

Picture courtesy of Gas Connect Austria

# Joint ENTSOG / EASEE-Gas Workshop on Data Communication Harmonisation for Gas Transmission

Microsoft Teams Online Meeting, 01/12/2020

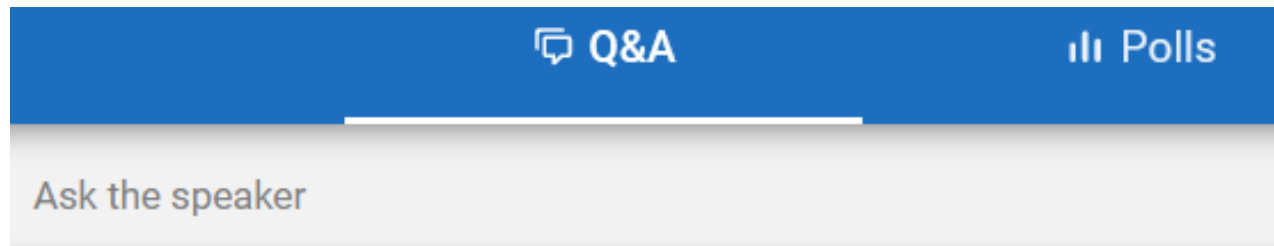
# 1. Technical checks and instructions


# Interactive Part at the Workshop

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Please join **slido.com** for the interactive parts today

- We encourage you to use the Q&A section in Slido.



 Type your question

- Please add your company name in brackets after your name
- The most supported questions will be answered at the Q&A sessions



# Slido View



3rd joint ENTSOG / EASEE... Q&A Polls

3rd joint ENTSOG / EASEE...  
Nov 26 – Dec 3, 2020  
#AS4

Live interaction

- ENTSOG's website
- EASEE-gas' website
- FUNC Platform
- CNOTs
- Edig@s documentation
- CEF eDelivery

Ask the speaker

Type your question

**Popular** Recent 1 question

**M** Marin 11:34 AM 0

Where can I find the CNOT documents?

Reply



## Slido Poll


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- The main results of the polls are available at the end of the presentation click [here](#)

slido

# Workshop Participants

 Start presenting to display the poll results on this slide.

## 2. Welcome and objectives



Hendrik Pollex  
System Operations  
Director  
ENTSOG

# Structure of event

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## Main Topics for the Workshop

- General introduction of the EU Regulation 2015/703
- Explanation of the Interoperability & Data Exchange NC
- AS4 as a protocol for Data Exchange
- Future of AS4
- Updates from the Technology Standards WG of EASEE-gas
- Updates from CEF eDelivery Team
- AS4 case studies
- Practical use of the edig@s format
- FUNC issue – missing harmonisation of interfaces on Booking Platforms
- Q&A session
- Closing

A photograph of a person in a dark pinstriped business suit and white shirt, holding a white sign with the text "Workshop today" in blue. The person's hands are visible at the top and bottom of the sign.

**Workshop today**



# 3. Interoperability & Data Exchange Network Code



Marin Zwetkow  
INT & Data Exchange  
Subject Manager  
ENTSOG

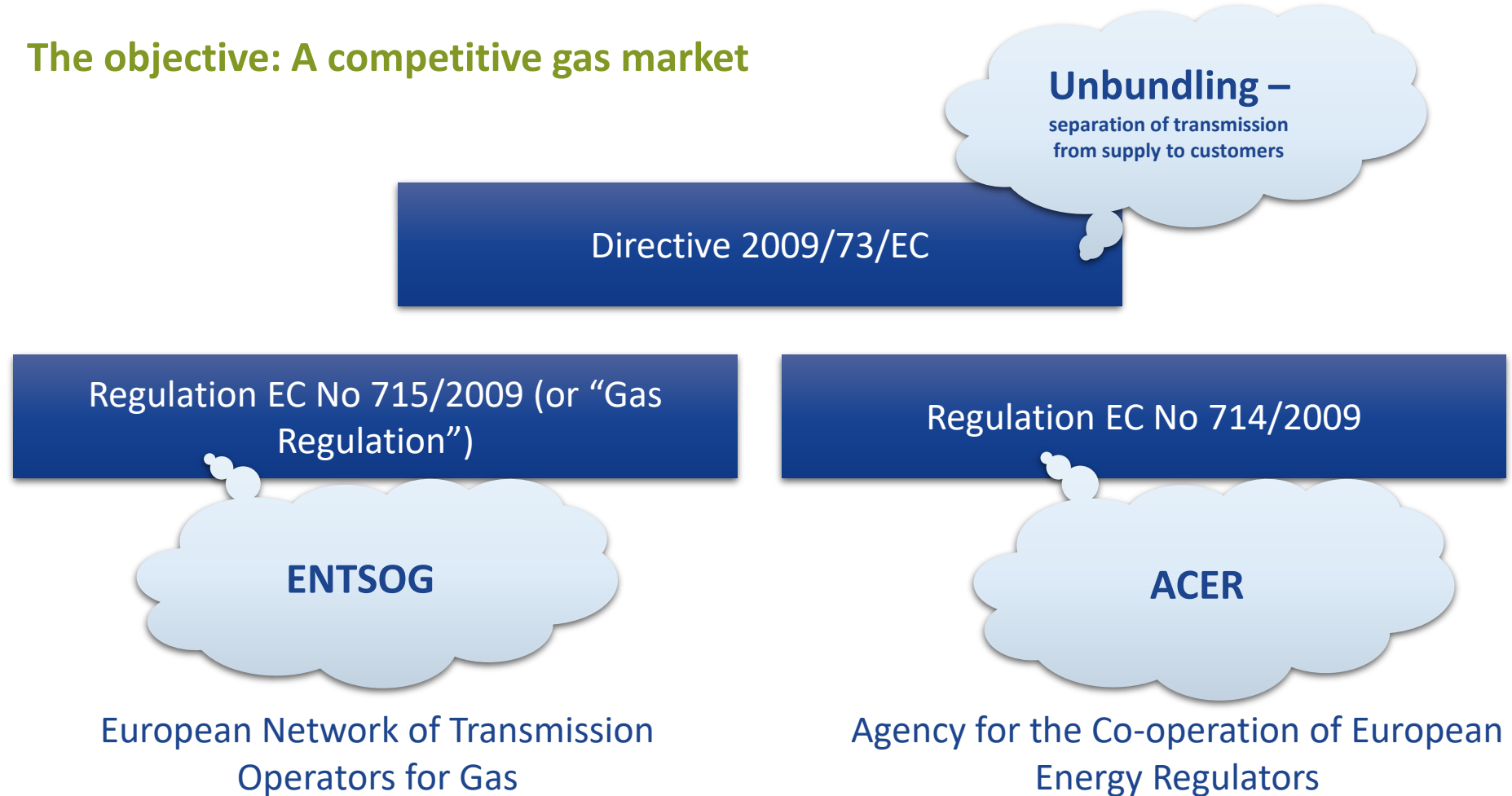
# What's INT NC's added value?

- Clear Guidance
- Harmonisation of
  - Units
  - Data Exchange Rules
  - Interconnection Agreements



# 3<sup>rd</sup> Package regulatory framework for Gas

The objective: A competitive gas market



# MEMBERS MAP

STATUS: JANUARY 2019

- 44 Members
- 3 Associated Partners
- 8 Observers



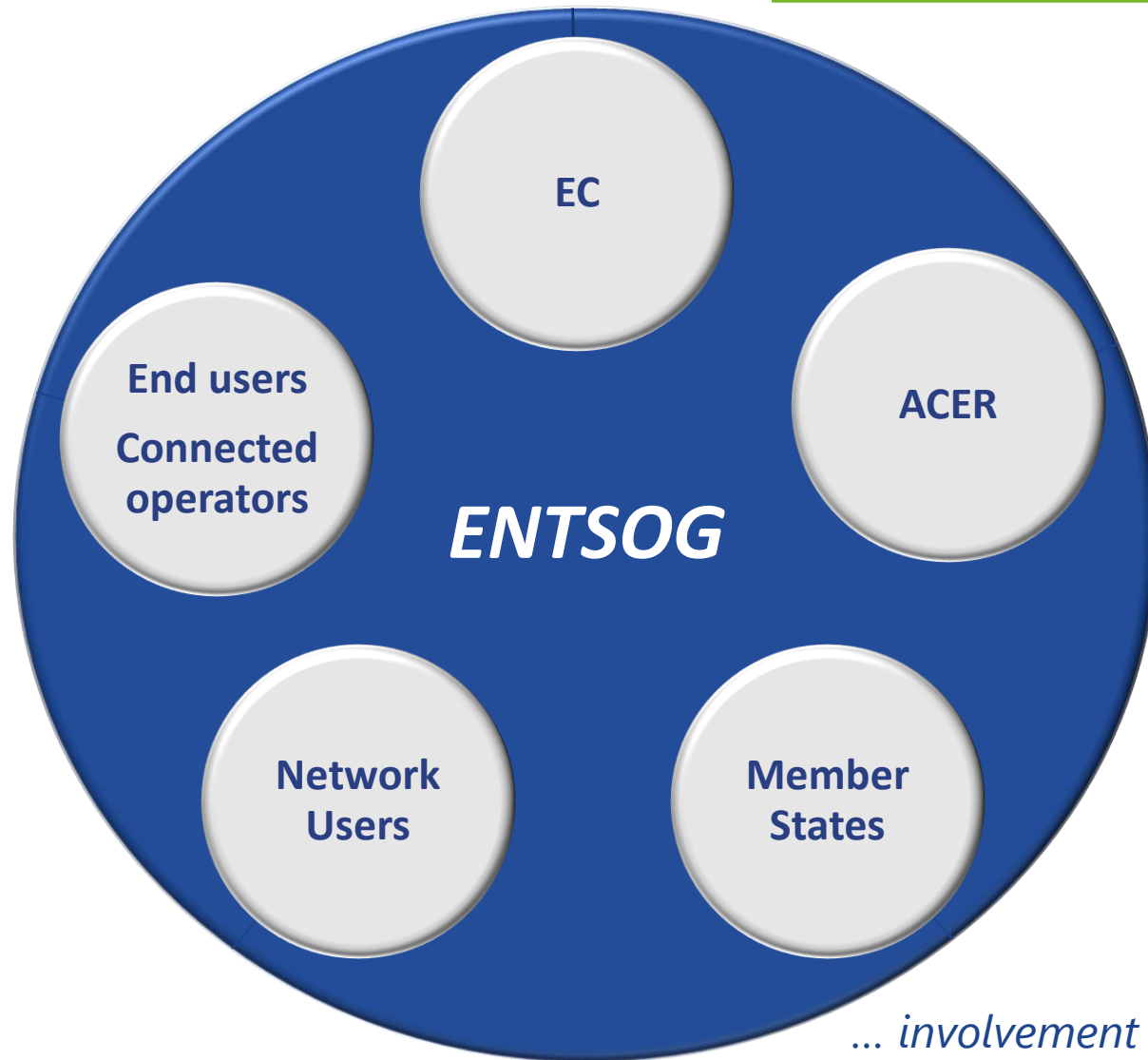
Since its foundation, ENTSOG member TSOs have provided wide coverage of the European gas market. In addition, according to ENTSOG's articles of association TSOs from EU countries currently derogated from the Third Energy Package, such as two of the Baltic States, are associated partners and are able to participate in its activities.

Since 2011, TSOs from Third Party countries (candidates for EU accession, members of the Energy Community or EFTA) interested in following development of the network codes were also admitted to the association as observers.

## AUSTRIA, GERMANY AND SWITZERLAND



# ENTSOG working process



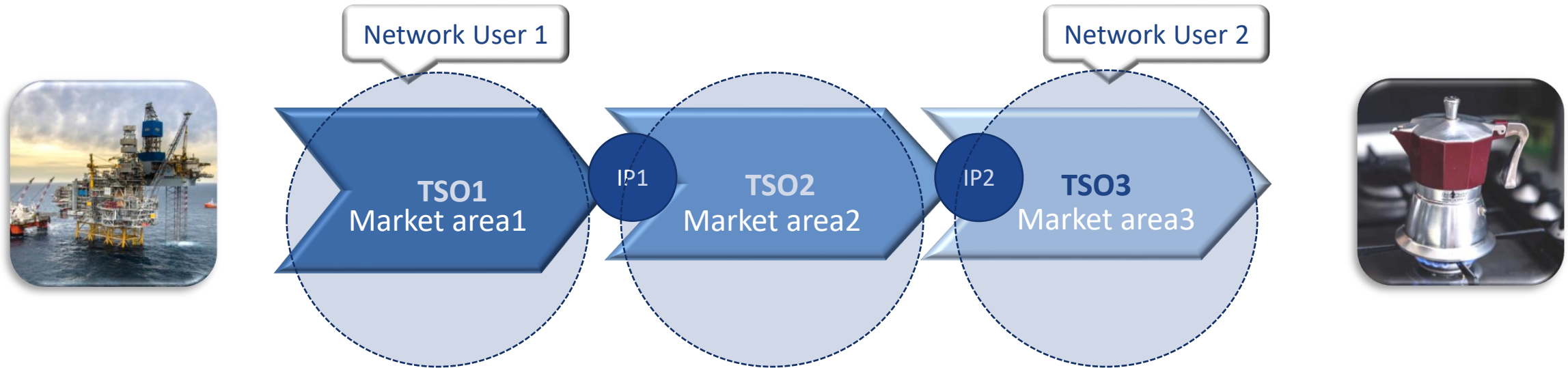
- > Stakeholder consultation is crucial for the ENTSOG team's work
- > Huge progress made in engaging a range of market participants



- > Market participants see ENTSOG as a fair partner
- > Stakeholders have responded positively to our processes and outputs

*... involvement of all market participants is the key to our success*

# Why do we need an INT NC?

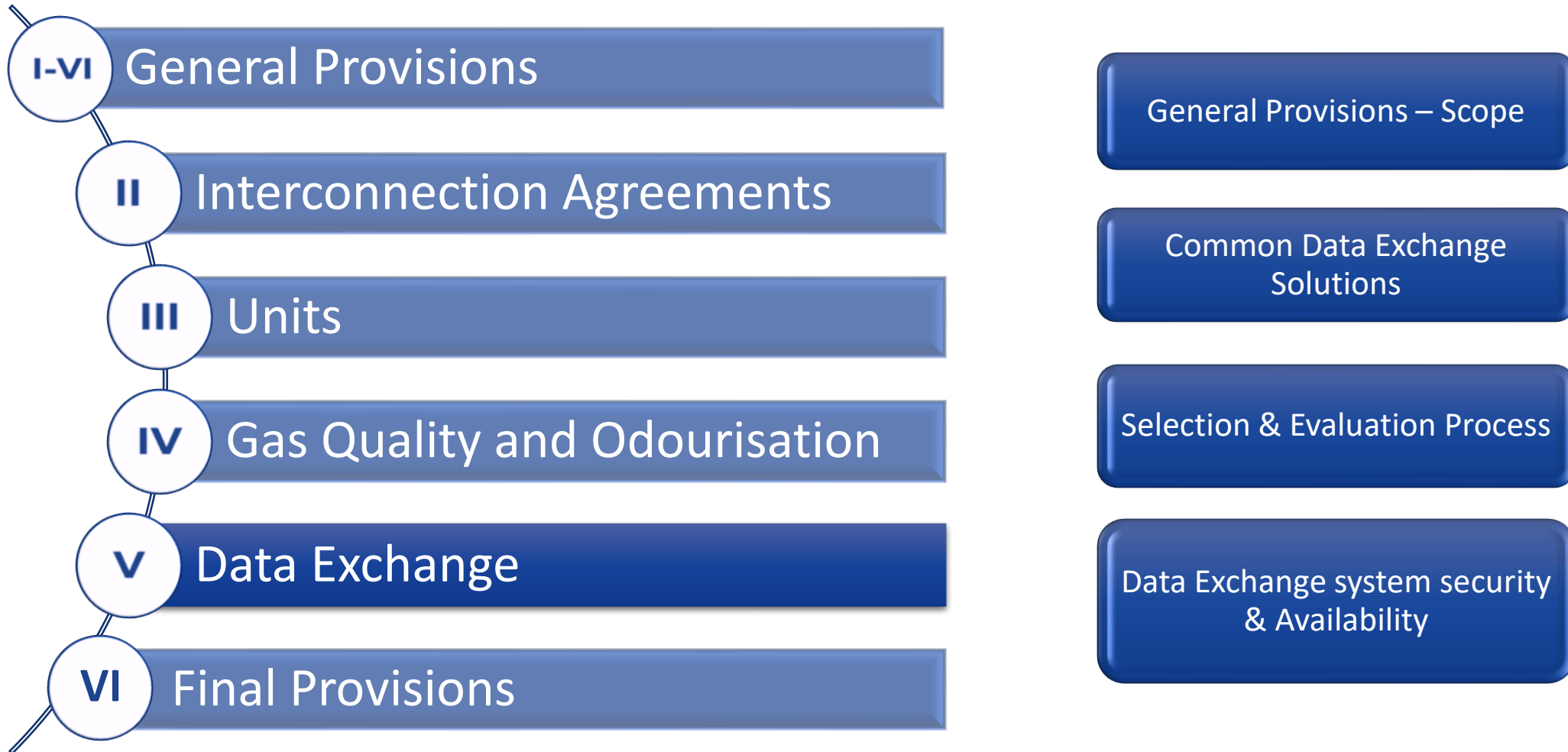


- Network Users, when crossing different systems, would like to be sure that:
  - they remain unaffected
  - no quality issues are raised
  - same procedures are followed by TSOs
  - communication rules are clear and common

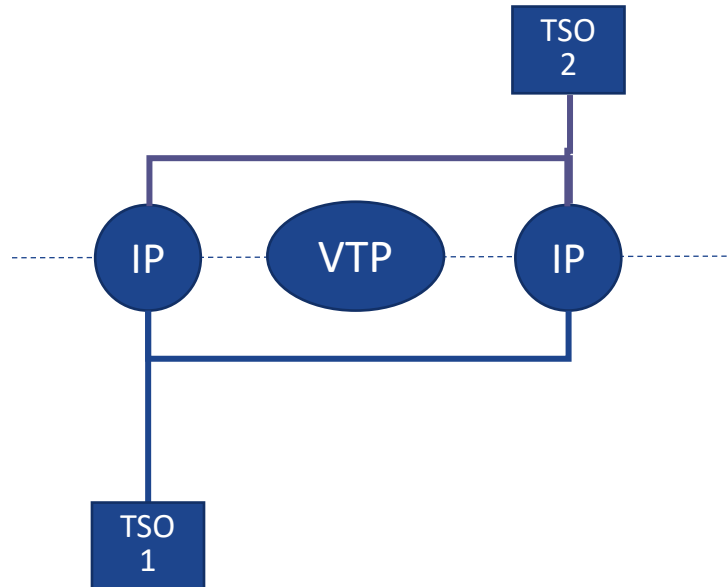
**Harmonisation  
Removal of barriers**

# NC Interoperability and Data Exchange

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# Article 20: General provisions



