:15:00
7	Break		ALL	10:40:00	10:55:00	00:15:00
8	NIS2 adoption experiences from National Gas UK	Sebastian Contreras	National gas (UK)	10:55:00	11:10:00	00:15:00
9	NIS2 adoption experiences from DESFA	Apostolia Angeleri	DESFA	11:10:00	11:25:00	00:15:00
10	Drill Down on Secure remote access to Industrial Control Systems (TSO Experience)	Fabrizio Zucca	SNAM	11:25:00	11:40:00	00:15:00
11	CCB updates from Belgium's National Cybersecurity Certification Authority	Johan Klykens - Director of the NCCA	CCB (NCCA)	11:40:00	11:55:00	00:15:00
12	Wrap up, Q&A	Douglas Hill	ENTSOG	11:55:00	12:00:00	00:05:00
13	Lunch		ALL	12:00:00	13:00:00	01:00:00



Thank you for your attention
Tomorrow's cybersecurity session starts at 09:30 hrs

Douglas Walker Hill,
Interoperability & Data Exchange Adviser
douglas.hill@entsog.eu

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