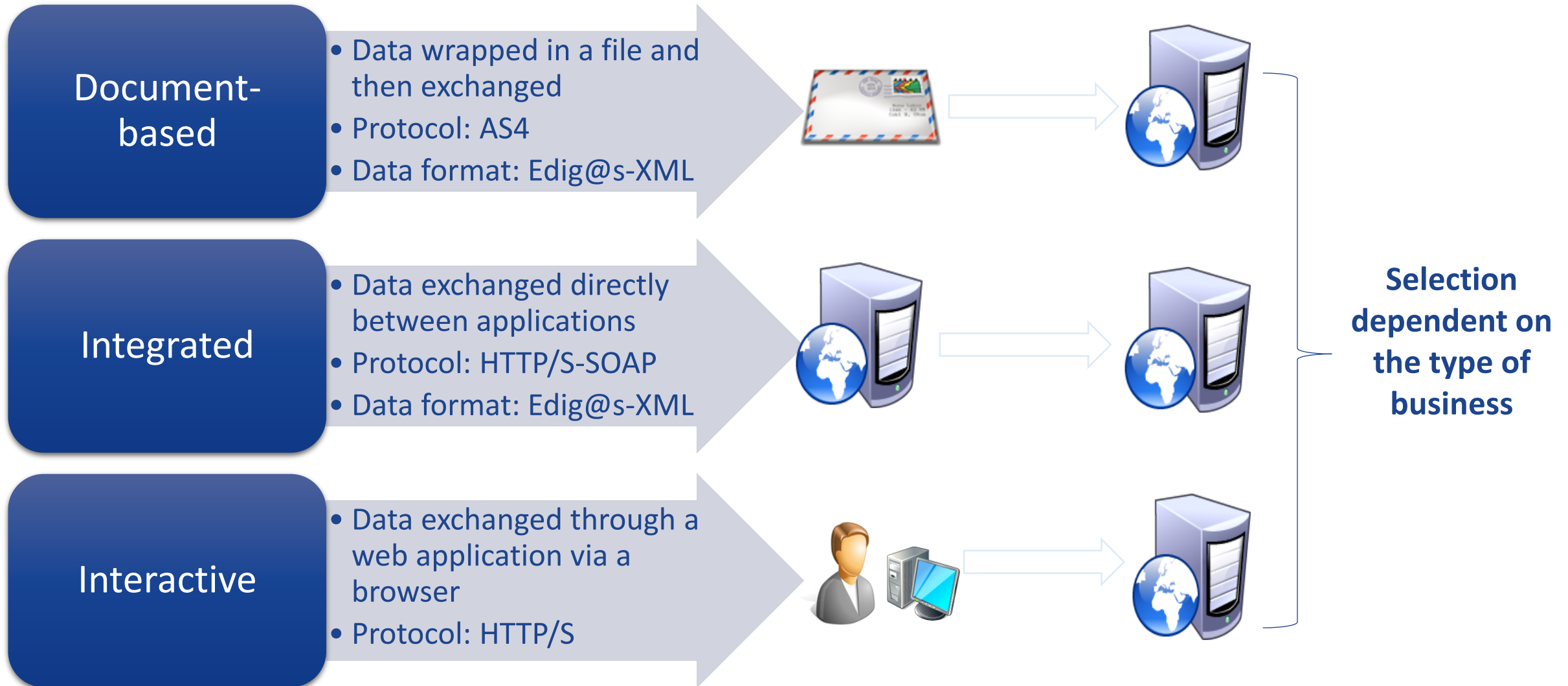
Counterparties



Network users active at IPs  
or IPs and VTPs



# Article 21: Common Data Exchange Solutions



# Article 22: Data Exchange System Security and Availability

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## All Parties

**Provide Secure Communications**

**Implement security Measures**

**Inform other parties in case of a problem**

## TSOs

**Avoid single points of failure**

**Obtain appropriate services**

**Minimise downtime**

**Inform their counterparties**



## Article 23: Implementation of Common Network Operating Tools (CNOTs)

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TSOs shall implement the common DE solution within 12 months of when NC comes into force

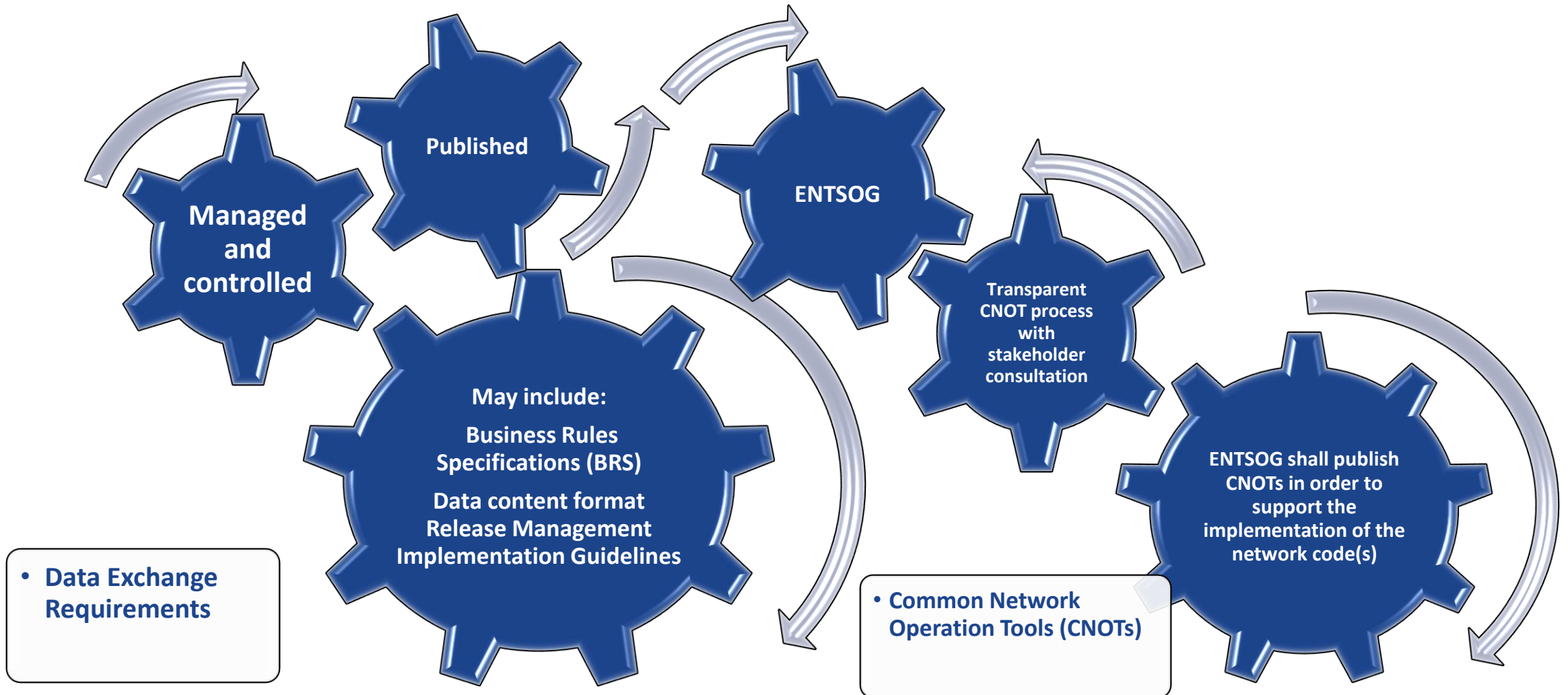


Parties who cannot communicate with TSOs using their existing DE protocol shall also use the common DE solution



Existing solutions can stay in place as long as they are compliant with the data exchange requirements for the corresponding business processes subject to NRA approval

# Article 24: Development Process for Common Network Operating Tools (CNOTs)



# Available CNOTs

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## Business Requirement Specifications (BRS) for

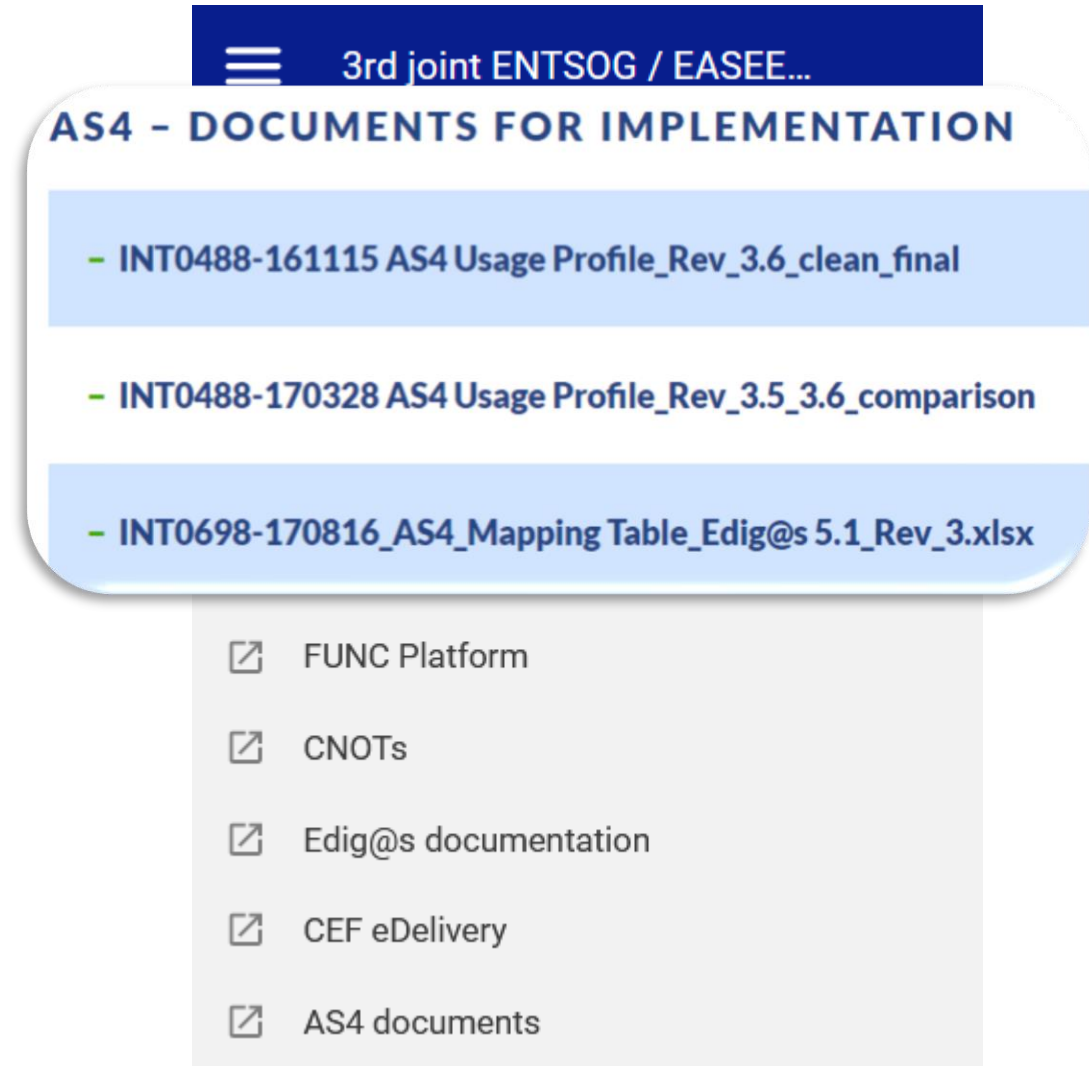
- BRS for Capacity Allocation Mechanisms (CAM) & Congestions Management Procedures (CMP)
- BRS for Nomination & Matching
- Guidelines for both documents
- Common Data Exchange Solutions Table (CDEST) – defining which solution mentioned in Art 21 has to be used for a certain process



# Further Documents for implementation

## ENTSOG AS4 profile

- ENTSOG has developed an AS4 profile suitable for the gas market and including all AS4 functionalities needed for the interoperable document-based data exchange, e.g.
  - Parameters
  - Encryption
  - Authentication
- Documents available [here](#)



The screenshot shows a web interface with a dark blue header containing a hamburger menu icon and the text "3rd joint ENTSOG / EASEE...". Below the header is a white rounded rectangle with the title "AS4 - DOCUMENTS FOR IMPLEMENTATION". Inside this rectangle, there are three blue horizontal bars, each containing a document title: "INT0488-161115 AS4 Usage Profile\_Rev\_3.6\_clean\_final", "INT0488-170328 AS4 Usage Profile\_Rev\_3.5\_3.6\_comparison", and "INT0698-170816\_AS4\_Mapping Table\_Edig@s 5.1\_Rev\_3.xlsx". Below the white rectangle is a light gray area with a list of items, each preceded by a square icon with a diagonal line: "FUNC Platform", "CNOTs", "Edig@s documentation", "CEF eDelivery", and "AS4 documents".

# Document-based Data Exchange

# Document-based Data Exchange



Message in

edig@s

AS4 – transport protocol

Edig@s - message format



# Document-based Data Exchange

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# 4. AS4 as Protocol for Data Exchange

Pim van der Eijk  
Consultant  
Sonnenglanz

# ENTSOG AS4 Usage Profile

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Why is a usage profile needed?

- To select the functionality needed for the domain
  - Not all features of AS4 are relevant to TSOs
- To narrow down options to
  - Simplify design, build, test & deployment of implementations
  - Reduce cost and time of implementation for all stakeholders
  - Select options that are secure and future-proof



# What is provided by the ENTSOG AS4 Profile?

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## Core secure and reliable messaging

- Algorithms, parameters, key sizes for message and transport security
- Signing, encryption, non-repudiation of origin and receipt
- Reliable messaging (retries, duplicate elimination)
- Initially quite “leading edge” (ahead of state-of-the-art); stable since ≈ 2014

## Domain profiling

- Use of AS4 headers (service, action, role, document codes) for gas document exchange
- Some updates over time (conventions added for some values; constraints relaxed)
- Stable since version 3.5 (Feb 2017)

## ***Tightening***

- Tightening of some recommendations to absolute requirements for consistency and interoperability in version 3.6 (March 2018)

# Status of use of the ENTSOG AS4 Profile

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Older versions are still widely used

- *"If it ain't broke, don't fix it"* principle
- In running exchanges, no business case for changes (other than certificate updates)

Current Version is 3.6

- Widely used and (according to survey) preferred by most ENTSOG members
- Best choice for new partners and for re-configuration of existing partners

## ***Changes and change history***

- Specification has a full change log back to earliest draft
- Versioning policy / conventions (naming, numbering, sharing) could be improved:
- E.g. change log includes many minor ITC KG internal versions that were never officially published

# Alignment with eDelivery AS4

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- What is eDelivery AS4?
  - Technical specification and implementation guidelines for the use of AS4
  - Promoted for cross-border data exchange by European Commission's Connecting Europe Facility (CEF) in multiple domains in Europe
  - Mandatory core "*Common Profile*" and optional "*Profile Enhancement*" modules
  - More on this in separate presentation by CEF
- Relation of ENTSOG AS4 to eDelivery AS4
  - ENTSOG AS4 shares all settings for algorithms selected in the eDelivery "*Common Profile*"
  - Does not use any of the optional eDelivery "*Profile Enhancements*"
  - Adds usage profiling for the gas domain (e.g. values for Service, Action, Role, Part Property)
  - Adds an X.509 certificate profile
  - Adds mandatory support for ebCore Certificate Update

# Data exchange challenges to be addressed

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- Certificate Updates
  - Known operational issue in data exchange
  - Known cost and risk of three-yearly “migration of certificates” in EASEE-gas community
- Readiness for incompatible changes
  - Evolution in cryptography, vulnerabilities, compute capability require changes
  - “Elliptic Curve Cryptography” (ECC) as recommended replacement for some ENTSOG AS4 algorithms: affects algorithms, certificates, trusted root certificates
- Expanding community efficiently
  - More parties entering the market; AS4 is a building block for new business processes

# ebCore Certificate Update

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- ebCore Certificate Update
  - OASIS standard protocol for updating certificates
  - Exchange and deployment of certificates managed using special AS4 messages
  - New certificates deployed in new “agreements” between communication partners
  - New and old certificate (agreements) can be used in parallel during transition
  - Support for the feature has been required in ENTSOG AS4 since v2.6 (October 2016)
  
- ebCore Certificate Update Proof-of-Concept
  - Voluntary initiative of ENTSOG ITC KG and EASEE-gas TSWG members
  - Case study presented at last year’s Data Exchange Workshop



# Benefits of ebCore Certificate Update

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## — EASEE-gas “Migration of Certificates”

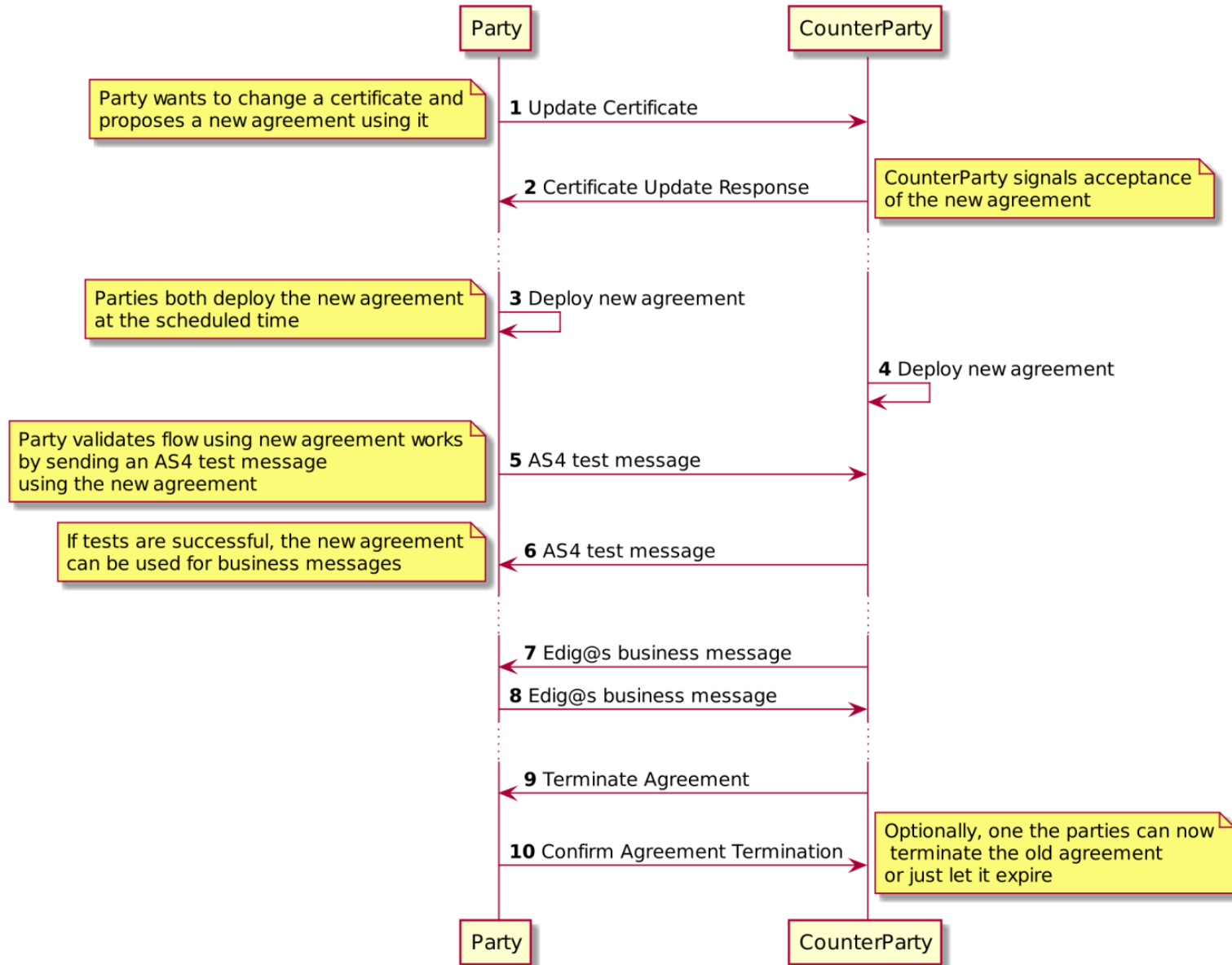
- EASEE-gas members periodically replace their certificates in a “big bang” migration
- Migration requires a lot of coordination and manual work (e.g. >100 companies are using certificates issued by EASEE-gas)
- One problem in migration has the potential to affect the entire community
- Current certificates can be used ~~until 11/2021~~

## — ebCore Certificate Update

- Each certificate can be *updated and deployed independently* of all others
- Updates can be done whenever needed, even more frequently (e.g. quarterly)
- The AS4 “test” feature can be used to *check* if the certificate can be used successfully
- Both *manual and (semi-)automatic deployments* are supported
- Deployments can be *phased in* using a transition interval in which current and new certificates can be used in *parallel*



# How ebCore Certificate Update works



# ENTSOG configuration management approach

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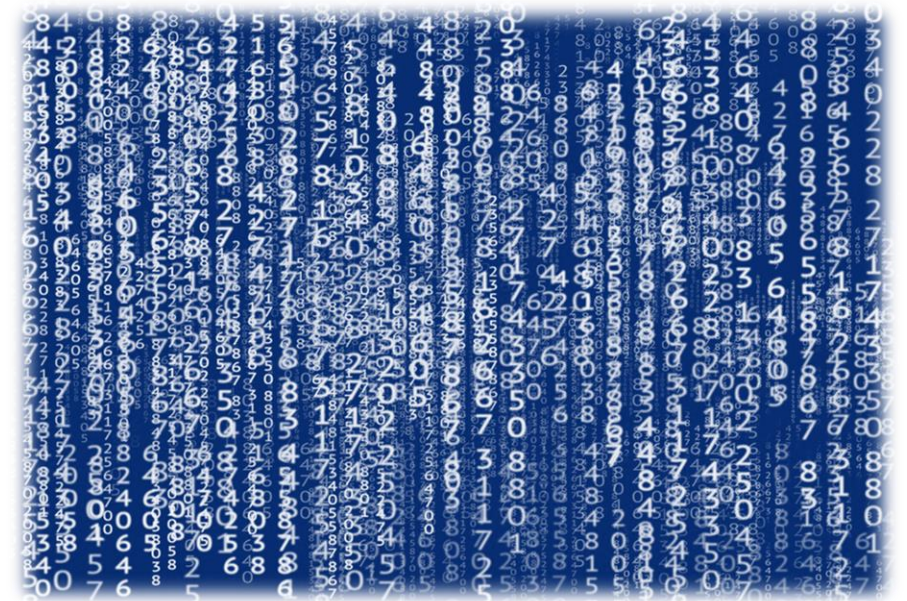


- Limitations of ebCore Certificate Update
  - Parties must already have AS4 working, so not useful to set up AS4 from scratch
  - Can only handle certificate updates, not e.g. also change the signature algorithm from RSA to ECC
- Mediation platform
  - Trusted, neutral third party service to search, share profiles and form agreements
  - Interactive (as in EASEE-Connect) or machine interface
- Profile-based matching and agreement formation
  - Data model of party profile information
  - Business information (Edig@s versions, roles in business processes)
  - Message channels (AS4 specific), transport (HTTPS), networking configuration
- [https://www.entsog.eu/sites/default/files/2020-11/INT1240-171212%20ENTSOG%20Configuration%20Management%20Approach Rev 1 clean.pdf](https://www.entsog.eu/sites/default/files/2020-11/INT1240-171212%20ENTSOG%20Configuration%20Management%20Approach%20Rev%201%20clean.pdf)

- ebCore CPPA3
  - OASIS standard XML format for profiles and agreements
  - Full support for AS4 and other protocols and transports
  - Defines algorithms for formation of agreements from profiles and for matching
  - Support for dynamic discovery and registration service
  - [ENTSOG Configuration Management Approach](#) defines an ENTSOG usage profile for CPPA3
- ebCore CPPA3 and EASEE-Connect
  - [EASEE-Connect](#) is a Web-based profile-management platform that offers agreement as an interactive service
  - Under development by EASEE-gas for its members
  - Will support export/download of agreement information in CPPA3 format

# Other Ongoing Work in ITC KG

- Updating Integrated Profile
  - ENTSOG Integrated Data Exchange Profile follows Network Code in using SOAP/HTTPS
  - Network Code revision to allow non-SOAP exchanges, in recognition of trend towards APIs and JSON
- Supporting documentation
  - Updated *"How to set up a system ..."*
  - Frequently Asked Questions
- Reviewing user needs and technology developments



## 5. Future of AS4



Marin Zwetkow  
INT & Data Exchange  
Subject Manager  
ENTSOG

# European signature algorithm dialogue

# Different signature algorithms

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## Identified Issue

- Market Participants identified data exchange issues regarding the usage of certificates within European and domestic market
- For data exchange within Germany, Market Participants have to use a different algorithm for signing messages and certificates
- Market Participants need to have **two** different certificates and software configurations for the **two** markets (European and domestic)





# Different signature algorithms

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## Steps taken

- Initiated discussion with ACER on possible collaboration between the respective bodies
- Contacted National Security Expert Organisations and European Organisations representing the different sectors
- Invited European Security Organisations (ENISA) to provide feedback on new security standards
- Elaborated on balance between “Interoperability” (Market availability) and “Security”



# European signature algorithm dialogue

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## Participants

- BSI
- BDEW
- CEF
- EASEE-gas
- ENTSOG



# European Dialogue on Signature Algorithms

Elliptic  
Curve  
Digital  
Signature  
Algorithm

- Agreement: ECC (Elliptic Curve Cryptography) will be used in the common future-proof signature algorithm Viewpoints on signature algorithms from security experts ([BSI](#), [ETSI](#), and others)
- Same level of security using a shorter key length (ECDSA)

Organisation	Publication	Year	Algorithm	Key length	Status	Expire
BSI	TR-02102-1 / TR-03116-4	2020	RSA PKCS#1 / PSS	2048	L	2024
			RSA PKCS#1 / PSS	3072	R	
			ECDSA	256	R	
ETSI	ETSI 119 312	2017	RSA PKCS#1	2048+	L	2022
			RSA PSS	2048	L	2022
			RSA PSS	3072	R	
			ECDSA	256+	R	

Status:

L – Legacy

R - Release

## ENTSOG survey on ECC - Conclusions

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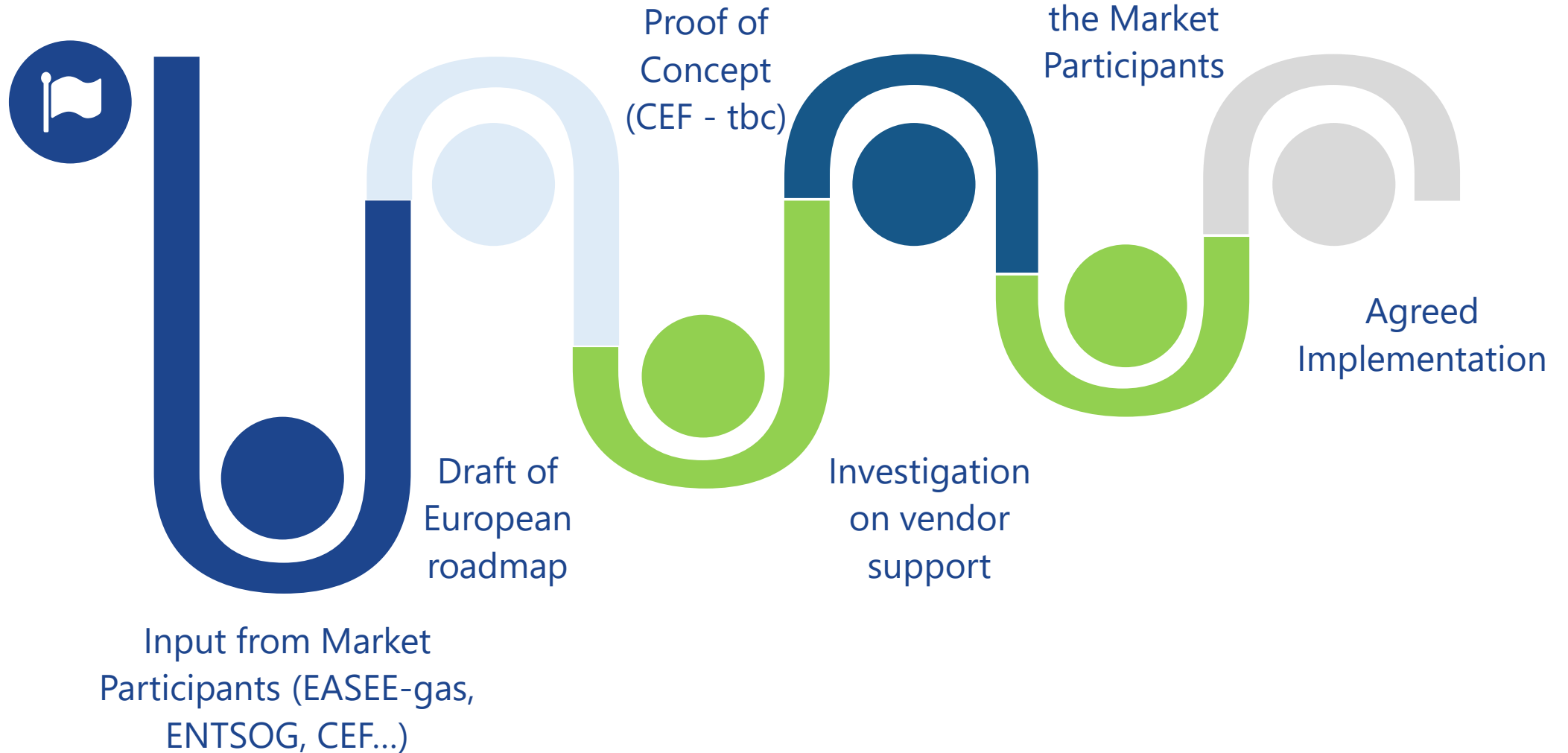
- ECC awareness: most ENTSOG members are aware of it
- Technical barriers are seen by the majority as a challenge (no backward compatibility)
- Possible implementation end of 2022 by 50% of the participants
- No legal barriers for implementing ECC – coordination within the national sector needed
- No information available about any preferred TLS 1.3 algorithm by expert groups / NRA – except Germany

Transport  
Layer  
Security

# Next Steps – discussion on the Common Roadmap Milestones



Security Expertise  
(ENISA...)



**Coffee Break (we will start at 11:55)**



## 6. Technology Standards Working Group

# Certificate Renewal



Dirk Serruys  
Chair TSWG  
EASEE-gas









# Certificate Renewal

30.11.2020

**PSvdL**  
CONSULTING

# Target of today's meeting

-  Inform the European Gas community of an issue related to the Issuing Authority of EASEE-gas security certificates
-  EASEE-gas certificates are used to authenticate and trust market partners in market communication in the European Gas Market
-  Announce the start of a condensed EASEE-gas Migration of Certificates Project 2021 (MoC) to react to the unforeseen situation
-  Announce a new Go-Live date for the MoC 2021 for the end of December 2020 / early January 2021



# Incorrect OCSP Delegated Responder Certificate

## Background

- Due to a missing technical certificate entry, many CA's (Certificate Authority) are theoretically able to provide valid OCSP responses for certificates they have not issued and do not control
- This requires revocation of many root & intermediate certificates, which affects the currently utilized EASEE-gas certificates

## EASEE-gas Measures

- Initial assessment of the EASEE-gas TSWG was to mitigate the issue by asking members to disable OCSP and CRL checks
  - Based on member feedback it was determined that the operational risk is still too high
- Decision made to replace current certificates with new certificates
  - Launch of revised Migration of Certificates (MoC) Project 2021
- Target: Go-Live on January 5<sup>th</sup>, 2021 (official confirmation outstanding)

Online  
Certificate  
Status  
Protocol

A photograph of a person in a red jacket hiking on a brown, rocky mountain ridge. The valley below is filled with mist and clouds, and snow-capped mountains are visible in the distance under a cloudy sky.

# Condensed EASEE-gas MoC 2021 launched to mitigate risks

## Key messages

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- **URGENT.** If we don't act, there is a high risk of operational impact in the first days of 2021
  - Your messaging teams need to get **INVOLVED.**  
→ Please align every team in your company that deals with messaging, since it is crucial for a successful migration.
  - If you are not directly involved in this, please raise the issue within your companies towards the **RIGHT PEOPLE.**
  - **WATCH OUT** for upcoming communication from the MoC project team
- 
- If you, or your teams, have questions, please reach out to:  
[easee-gas@psvdl.com](mailto:easee-gas@psvdl.com)
-



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# Update on EASEE-connect



Wim de Olde  
Secretary TSWG  
EASEE-gas

## The trusted platform for AS4/AS2 profiles

**EASEE-connect** is a digital platform developed by EASEE-gas whereby gas market participants can create and manage their AS4 and AS2 company profiles and portfolio of business connections in a simple and secure way.

- EASEE-connect replaces the e-mail and telephone conversations regarding technical connection parameters
- Up-to-date contact details of communication partners in one application
- By using EASEE-connect, gas companies have access to an automated profile management system that helps them:
  - increase efficiency and quality of information
  - save time and money
  - avoid mistakes and security risks



## EASEE-connect functionality

Members:



RELATION PARTY PROFILE CERTIFICATE COMPANY SWITCH PARTY MY ACCOUNT LOGOUT

- Company management
- Party management
- Certificate upload
- Profile management (technical parameters)
- Relation management
- EASEE-connect My Account management

Administrator:

- Management companies/parties
- Management user access



ADMINISTRATION MY ACCOUNT LOGOUT

Manage companies and parties



## EASEE-connect (1)

### Address book functionality

- All contact details in one place

### Edit Company

Name

Gasunie IT department

Parent/Repres

N.V. Nederlandse Gasunie

Company

Name

[SAVE](#)

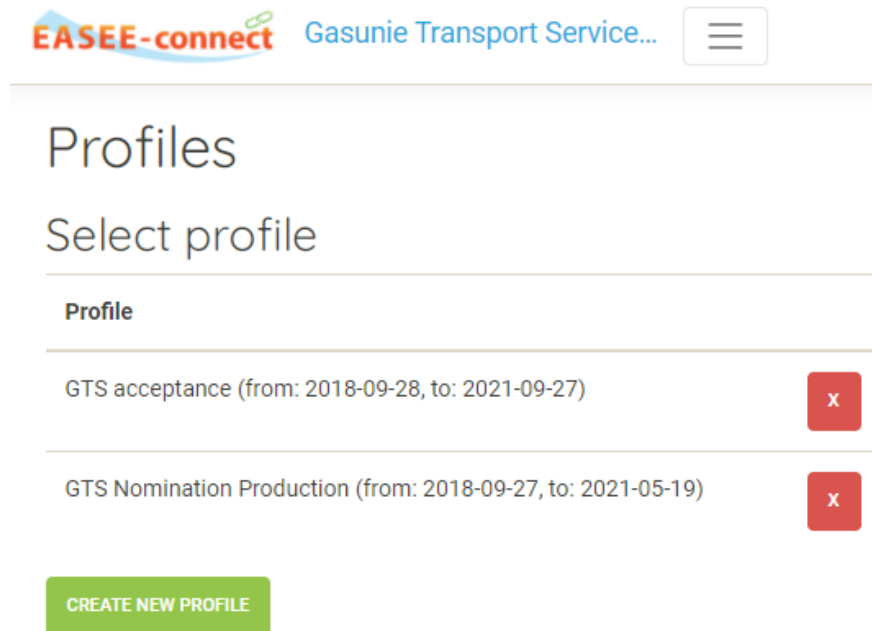
### Contacts

Name	Phone Number	Email	
Business			
Jeroen Zanting	+31 50 521 3023	w.b.de.olde@gasunie.nl	<a href="#">REMOVE</a> <a href="#">EDIT</a>
Production Support			
Nimbus-T (officer of the week)	0031 50 521 2333	w.b.de.olde@gasunie.nl	<a href="#">REMOVE</a> <a href="#">EDIT</a>
Technical			
Wim de Olde	0611005515	w.b.de.olde@gasunie.nl	<a href="#">REMOVE</a> <a href="#">EDIT</a>
Tester		test@test.nl	<a href="#">REMOVE</a> <a href="#">EDIT</a>

[CREATE NEW CONTACT PERSON](#)

## EASEE-connect (2)

Manage your technical profiles for communication and create relations



The screenshot shows the 'Profiles' section of the EASEE-connect interface. At the top, there is a header with the EASEE-connect logo and the text 'Gasunie Transport Service...' followed by a menu icon. Below the header, the word 'Profiles' is displayed in a large font, followed by 'Select profile'. A table lists two profiles, each with a red 'x' icon in a square to its right. At the bottom left, there is a green button labeled 'CREATE NEW PROFILE'.

Profile	
GTS acceptance (from: 2018-09-28, to: 2021-09-27)	x
GTS Nomination Production (from: 2018-09-27, to: 2021-05-19)	x

CREATE NEW PROFILE



The screenshot shows the 'Relation' section of the EASEE-connect interface. At the top, there is a header with the EASEE-connect logo and the text 'Gasunie Transport Service...' followed by a menu icon. Below the header, the word 'Relation' is displayed in a large font, followed by a button labeled 'DOWNLOAD ALL CONTACTS'. Below this, the text 'Existing relations' is displayed. A table lists six existing relations.

Existing relations
Fluxys & Gasunie Transport Services B.V. Agreement
Equinor & Gasunie Transport Services B.V. Agreement
Gasunie Transport Services B.V. & Gassco P1Request
GMSL & Gasunie Transport Services B.V. Agreement
ENI & Gasunie Transport Services B.V. Agreement
ENGIE SA & Gasunie Transport Services B.V. Agreement
ECC & Gasunie Transport Services B.V. Agreement

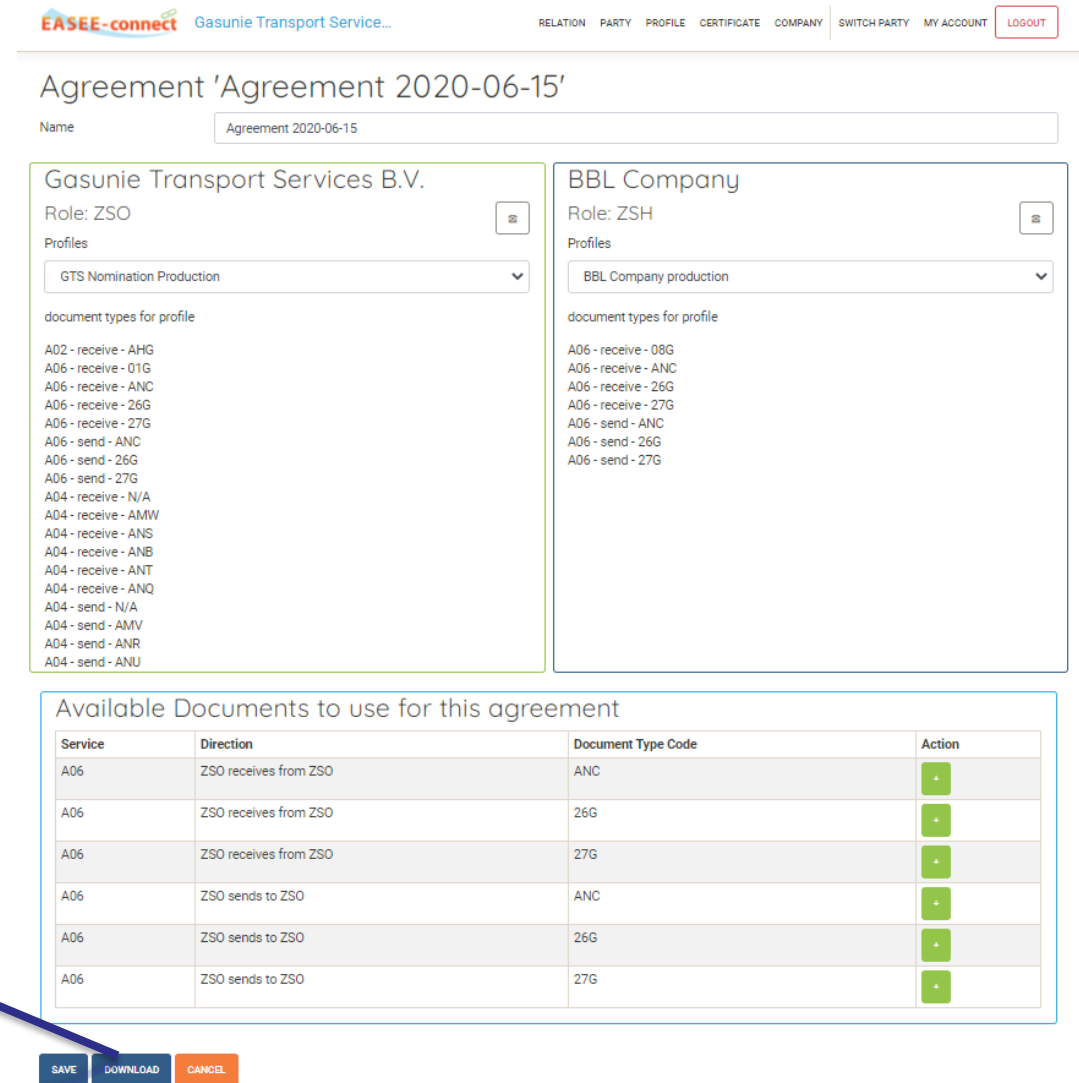
## EASEE-connect (3)

The technical settings can be downloaded (future standard CPPA3 format for automatic import in application)

```

{"parties":[
{"eicCode":"21X-NL-A-A0A0A-Z",
"signing_certificate":"#!$@%#$$%",
"encryption_certificate":"%$#%$^&",
"client_ipv4":"31.161.7.165; 31.161.7.166; 212.67.187.245; 212.67.187.246;
212.67.187.235; 212.67.187.236",
"clientOutboundIp":"31.161.7.165; 31.161.7.166; 212.67.187.245;
212.67.187.246; 212.67.187.235; 212.67.187.236",
"server_address":"https://prp.gu-
messaging.com/RSSBus/pub/Receive.rsb:4343"},
{"eicCode":"21X-NL-B-A0A0A-Q",
"signing_certificate":"$#^&*@^#",
"encryption_certificate":"$#*(%#@",
"client_ipv4":"31.161.7.165; 31.161.7.166; 212.67.187.245; 212.67.187.246;
212.67.187.235; 212.67.187.236",
"clientOutboundIp":"31.161.7.165; 31.161.7.166; 212.67.187.245;
212.67.187.246; 212.67.187.235; 212.67.187.236",
"server_address": "https://prp.bbl-messaging.com/RSSBus/pub/Receive.rsb:4343
"}],
"documents":[]}]

```



The screenshot shows the EASEE-connect Gasunie Transport Service interface. At the top, there are navigation links: RELATION, PARTY, PROFILE, CERTIFICATE, COMPANY, SWITCH PARTY, MY ACCOUNT, and LOGOUT. The main heading is 'Agreement 'Agreement 2020-06-15''. Below this, the agreement name is displayed as 'Agreement 2020-06-15'.

Two main panels are visible:

- Gasunie Transport Services B.V.:** Role: ZSO. Profiles: GTS Nomination Production. Document types for profile: A02 - receive - AHG, A06 - receive - 01G, A06 - receive - ANC, A06 - receive - 26G, A06 - receive - 27G, A06 - send - ANC, A06 - send - 26G, A06 - send - 27G, A04 - receive - N/A, A04 - receive - AMW, A04 - receive - ANS, A04 - receive - ANB, A04 - receive - ANT, A04 - receive - ANQ, A04 - send - N/A, A04 - send - AMV, A04 - send - ANR, A04 - send - ANU.
- BBL Company:** Role: ZSH. Profiles: BBL Company production. Document types for profile: A06 - receive - 08G, A06 - receive - ANC, A06 - receive - 26G, A06 - receive - 27G, A06 - send - ANC, A06 - send - 26G, A06 - send - 27G.

Below these panels is a table titled 'Available Documents to use for this agreement':


Service	Direction	Document Type Code	Action
A06	ZSO receives from ZSO	ANC	+
A06	ZSO receives from ZSO	26G	+
A06	ZSO receives from ZSO	27G	+
A06	ZSO sends to ZSO	ANC	+
A06	ZSO sends to ZSO	26G	+
A06	ZSO sends to ZSO	27G	+

At the bottom of the interface, there are three buttons: SAVE, DOWNLOAD, and CANCEL. A blue arrow points from the 'DOWNLOAD' button to the JSON code block on the left.

# EASEE-connect (4)

## Security

### 2FA by email or app



### Log in

Use a local account to log in.

Email


Password


Remember me?

[Log in](#)


[Forgot your password?](#)

### Two factor authentication code




EASEE-gas <noreply@easeegas.eu>  
Aan  Olde de W.B. (Wim)

Your 2FA code: 371841



EASEE-Connect  
gasunie@quintor.nl

933 204 



## Two-factor authentication

Your login is protected with Email 2FA. Enter the code you received by e-mail below.

Authentication code

Remember this machine

[Log in](#)



[Back to EASEE-connect](#)

Hello gasunie@quintor.nl! [Logout](#)

## Manage your account

Change your account settings

[Profile](#)

[Password](#)

[Two-factor authentication](#)

[Personal data](#)

### Two-factor authentication (2FA)

To enable two-factor authentication you can setup an authenticator app or if you have confirmed your e-mail address you can receive a token per e-mail.

[Disable 2FA](#)

**Authenticator app**

[Add authenticator app](#)

## License model

### Licenses

- Standard license = 1 to 5 parties
- Premium license = 6 to 15 parties
- Service provider license = no limit in n° of parties

### Full EASEE-gas members

- Standard +0, Premium +€XXXX, Service provider +€XXXX

### Paying non-members (only for the EASEE-connect service)

- Standard €XXX, Premium €XXXX, Service provider +€XXXX

### Non-members not paying (small companies, by invitation of a member)

- Restricted access: only maintenance of own profile

## Launch of EASEE-connect

A launch date has to be set in the beginning of 2021 (due to current circumstances and staffing)

- 1st phase: Launch for full members
- Price plan and availability for all companies
- More information at <https://easee-gas.eu/easee-connect> (check the video!)  
and <https://easeeconnect.eu/>

## EASEE-connect video on youtube



slido

# EASEE-Connect Survey

 Start presenting to display the poll results on this slide.



## 7. CEF eDelivery team



Bogdan Dumitriu  
Directorate-General for  
Informatics  
CEF

CEF



# AS4 Conformance Testing for the ENTSOG community

## Connecting Europe Facility

**DIGIT**  
Directorate-General  
for Informatics

**DG Connect**  
Directorate-General for Communications Networks, Content  
and Technology

Bogdan Dumitriu, CEF eDelivery  
1 December 2020

# AS4 Conformance Testing for the ENTSOG community

- 1 Introduction to CEF eDelivery
- 2 CEF eDelivery AS4 conformance testing
- 3 CEF eDelivery roadmap for 2021

## CEF Building Blocks

The **building blocks of the Connecting Europe Facility** promote the adoption of the same **open standards and technical specifications**, by the **different sectors** of the Union, for the most basic & common functionalities of any sectorial project/  
platform. (cloud, IAM, Testa ...)

**These core commonalities will enable interoperability across borders and sectors.**

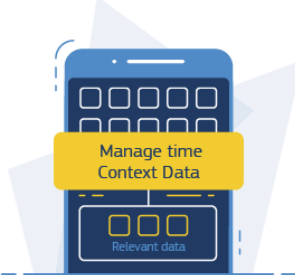


# CEF Building Blocks



**Big Data Test Infrastructure**

Explore and experiment with Big Data for improved performance and decision-making.



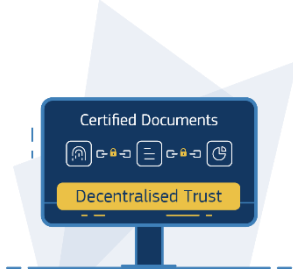
**Context Broker**

Gather, manage and share context data, in real time, throughout Europe.



**eArchiving**

Facilitates the preservation, migration, reuse and trust of your data.



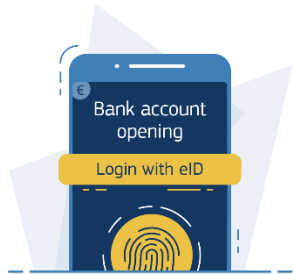
**European Blockchain Services Infrastructure**

Harness the power of a European-wide network of blockchain services, increasing trust through data security, privacy and transparency.



**eInvoicing**

Promote the implementation of the European standard for electronic invoicing across borders.



**eID**

Allow citizens to prove who they are across borders, making it easier to access online services in another EU Member State.



**eDelivery**

Exchange online data and documents reliably and securely.



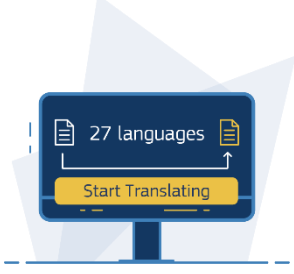
**eSignature**

Create and verify electronic signatures between businesses and EU citizens.



**Once Only Principle**

Re-use data held by Public Administrations.



**eTranslation**

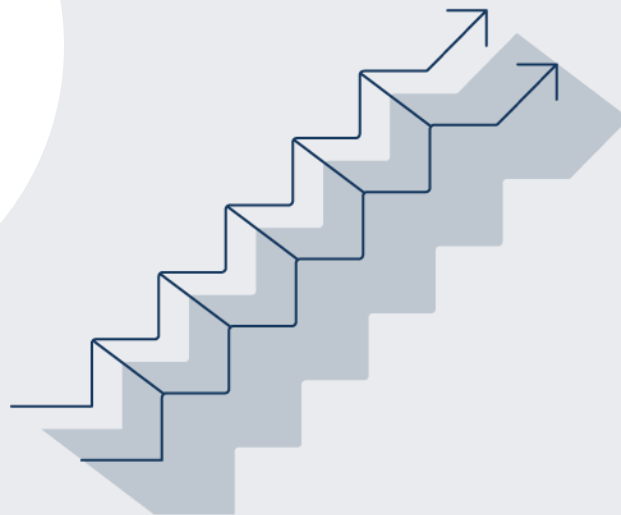
Use machine translation to translate your documents and web content into any official EU language, Norwegian or Icelandic

# How many projects have used the building blocks?

**120+**  
projects

[View Dashboard](#)

Growing potential cases are bringing us closer to fulfilling the dream.



# Connecting Europe together

## Co-develop and partner

With other parties



### Build

The solution from scratch based on a European standard



### Buy

A compliant solution from the market



### Reuse

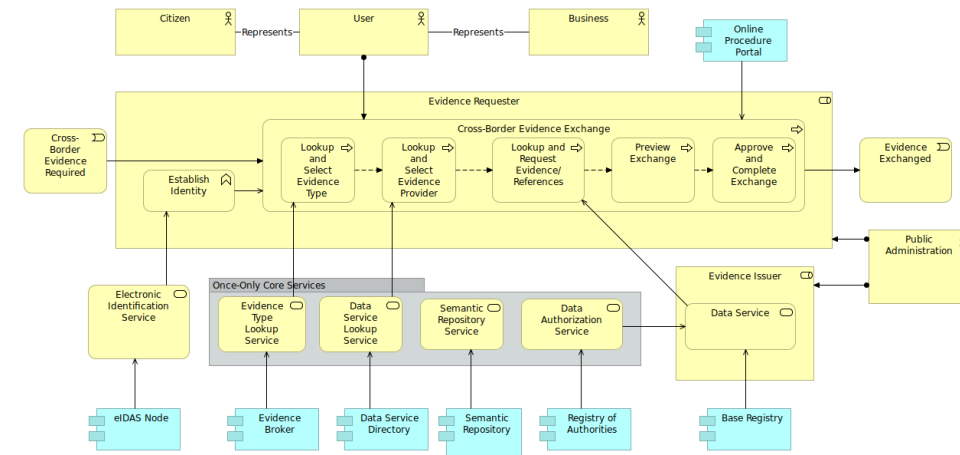
A sample software available on CEF website

## European Standards

# Once-Only Principle

## CEF eDelivery used in OOP

- EC preparing the Single Digital Gateway Once-Only Principle (OOP)
- OOP is an ecosystem where EU competent authorities can exchange evidences in the context of administrative procedures at the explicit request of users
- CEF eDelivery AS4 Access Points will be used to exchange these evidences across borders.



## Goals of eDelivery (AS4)



### Inter-operability

Implementing common technical specifications that enable diverse organisations to exchange data and documents



### Security

Promoting an atmosphere of trust among all parties in the message exchange network



### Scalability & Performance

Enabling the number of parties in the data exchange network to grow as well as the number of exchanged messages



### Legal Assurance & Accountability

Promoting a high level of transparency and confidence among all participants in the message exchange network



# eDelivery workflow

1

## Submit

Sender sends message to sending AP

2

## Send

Sending AP processes message

- a) Validation and compression of the user message;
- b) Signing of the compressed message;
- c) Encryption of the signed compressed message.

3

## Receive

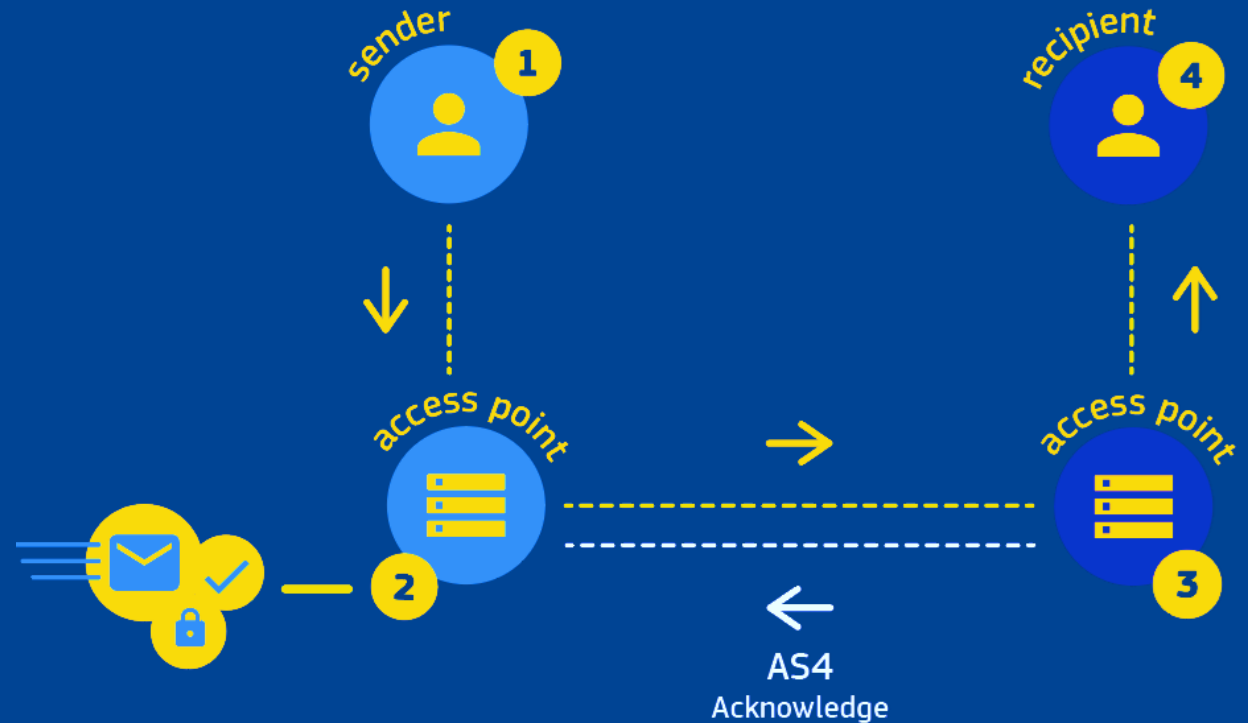
Receiving AP processes message

- a) Receives and decrypts the encrypted message;
- b) Verifies the sender's signature;
- c) Decompresses the decrypted message;
- d) Validates the original user message;
- e) Sends the acknowledgement to the sending AP;
- f) Stores the user message for download.

4

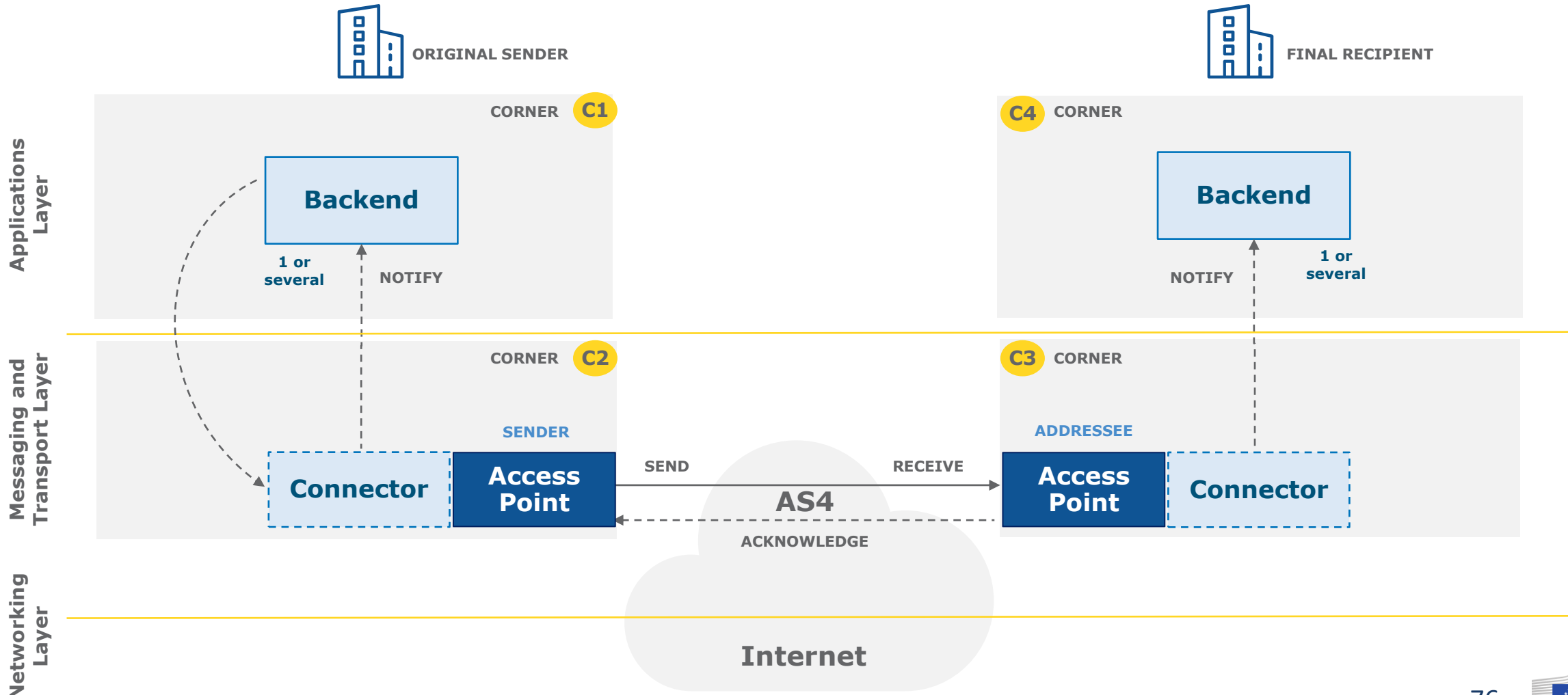
## Deliver

recipient receives message from receiving AP

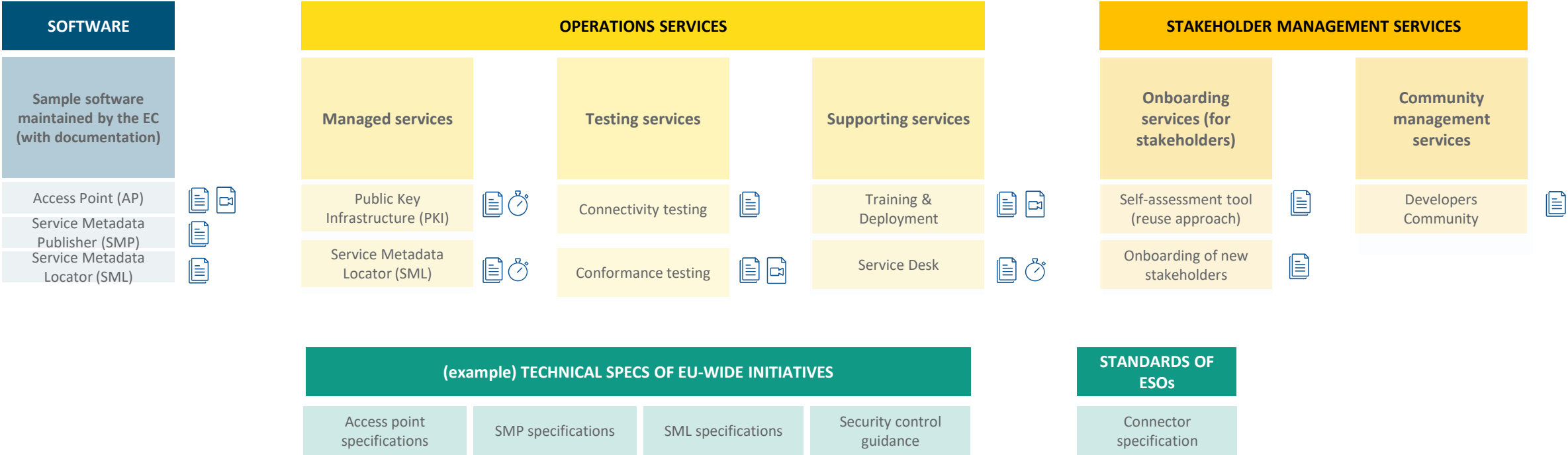


# eDelivery four-corner model

Required component  
 Optional component



# CEF eDelivery Service offering



### Service offering Description (SoD)

All services are described in an SoD describing its purpose, the users for which it is for, its benefits and the process to obtain it



### Service Level Arrangements (SLA)

Documents that describe Service Level Targets to be reached when delivering Building Block Services.



### eLearning, videos, success stories

Some services feature multimedia such as eLearnings, instructional videos or success stories to help grasp what the service is about

### CEF Digital platform

CEF eDelivery service offering, and more about the building block, can be found online

CEF Digital

# Conformance testing

## OBJECTIVE OF THE SERVICE

Verify that an implementation of the CEF eDelivery Access Point and SMP specifications, a software package either commercial or Open Source, conforms to the specifications of the CEF eDelivery Access Point.

The following specifications are tested within the scope of this service:

- eDelivery AS4 Profile
- eDelivery SMP Profile

The CEF eDelivery Team provides ready to use test cases, a testing platform, and supports the users of the CEF eDelivery Conformance Testing service during the entire testing process.

## BENEFITS

- Confirm and assure your users/customers that your software package or implementation of the CEF eDelivery Access Point or SMP conforms to the CEF eDelivery specifications
- Testing anywhere at anytime
- Testing supported by professional staff of the European Commission



[Back to Service offering >](#)

## USERS

Software Providers  
Service Providers

## STATUS

- ● ● Service
- ● ● Documentation

## More info

[CEF Digital >](#)

## Get started

[Contact us >](#)

# eDelivery AS4 conformant solutions

## Access Point software

### eDelivery AS4 conformant solutions

#### Domibus

#### Domibus releases

#### Domibus support arrangement

#### Domibus FAQs

#### Access Point specifications

#### SMP software

#### SMP specifications

#### SML software

#### SML service

#### SML specifications

#### PKI Service

#### Security Controls guidance

#### Connector specifications

#### eDelivery Stakeholders onboarding

#### eDelivery Conformance testing

#### eDelivery Connectivity testing

#### Cost estimation tool

## eDelivery AS4 conformant solutions

This page lists the solutions that have passed or are in the process of passing the conformance testing according to the eDelivery AS4 profile:

- Axway
- B2BRouter
- Babelway
- Bizbrains
- Cleo Integration Cloud
- Domibus (EC sample implementation)
- eefacta Server
- EESSI AS4.NET
- Edicom ASx Server
- Data Interchange
- DCS EIP
- Flame
- Holodeck B2B
- IBM
- iFenix
- Laurentius
- Mendelson
- Navitasoft - IP Systems AS4-IP
- Nota
- OXALIS
- Pagero
- phase4
- RSSBus
- SEEBURGER
- ViaAdValvas Gateway
- ADES
- Integration Cloud

A document listing [all vendors supporting AS4](#), including the ones that have not gone through the [CEF conformance testing process](#), is available at bottom of this page.

More information on CEF Digital

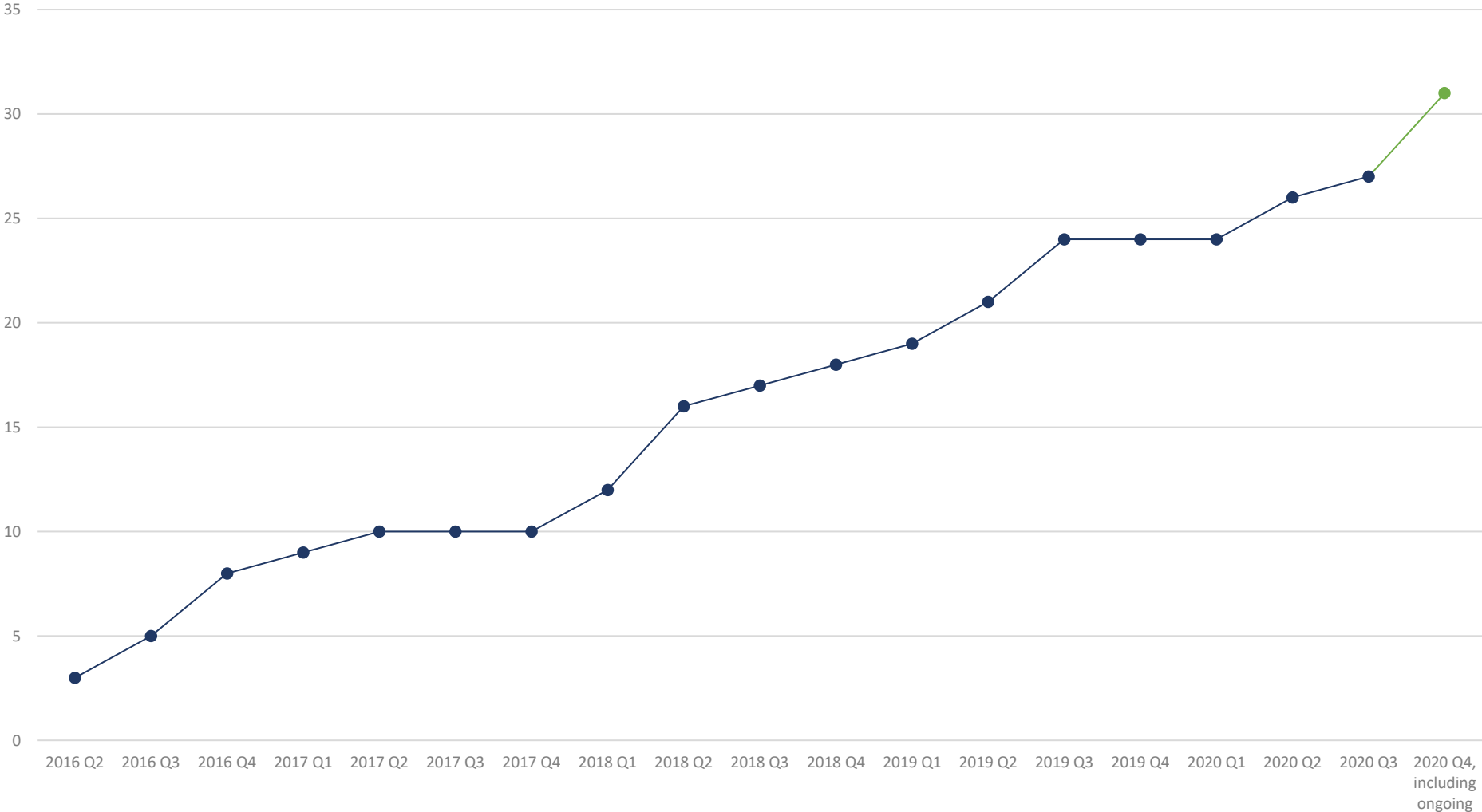
[Conformant Solutions >](#)

## ENTSOG Profile conformance

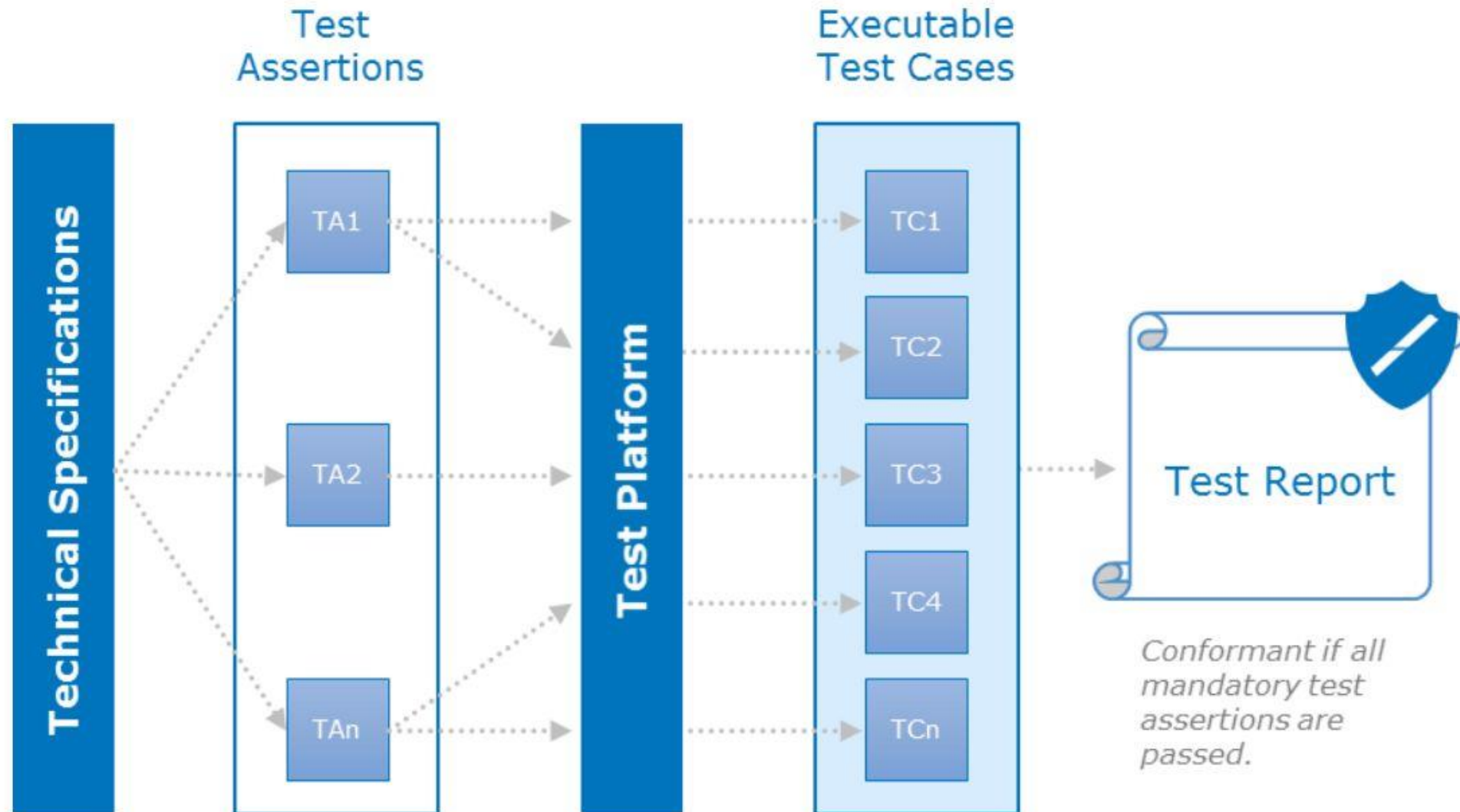
So far, **Flame Messaging Solution** and **Axway** passed conformance testing with the specific ENTSOG profile.



# eDelivery AS4 conformant solutions evolution



# From specifications to test cases



# ENTSOG specific optional module

## DOMAIN PROFILING (ENTSOG SPECIFIC)

- Values for PartyId and @type, Service, Action, Role
- Values for AgreementRef, ConversationId
- MPC
- Payload part property
- EDIG@S payloads

## ENTSOG SPECIFIC TEST ASSERTIONS AND TEST CASES ARE NOW AVAILABLE TO THE ENTSOG COMMUNITY

- Flame was listed as the first ENTSOG module conformant solution.
- The ENSTOG module is available to be rolled out to all ENTOG interested solution providers.



# eDelivery 2021 roadmap highlights



## POLICY

### Policy changes

CEF Building blocks in new MFF: Transition from CEF to DEP

---

DEP will no longer include grants

---

Funding for deploying eDelivery expected via the Recovery and Resilience facility of NextGenerationEU

---

# eDelivery 2021 roadmap highlights



## TECHNICAL

### Technical developments

Migration to new cryptographic algorithms, in line with recent security recommendations

Promote the recently adopted “Split and Join” profile enhancement (transfer of files over 2GB)

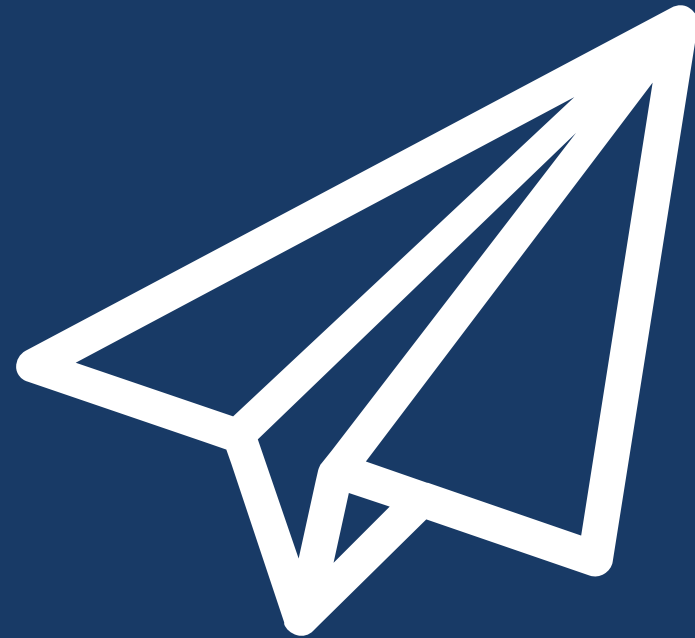
Domibus 5.0: Focus on technical overhaul aiming for high-level performance, ability to push messages from C3 to C4, prototyping new cryptography

Platformisation & expansion of conformance testing

# Thank you!


[ec.europa.eu/cefdigital](https://ec.europa.eu/cefdigital)

[CEF-BUILDING-BLOCKS@ec.europa.eu](mailto:CEF-BUILDING-BLOCKS@ec.europa.eu)



slido

# CEF eDelivery Questions

 Start presenting to display the poll results on this slide.

## 8. AS4 implementation case studies

# Gas market opening in Finland



Tiina Niinimäki  
Business Developer  
Gasgrid Finland Oy



Toni Salminen  
Development manager  
AgentIT Finland Oy

# Gas market opening and implementation of the integration layer

01.12.2020 - Gasgrid Finland Oy

# Table of contents

- Gasgrid Finland Oy
- Market opening
- Implementation project of the integration layer
- Integration platform
- Other related systems
- Message standards / protocols
- Monitoring
- Current state
- Next steps



Tiina Niinimäki  
Gasgrid Finland Oy  
Business Developer  
Customers and Services  
Responsible for open gas market IT systems



Toni Salminen  
AgentIT Finland Oy  
Development manager  
Responsible for customer projects



# Gasgrid Finland Oy

We offer our customers safe, reliable and cost-efficient transmission of gases. We actively develop our transmission platform, services and the gas market in a customer-oriented manner to promote the carbon-neutral energy system of the future.

**290**

GWh/d: maximum transmission entry capacity to Finland of which 210 GWh/d is the transmission capacity from Russia and 80 GWh/d is the maximum transmission capacity from Estonia.

**42**

Employees in 3 locations

**80**

GWh/d: maximum transmission exit capacity to Estonia\*

**60**

GWh line-pack of Finnish transmission system

**1 300**

km of pipeline, 9 compressor stations in 4 different locations

**220**

connection points

**5**

biogas plants connected to the Finnish gas system

**2**

cross-border points: Imatra & Balticconnector

\*Balticconnector-related compressor capacity in Estonia will increase during 2021.



# Implementation project of the integration layer

- Timeline
  - Project was started on May 2019
  - Proof-of-concept during the summer 2019
  - Production build-up on autumn 2019
  - Production started 1.1.2020
- Implementation project was delivered by Agentit Finland Oy
- Challenges
  - The processes, definitions and technical solutions had to be created simultaneously → lots of iteration
- Successes
  - Timeline: Almost everything was ready for production 1.12.2019

# Integration platform



- ArcESB is used as the integration platform
- Built-in capability for AS4 connectivity
- Low-code system, but easy to expand using Java

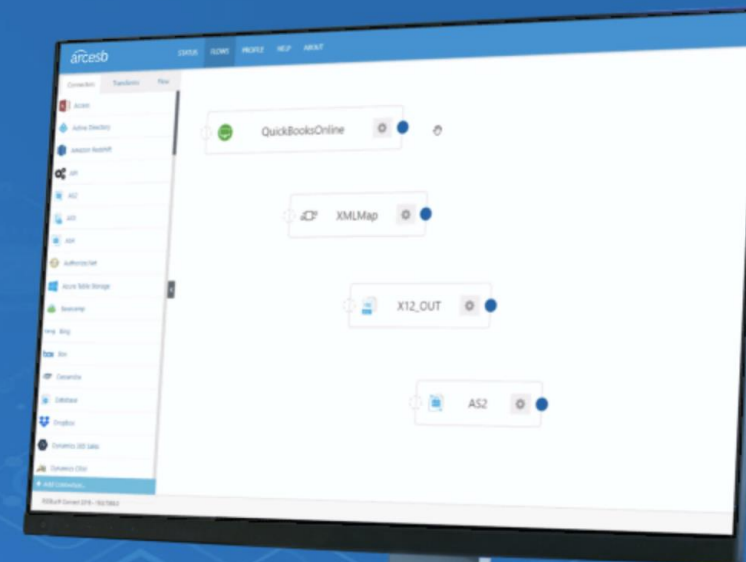
## Modern MFT & EDI Integration

Visual, simple, fast, and secure application and data integration.  
Open architecture, enterprise-ready, without enterprise complexity.

Integrate | Automate | Transform

MANAGED FILE TRANSFER

EDI INTEGRATION



# Other related systems

- Generis
  - Master data
  - Integration through timeseries files (SAF)
- Portal
  - Serves multiple functions. For example nominations and capacity reservations can be done through portal
  - Integration mostly using REST APIs
- Retail Market Data distribution system (Kaasudatahub)
  - Integrated using
    - transactional timeseries (SAF)
    - REST APIs

# Message standards / protocols

- Market parties use Edig@s over AS4
  - NOMINT, NOMRES, DELRES, CAPDOC, DELORD, CAPDOC, MARSIT and ACKNOW
- AS4 connections to
  - Three shippers
  - ENTSOG Transparency Platform
  - GETBaltic
  - ACER (WIP)
- SAF timeseries to internal systems
- REST APIs for internal integration

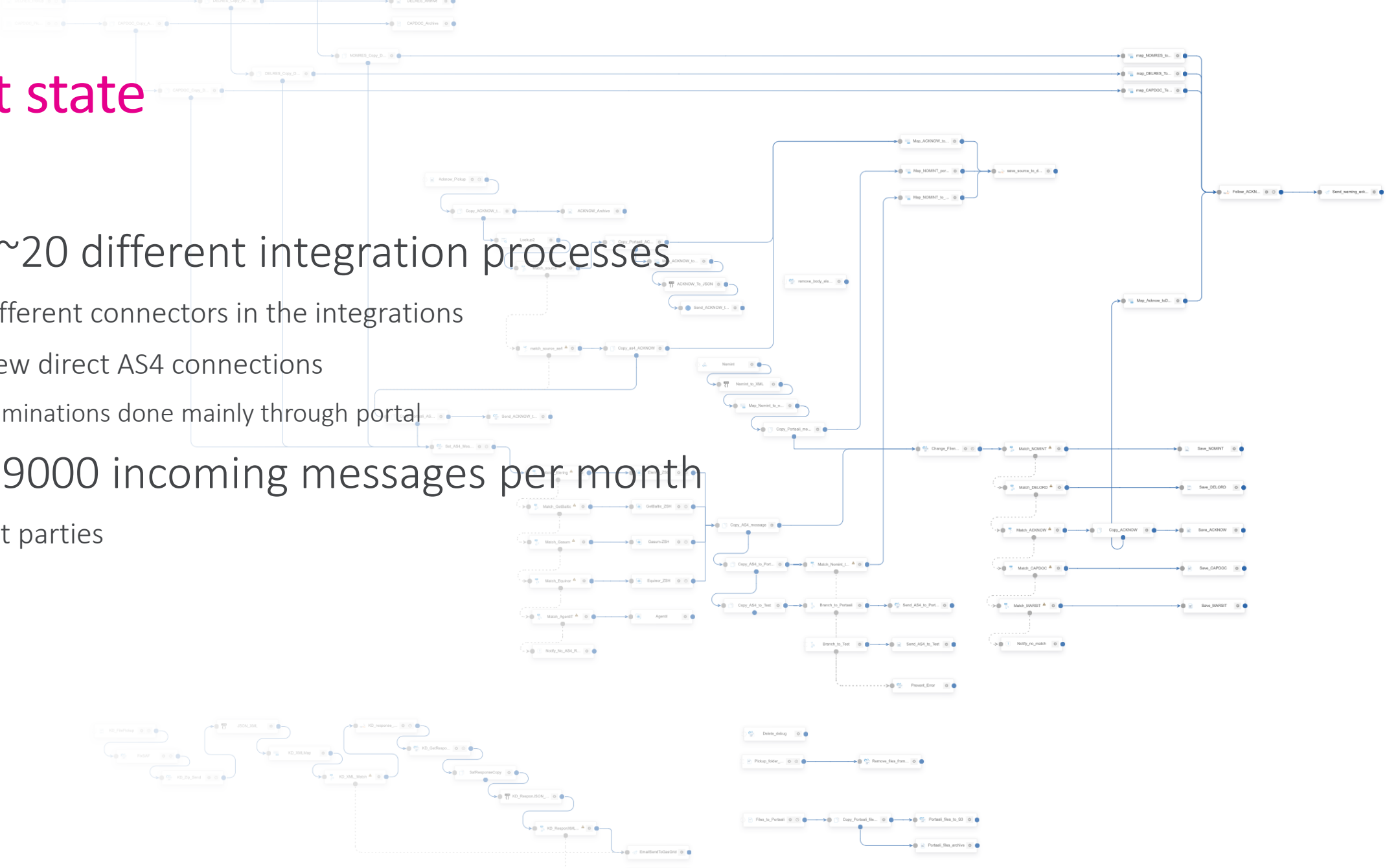
# Monitoring

- Technical solution is based on Elastic Stack
  - Elasticsearch, logstash, different beats and Grafana
  - External alerting mechanisms, such as Twilio
- Gasgrid control room works 24/7



# Current state

- Today ~20 different integration processes
  - 146 different connectors in the integrations
  - Only few direct AS4 connections
    - Nominations done mainly through portal
- About 9000 incoming messages per month
  - Market parties



# Next steps

- RPA solutions
  - Easier administration
  - Automatic recovery from simple errors
  - Data integrity



**Lunch Break (we will start at 14:00)**

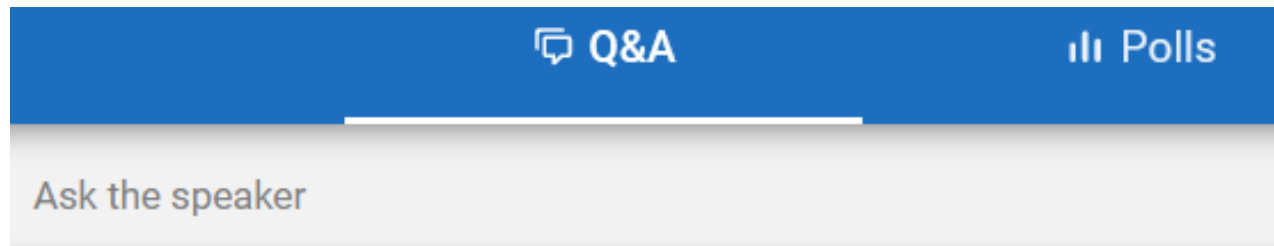
**Lunch Break (we will start at 14:00)**


## Interactive Part at the Workshop

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Please join **slido.com** for the interactive parts today

- We encourage you to use the Q&A section in Slido.



 Type your question

- Please add your company name in brackets after your name
- The most supported questions will be answered at the Q&A sessions



## 9. Practical use of the edig@s - Current & Future

# Usage of Edig@s

Practical use of the edig@s format - Current and Future



Jarle Rønnevik  
Equinor ASA

## Edig@s version 6

- New version released
  - Main goal: get rid of the different implementations
  - Alignment with the Gas Role Model
  - Introduction of decision tables
  - Further harmonised
  - Document describing the differences between version 5 and 6 available
- The new version can be downloaded from [www.edigas.org](http://www.edigas.org)
- Questions can be sent via our contact form at: <https://www.edigas.org/edigas-contact/>
- Questions will be answered at the latest after each workgroup meeting



## Edig@s format is part of the Network code

- Before the nomination and matching process became part of the network code:
  - Many different nomination solutions in Europe
  - Big IT projects needed to support the different solutions, high costs
  - Different matching processes
- After adding nomination and matching process in the network code:
  - The same IT solution can be used to handle most of the markets. Special solutions still exist but they will most likely change in the future
  - The matching process is the same in most of the markets in Europe

## Edig@s format is part of the Network code

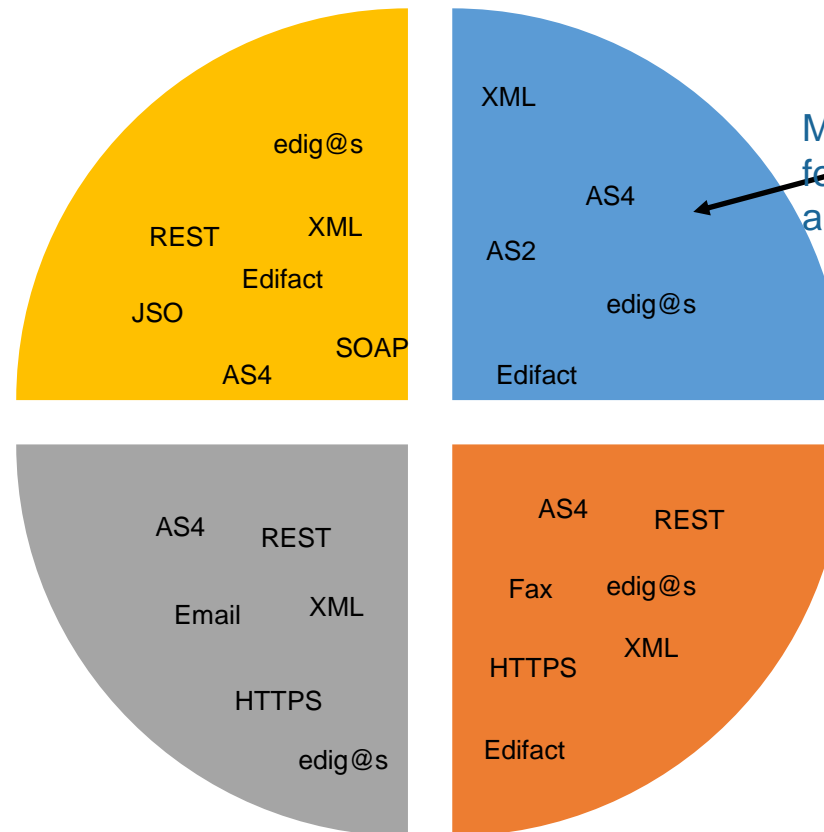
- The harmonisation of the nomination and matching process is a big success story:
  - Easier for all players in the market
  - Big, mid and small network users only need to implement one solution and can schedule gas everywhere in Europe. Free market
  - Easier for software companies to implement a solution for scheduling
  - All network users active in more than one market lower their cost
  - Digitalisation and automatic handling of the process is possible



# Processes, technology and format

## Technology and format used in Europe today

■ Nomination and matching ■ Balancing ■ Settlement ■ Capacity allocation



Most use AS4 and edig@s xml for this now, but still some areas use specific solutions

Anarchy

Expensive IT solutions to handle all the different formats and technologies

Unstructured updates and change of technology

# Edig@s format is part of the Network code

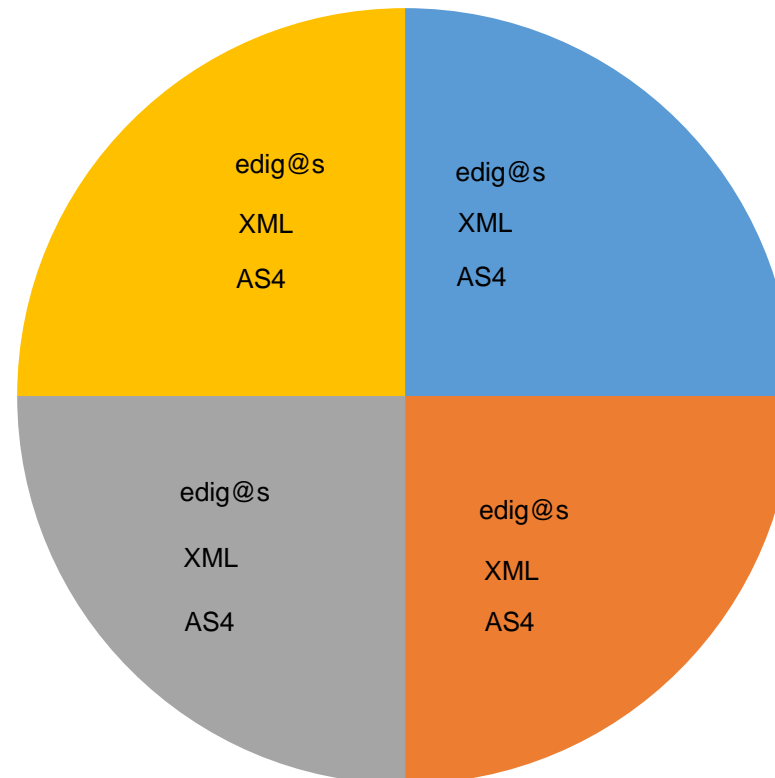
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- After the big success with the nomination and matching process our goal is to harmonise more:
  - Capacity allocations: public consultation shows that the majority wants harmonised interfaces from all platforms. Edig@s is preferred. Waiting for suggested solution from ENTSOG/ACER
  - Balancing Process: most of this is already in the network code, ENTSOG is adding the balancing part to a BRS document. Edig@s balancing process can cover everything in the NC
  - Settlement: a taskforce of EASEE-gas members is being set up to create an Invoice Message in edig@s format. Using an already approved invoicing standard from EC as a starting point. The goal is to get one or more messages that can cover most of the invoices used in our business
  - Gas Trading Process: process already supported by most BRPs, not part of the NC
  - General: many useful messages to handle factors, weather and messages that can be used if expected nominations are not received

# Processes, technology and format

## Our goal

■ Nomination and matching ■ Balancing ■ Settlement ■ Capacity allocation



One solution that fits the business process for Europe

Decreased IT costs

Open markets for everyone

Coordinated change of technology and format

Digitalisation

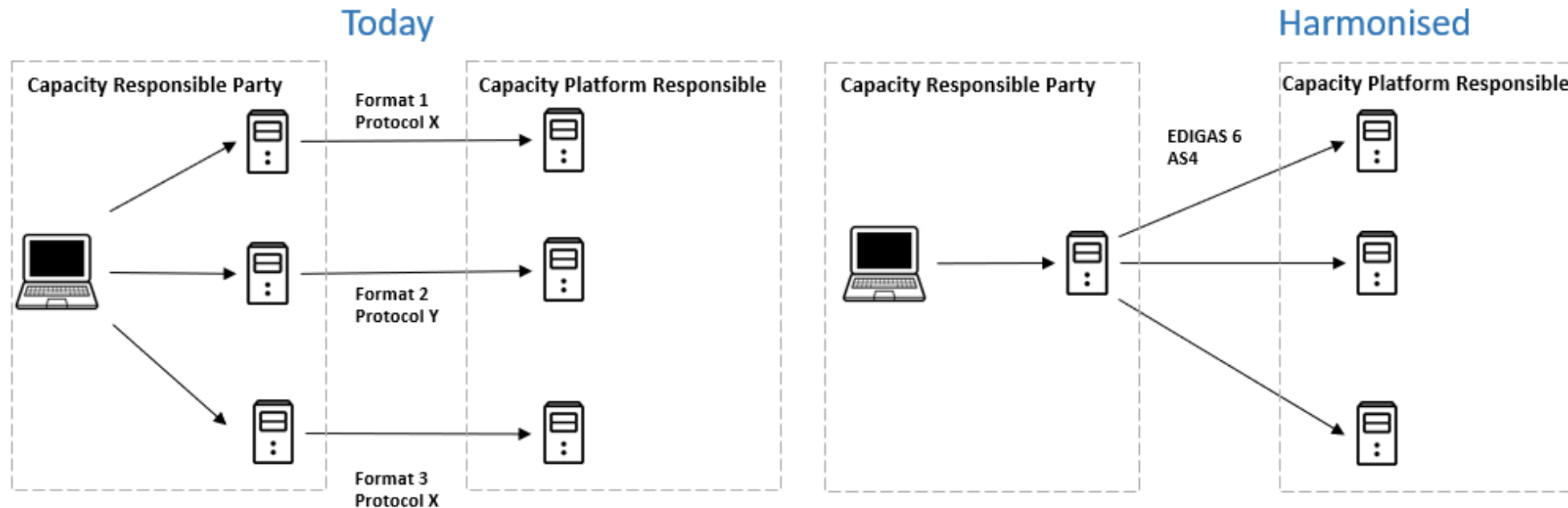
# Capacity Allocation

Practical use of the edig@s format - Current and Future

Andreas Keil  
GASCADE

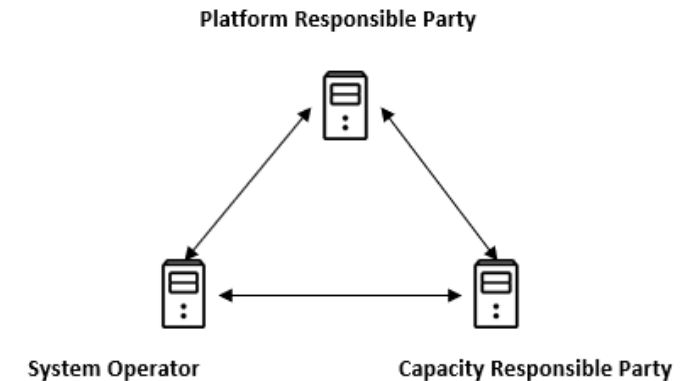
# Capacity Allocation

- Business Processes for Capacity Allocation are harmonised for interconnection points
- Different technical solutions are used (format and protocols)
- **Func issue regarding this topic is raised (one public consultation has been held, waiting for the proposed solution from ENTSOG and ACER)**



# Capacity Allocation with EDIGAS 6

- Full support for processes described in the network code.
- Version 6 is upgraded and modernized with the new requirements from the “Role Model Gas”, more clearer with structural changes, attribute changes and removed or deleted attributes.
- Enables parties to handle capacity auctions and other capacity allocation processes.



# Capacity Allocation - Package Structure

## Initialisation Process

## Auction

## Reverse Auction

## Capacity Information & Secondary Market

**Credit Limits Document (CRELIM)**

**Surrender Capacity Document (SURCAP)**

**SO Offered Capacity Document (OFFCAP)**

**Market Offered Capacity Document (MAOCAP)**

**Auction Bid Document (AUCBID)**

**Auction Result Document (AUCRES)**

**Reverse Auction (REVAUC)**

**Capacity Curtailment Document (CAPDOC)**

**Transfer Advice Document (TRAADV)**

# Capacity Allocation

---

- **Credit Limit Document:** Used by System Operator (SO) or Capacity Platform Responsible (CPR) to inform SO or CRP about CRP credit limits.
- **Surrender Capacity Document:** Used in process where the Capacity Responsible Party (CRP) wants to surrender capacity.
- **SO Offered capacity:** Document to be sent from SO to platform to tell how much capacity is available for auction.
- **Market offered capacity document:** Used to inform the market about available capacity for auction.
- **Auction Bid Document:** Enables a Capacity Responsible Party to submit bids to the Auction Office
- **Auction Result document:** Used by a Capacity Platform to send the allocated capacity or aggregated auction results to the CRP and the bids and auction results to the SO
- **Reverse auction:** Used in cases where a SO needs to buy back already sold capacity.
- **Capacity Curtailment document:** Used to inform adjacent SO and CRP about a capacity curtailment.
- **Transfer advice:** Message used to transfer capacity between CRP's (secondary market).



# Capacity Allocation

We need your input: Since most capacity platforms are members of EASEE-gas we hope we can make the solution even better.

Capacity task-force created, current members; Prisma, Gassco, GSA, Conexus, VNG, RBP, Equinor and GASCADE.

Registration on the website:

<https://www.edigas.org/edigas-contact/>



# Gas Trading Process

Practical use of the edig@s format - Current and Future

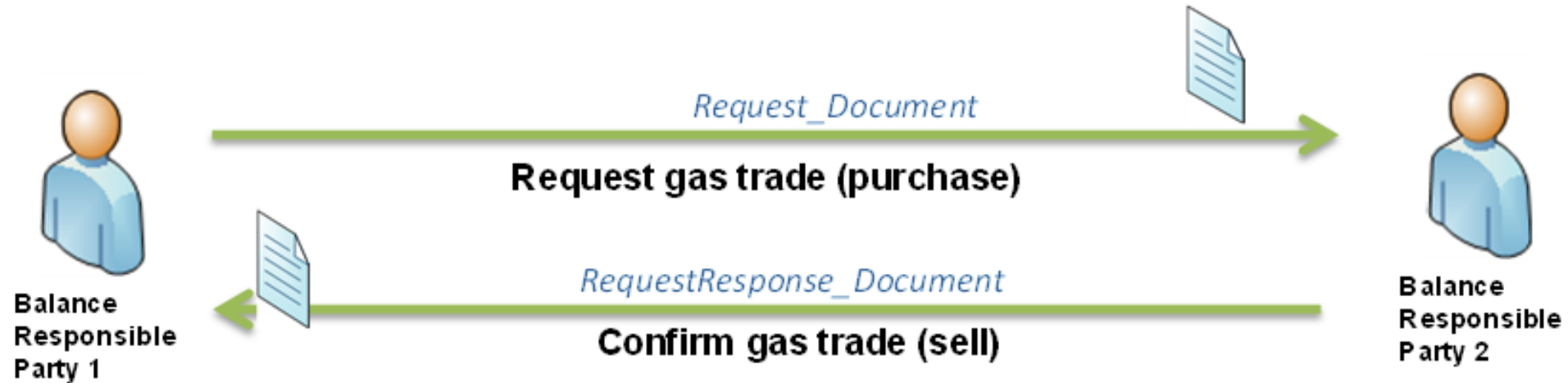


Oliver Schirok  
VNG

# OTC Gas Trading process

- **Offers Document (OFFERS)**: message sent by a BRP (e.g. a Producer and Seller) to another BRP (e.g. Buyer) to show available volumes under a flexible contract
- **Request Document (REQUEST)**: message sent by a BRP (e.g. a Buyer) to another BRP (e.g. Seller) stating the volumes requested
- **Request Response Document (REQRES)**: message sent by a BRP (e.g. a Seller) to another BRP (e.g. Buyer) responding to the requested volumes  
→ This reflects the classical workflow, but it is also possible to do the reverse:
- **OFFERS**: initiation of purchase requirements
- **REQUEST**: offer of sales
- **REQRES**: purchase confirmation

# Simple workflow



## OTC Gas Trading process

- Another possibility is a flexible request – a mix of buy and sell positions in the same message – a scenario that also needs a detailed implementation

## Exchange Gas Trading process

- Currently in general processes but it will be moved
- ACIREQ: a BRP or Clearing Responsible sends this message to an Area Coordinator (AC) to request the validity of account pairs /Shippercode pairs before actually nominating
- ACICON: the AC sends this message to a BRP or CR to confirm validity of the account pairs / Shippercode pairs

# Balancing Process

Practical use of the edig@s format - Current and Future



Svetlana Pozdysheva  
Engie

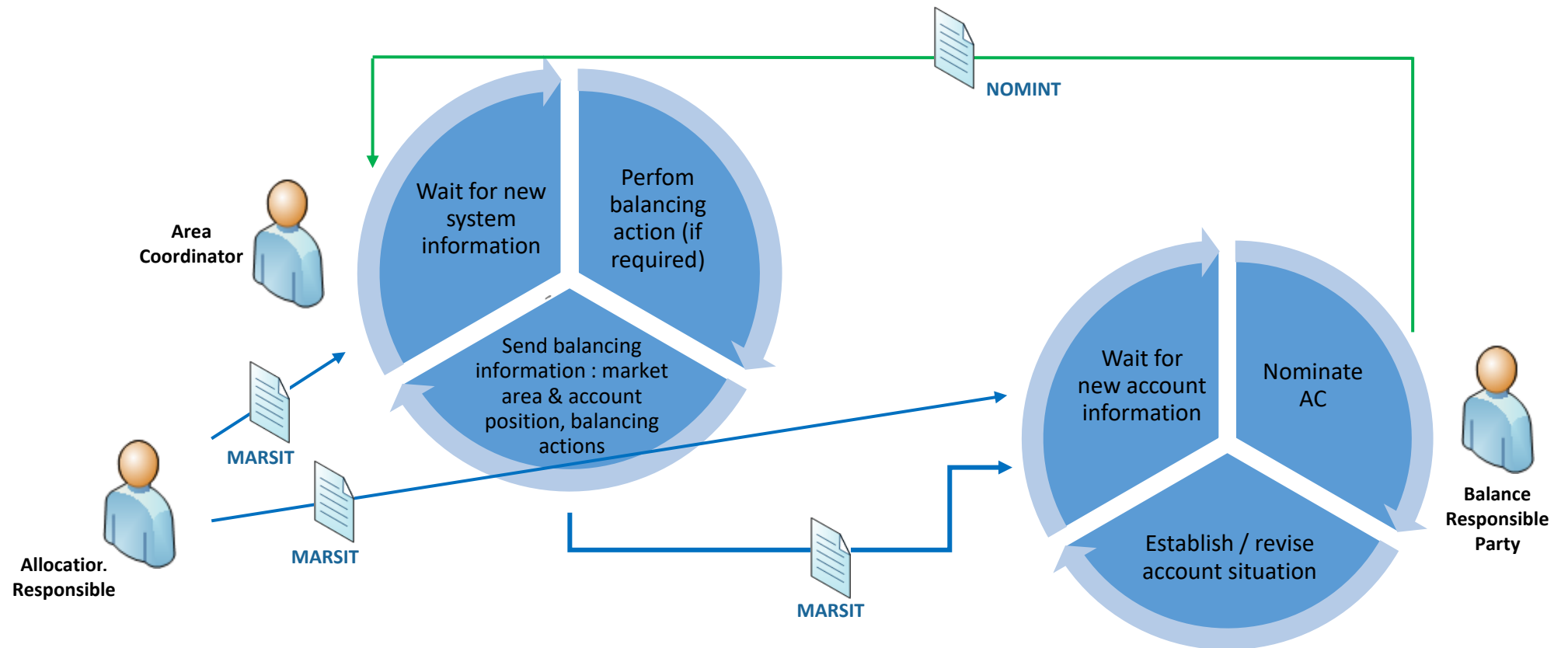
# Balancing process

- MARSIT document is used to inform the Market and the BRPs on the following:
  - Non daily metered forecasts (TSO -> AC, AC -> BRP)
  - Market area position and corresponding market thresholds (AC -> BRP)
  - Account position (AC -> BRP)
  - Within day balancing actions (volume, price) undertaken by the AC. This information can be provided system – wide or as allocated to a particular BRP (AC -> BRP)
- MARSIT document is also used to provide:
  - Operational Balancing Account situation (TSO -> TSO)
  - Provisional allocations on connection points (AR -> BRP, AR -> TSO, AR -> DSO, AR -> AC)

AC – Area  
Coordinator  
AR – Allocation  
Responsible  
BRP – Balance  
Responsible Party  
DSO – Distribution  
System Operator  
TSO – Transmission  
System Operator



# Balancing process



## Focus on within day balancing (hourly system)

---

- Within day balancing is an iterative process. From a BRP point of view, to be performed in efficient (operationally and financially) manner it requires not only hourly updates of the allocated flows per connection point, but also additional balancing information managed by the corresponding AC:
  - Market area position in regards with the market thresholds -> allows to estimate portfolio exposure to penalties
  - Account situation -> essential information to avoid penalties and/or portfolio deoptimisation
  - Allocated balancing action volume (buy / sell) -> portfolio situation

# ENTSOG – BRS on Balancing

- FUNC Issue reported (02-2019) by Equinor
- ENTSOG agreed to include parts of the Balancing and Settlement MIG in the BRS

# Nomination & Matching Process

Practical use of the edig@s format - Current and Future



Jarle Rønnevik  
Equinor ASA

# Nomination and Matching

The Nomination and Matching Process consists of the following:

- Nomination is the prior reporting by the Balance Responsible Party (BRP) to the System Operator (SO) of the actual flow that the BRP wishes to inject into or withdraw from the system
- Nomination to the virtual trading point (VTP) is done by the BRP to the Area Coordinator to indicate the traded quantities
- Nomination of end users where matching is not required
- Platform trades are nominated by the clearing house to the SO
- Matching is the process of comparing and aligning processed quantities of gas for BRP at both sides of a connection point between systems, which results in confirmed quantities for the BRP. The matching on the VTP confirms the traded quantities



# Nomination and Matching

- **Nomination Document (NOMINT)**: used by a BRP to send the nominations (transmission order) to a SO and any re-nominations following the initial nomination
- **Delivery Order Document (DELORD)**: used by coordinating SO to exchange BRP's nomination after acceptance with neighboring SO
- **Delivery Response Document (DELRES)**: used by adjacent SO to send results of matching to coordinating SO in reply to its initial DELORD document
- **Nomination Response Document (NOMRES)**: used by a coordinating SO to send the result of the internal and external matching to a BRP in reply to its initial nomination/ re-nomination

Each nomination document (NOMINT) applied for one location and one internal account only.

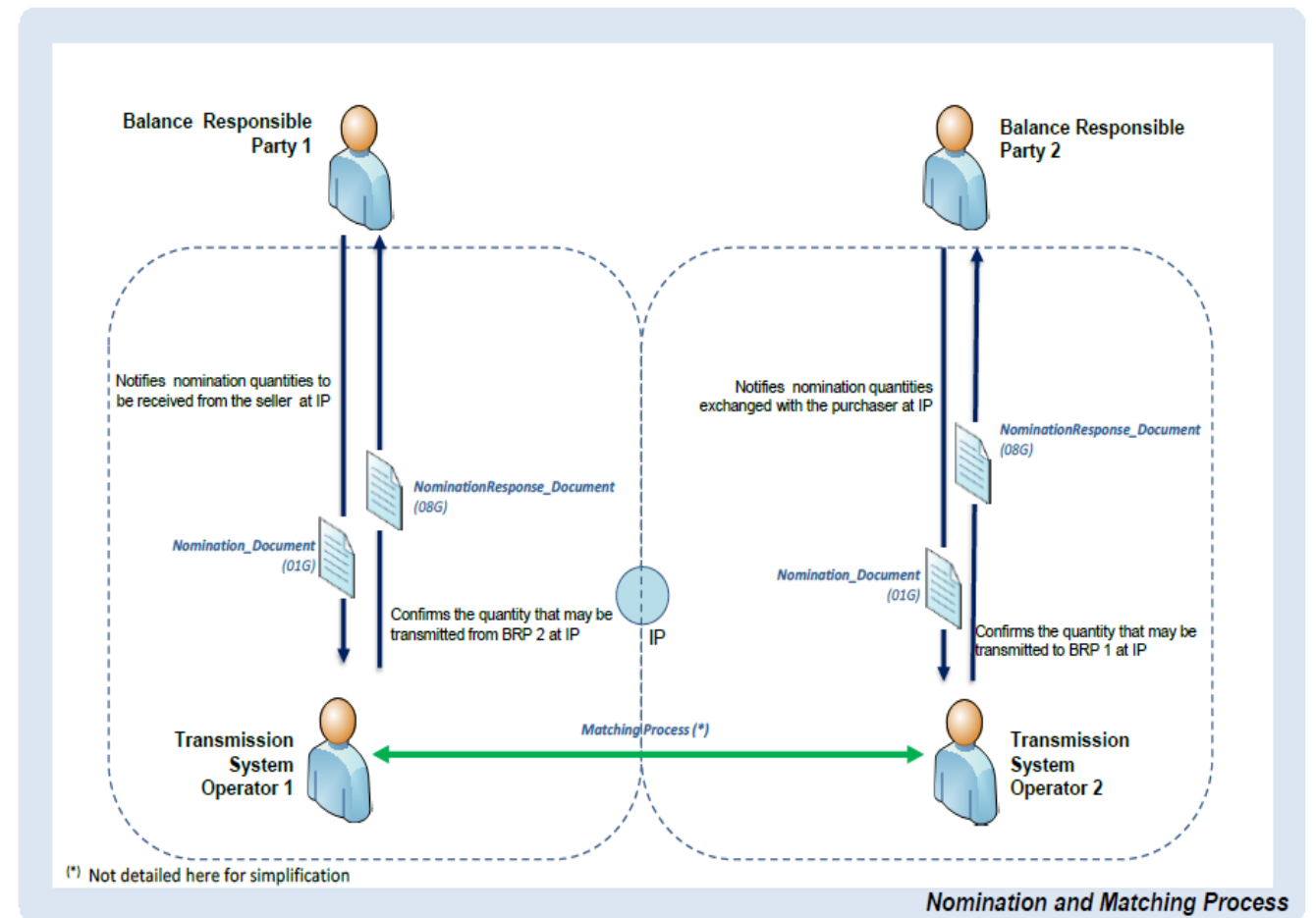
# Nomination and Matching

In order to transport gas between two BRPs in different market areas, the following action must be carried out:

- Each BRP must nominate the gas to be carried to TSO of the market area

This involves the usage of edig@s - Nomination and Matching process

Note: BRPs already possess capacity required. The example illustrates a double-sided nomination



Nominate gas between different parties



# Settlement Process

Practical use of the edig@s format - Current and Future

Jarle Rønnevik  
Equinor ASA





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# Settlement

- Settlement starts after the balance of a given gas day is not possible to change
- Because lack of harmonisation this process is cumbersome for most companies in the industry
- Input to the process includes contract specific terms, invoicing terms, volumes and balances
- Today we receive volumes at different times using different technologies and formats
- Luckily some companies use edig@s when providing volume information but in many cases you need to go into portals to download the volume information needed or trigger a web service

# Settlement

- Metered:
  - Can be used each hour to give the measured offtake from meters
  - This information is needed to allocate volumes for settlement
- Allocation:
  - Allocated volumes are metered or calculated values that have been validated
  - Most contracts to end users are invoiced on the M+12 allocations
  - Integrated into MARSIT document

# Allocations

- The allocation used for invoicing is the allocation usually available at M+12 (working days)
- These are adjusted timeseries based on metering and calculations of actuals
- In most cases a SO gives different allocations with different timings:
  - Within day after each hour: Supported by METRED or MARSIT message
  - D+1: Supported by MARSIT message
  - M+12: Supported by MARSIT message

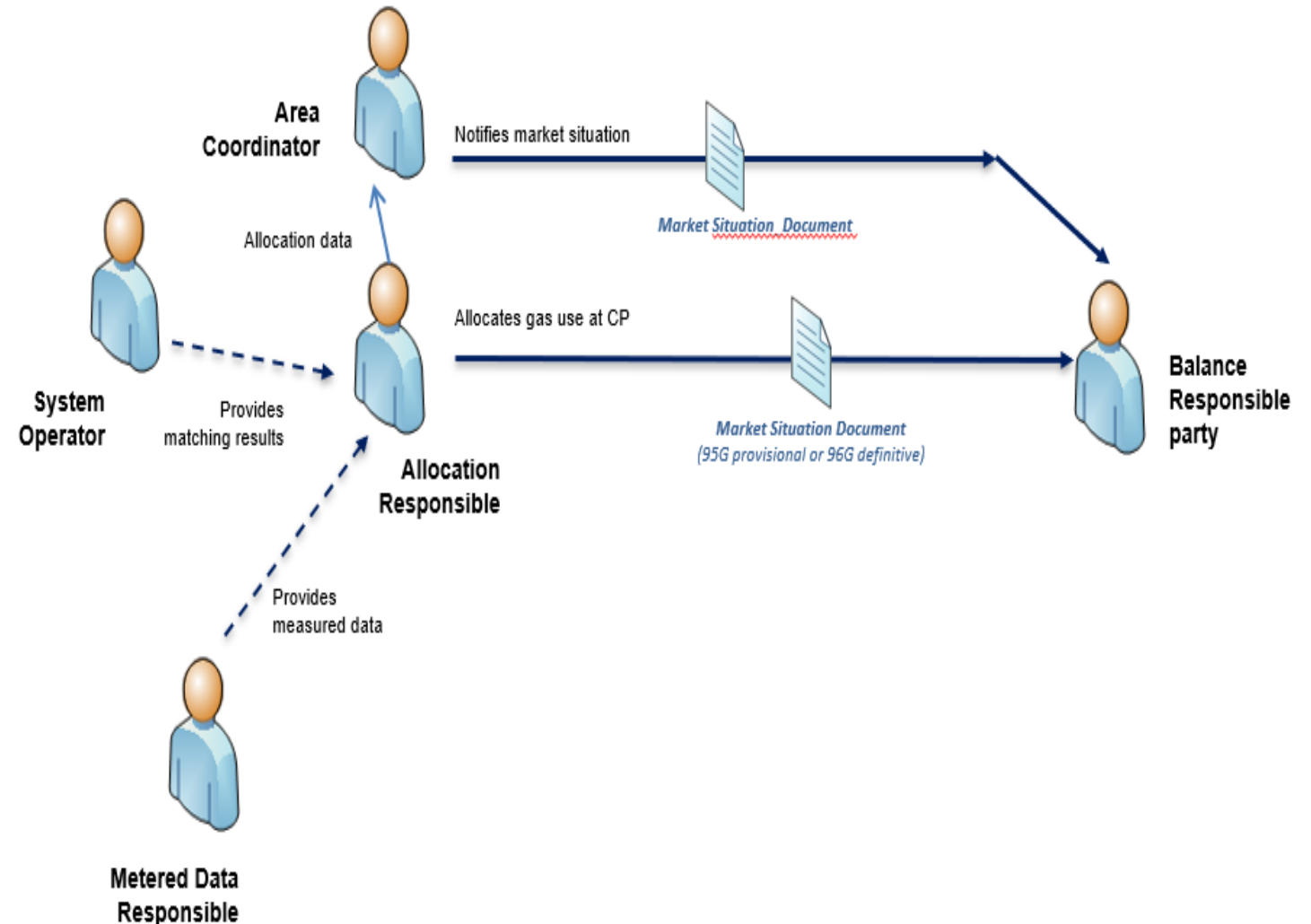
## Metered document

- The result of meters is gathered into one message METRED
- Meter ID, unit of measure, volume are some of the parameters available
- Information gathered at SO, then sent to BRP/SO

# Allocations

Allocation responsible collects data from System Operator and Metered Data Responsible

Then he allocates gas use before sending it to the Area Coordinator and BRP



# Settlement

Invoice:

Public consultation released in February 2019 on Development on ENTSOG AS4 / edig@s version 6

## Evaluation – Edig@s version 6

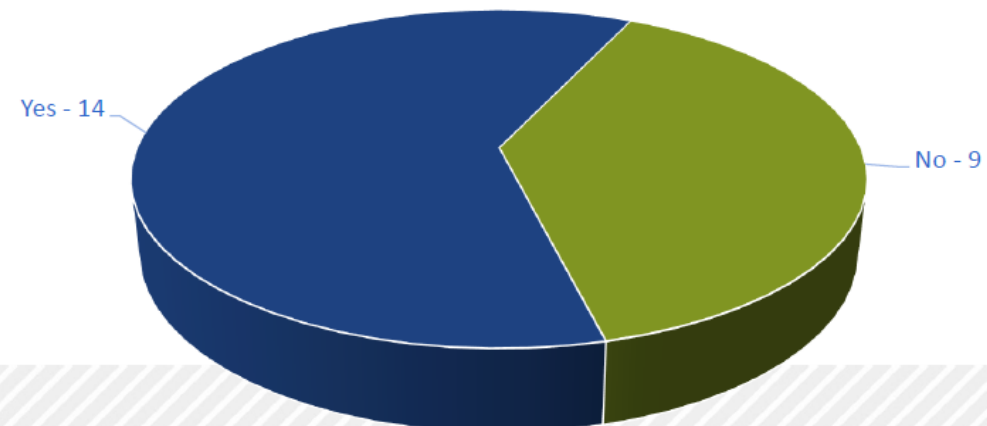
> Should invoicing message be implemented within the Edig@s version 6?

Comments on the answer “yes”:

- VNG, ENGIE support the implementation of messages for the capacity trading process pointing out that if the national needs covered it will make a huge step forward regarding harmonization.
- ENI (Network User / IT) asked for Invoice messages for the sales process
- Equinor mentioned the reduction of manual steps by having messages for processes such as capacity, penalties and sales

Comments on the answer “no”:

- Bayernets stated that the messages developed for the German market are complex. Messages for the usage on European would be even more complex.



# Settlement - Invoicing

- What has already been done:
  - Decided to use already approved EU standard ISO/IEC 19845:2015 as a starting point and integrate it into an edig@s package
    - Invoicing has many legal requirements both at European and national level
    - XML Format
    - Already extensively used
    - Support of European Commission and several countries
  - Pulled out parameters that are mandatory according to legal requirements
  - Tested against some invoices from companies present in the MWDWG

# Settlement - Invoicing

- What do we need to proceed:
  - Create an Invoice Taskforce with invoicing experts and the MWDWG
  - Companies that already joined: Amber Grid, ECC, Equinor, Fluxys, Gassco, GTS, Net4Gas, Terega
  - Interested people can contact us via the edig@s contact form at:  
<https://www.edigas.org/edigas-contact/>



# General Process

Practical use of the edig@s format - Current and Future



Olivier Termont  
ENI

# General Process Documents

We published documents to meet the business needs:

1. General Problem
2. Factors
3. Urgent Market Messages
4. Remit

## Problem

- The Problem Statement is sent by a party that is expecting the delivery of a specific electronic document that has not been received from his adjacent counterparty by a certain time

**DON'T**

**FORGET**

# Factors

- The factor document can be used by parties to exchange factors where conversions between volume and energy or other conversions (for example LNG) are needed. Factors are also needed in processing plants to calculate usage of different services (for example CO<sub>2</sub> and H<sub>2</sub>S reduction)
  - Examples of Factors:
    - Dry gas per field = 10,806 Kwh/m<sup>3</sup>
    - Shrinkage factor = 1,145 (Conversion Unit)
    - CO<sub>2</sub> Factor = 1,567 Ton/M<sup>3</sup>
    - H<sub>2</sub>S = 32,452 Kg/M<sup>3</sup>
    - CGV = 10,745 Kwh/m<sup>3</sup>

## Urgent Market Message (UMM)

- The Publication Document is a general edig@s message that can be used over several processes. It is an aggregation of information related to a connection point or an area (where an area is a virtual connection point managed by a single Area Coordinator on input and on output)
- The Publication Document may be used to provide information to a market participant that is normally not provided in the general day-to-day messages in this way edig@s could be used to send UMM

## Remit: Publication process

- The REMIT Process will not be migrated to edig@s version 6 until the planned changes to the REMIT electronic documents are approved for implementation
    - At that time the evolution to the REMIT document set will be simultaneously migrated to edig@s version 6
- Consequently the REMIT document set shall always be in edig@s version 5.1

# Remit: Publication documentation content

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- The electronic document contents are:
  1. Gas Capacity Allocations Document
  2. Nomination Monitoring Document
  3. Contract Market Monitoring Document
- The information is assembled at the connection point level and the requested characteristics

# Next steps

Practical use of the edig@s format - Current and Future

Jarle Rønnevik  
Equinor ASA





# Push or pull?

## Definition of “push”

- The owner of the data pushes or sends the data (e.g. using an edig@s message) when the data is available
- The receiver of the data passively waits to receive the data once it is available

## Definition of “pull”

- The receiver of the data, sends a request to the data owner to retrieve data when the receiver requests it
- The owner of the data passively waits for requests for data, and once a request is received the data is provided to the requestor



# Push or pull?

## When do you push?

- .. when you do not know when the data will become available
  - the data will be sent when available (like NOMRES)
- ... when the data can change at any time, and you don't know when this will happen
  - a CLRCON after WDBA call or new confirmation during curtailment
  - you do not know if you are involved even when you see this happening

## When do you pull?

- .. when data is always available and can be retrieved when needed
  - i.e. master data, historical booked capacity, etc.
- .. when data is always available at the same time
  - i.e. when you know when to expect the information (like every 5 minutes past the hour)

## Planned next steps

- Additional support for SSO / LSO business processes
- Support for invoicing process
- Analysis of use cases for push/pull scenarios

# Q & A




slido

# Audience Q&A Session

 Start presenting to display the audience questions on this slide.


slido

Edig@s 6 poll

 Start presenting to display the poll results on this slide.

slido

What are the advantages of Edig@s 6?

 Start presenting to display the poll results on this slide.



Streamlining the gas business



Thank you for your attention

[www.easee-gas.eu](http://www.easee-gas.eu)



[www.edigas.org](http://www.edigas.org)



# User success story (Flame)

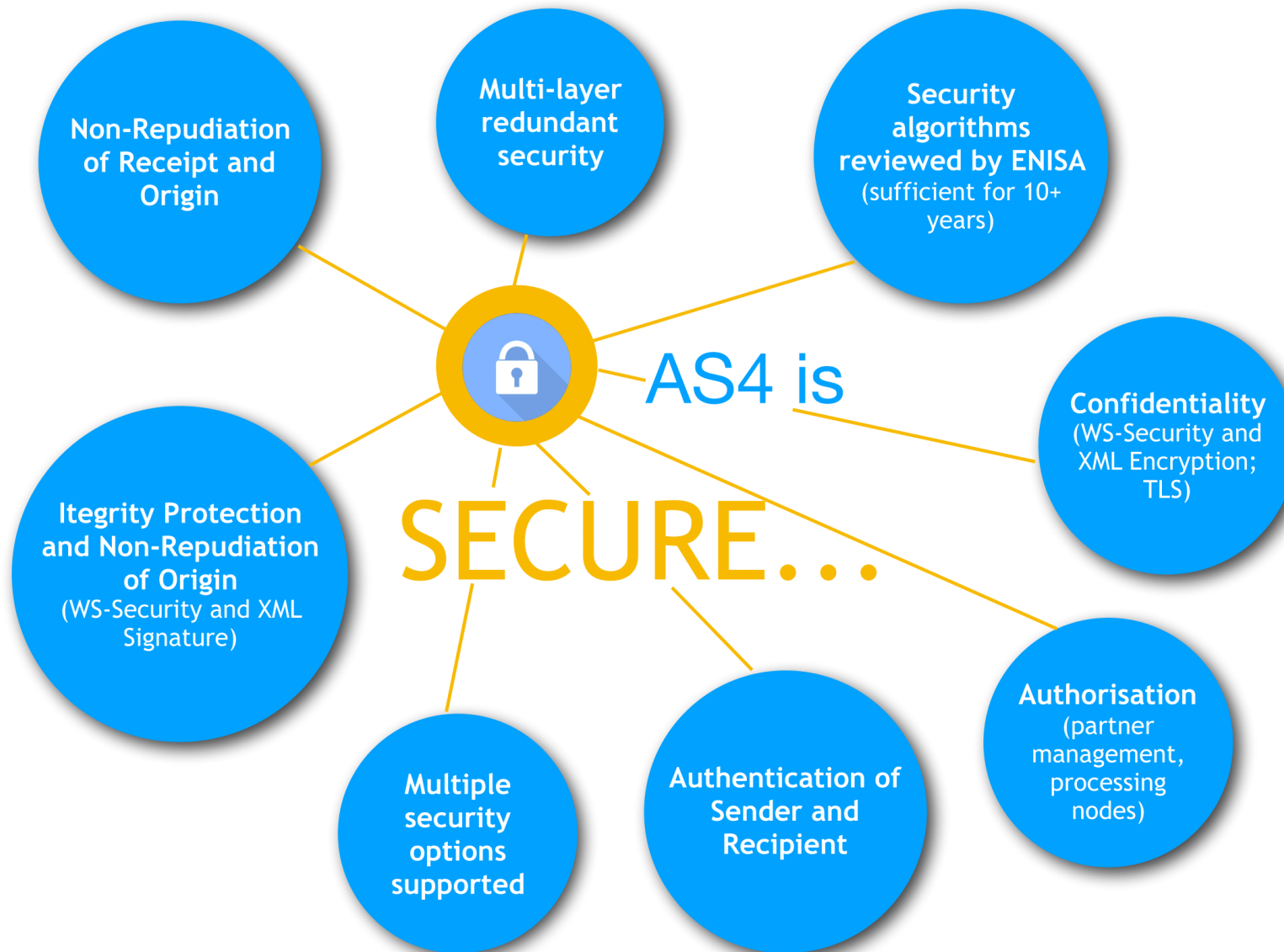


Theo Kramer  
Principal Member  
Flame Computing

The draft Network Code on Interoperability and Data Exchange Rules for European Gas Transmission Networks delivered to the European Commission (EC) on 11 September 2013 specifies that

“AS4 shall be used as common data exchange protocol for document-based data exchanges”.

A usage profile has been posted which defines an ENTSOG AS4 Profile that aims to support cross-enterprise collaboration in the gas sector using secure and reliable exchange of business documents based on the AS4 standard.



# B2B and AS4 History

- Flame Established 1998, and based in South Africa
- System Software Development specialising in B2B Messaging
- OASIS ebMS V3.0 MSH - 2008
- OASIS AS4 MSH - 2011
- Participant in e-SENS WP5.1 - 2015
- Business Partner with **ECS Int. BV** for Sales & 24x7 Support in Europe

- OASIS Open AS4 Informal Interoperability Testing and Demonstrations – 2011 – 2012
- SuperStream AS4 Rollover Induction – November/December 2013
- SuperStream AS4 Contribution Induction – November/December 2014
- Drummond Certified AS4 4Q13 and AS4 4Q14
- RossettaNet RNIF 2.0 Petroleum Industry Implementation – 2006
- CEF/e-SENS WP5.1 Conformance Compliant – 2015
- CEF/e-SENS e-Delivery POC including SML/SMP compliance – 2015 to 2017
- CEF WP5.1 AS2 vs AS4 Benchmarking – 2016 to 2017
- CEF/e-SENS ENTSOE Conformance Compliant – November 2018

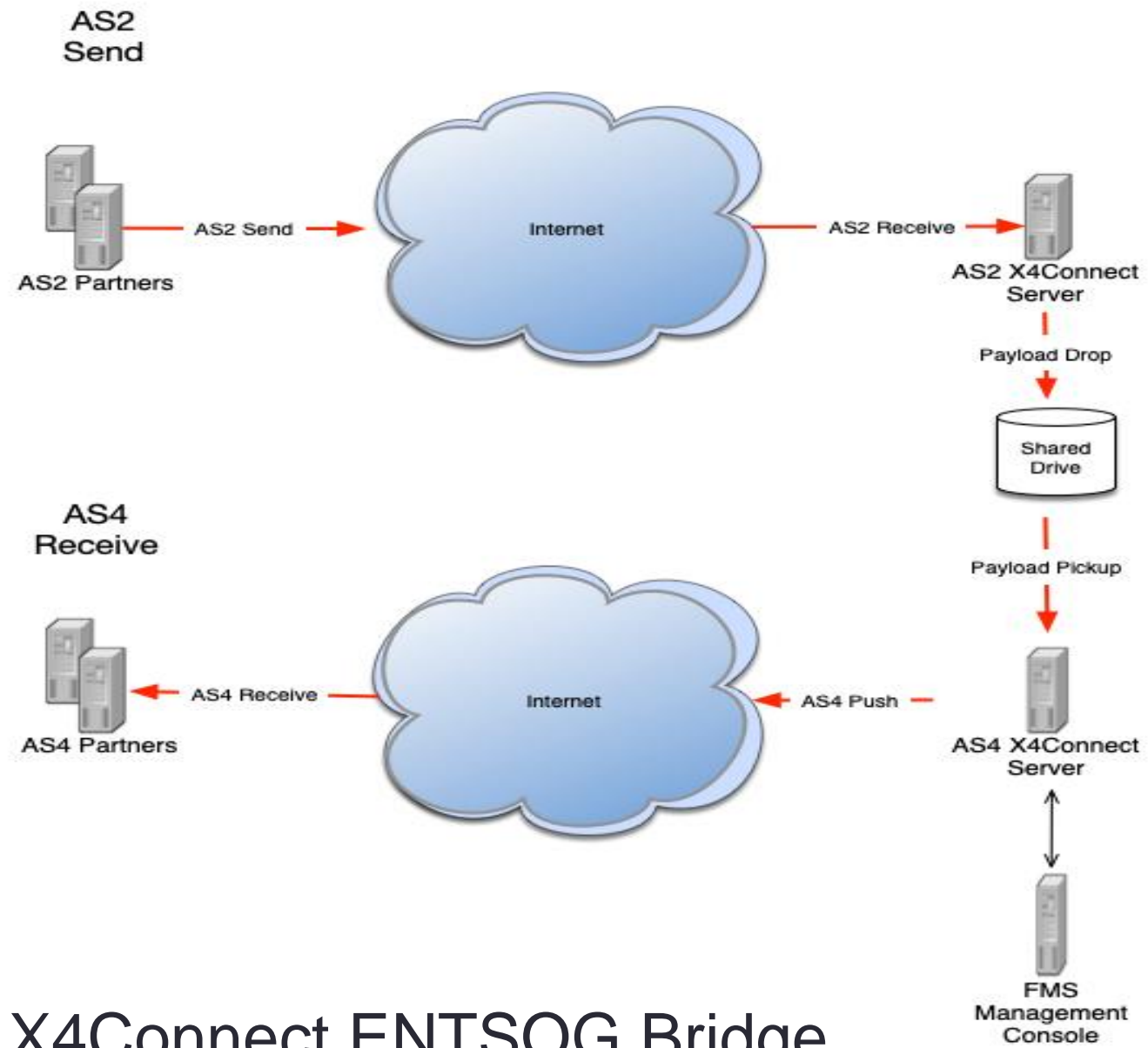
- ENTSOG AS4 Profile conforms to INT0488-161115 AS4 Usage Profile\_Rev\_3.6 2018-03-27
- ENTSOG Access Point operates as the inner corners in the 4-Corner model
- Support required for oneWay Push.
- Optional support for oneWay Pull, twoWay Push and twoWay Push and Pull
- Party IDs based on EIC Codes for natural gas processing
- Compressed, signed and encrypted SWA payloads
- State of the art security algorithms for message layer security including AES128/192/256 GCM
- Secure Transport Protocol TLSv1.2
- Synchronous Signed Non Repudiation Receipt (NRR) Signals
- Synchronous Error Signals



# CEF ENTSOE Conformance Status

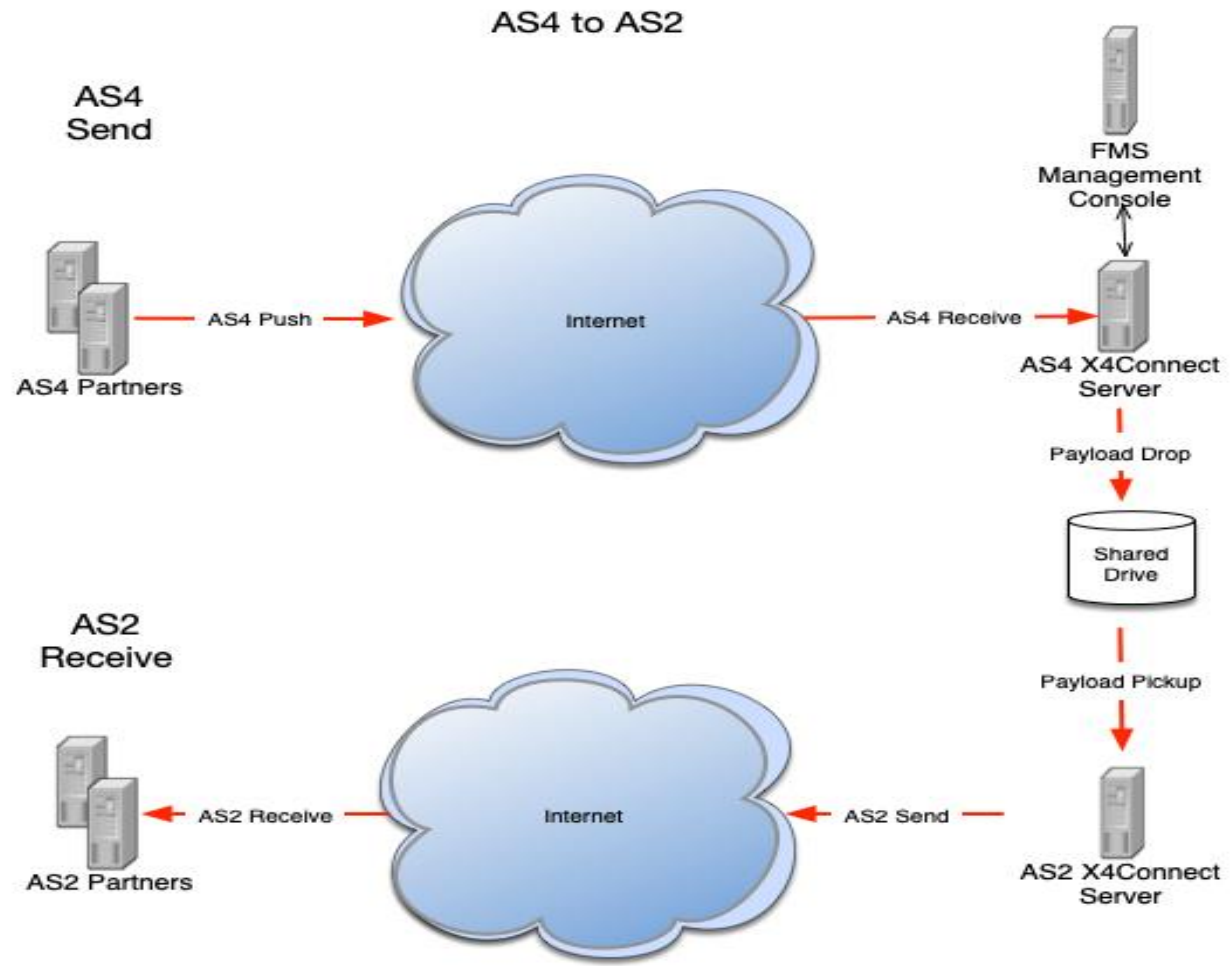
AS4_ENTSOE_TA01	✓
AS4_ENTSOE_TA02	✓
AS4_ENTSOE_TA03	✓
AS4_ENTSOE_TA04	✓
AS4_ENTSOE_TA05	✓
AS4_ENTSOE_TA06	✓
AS4_ENTSOE_TA07	✓
AS4_ENTSOE_TA08	✓
AS4_ENTSOE_TA09	✓
AS4_ENTSOE_TA10	✓
AS4_ENTSOE_TA11	✓
AS4_ENTSOE_TA12	✓

AS2 to AS4



X4Connect ENTSOE Bridge





# X4Connect ENTSOE Bridge

# X4Connect AS4

- X4Connect ENTSOG MAAS
- ENTSOG Partner User Agents – 7 (Different AS4 deployments)
- ENTSOG Partner Geographics
  - Austria
  - Germany
  - Italy
  - Netherlands
  - Spain
  - Switzerland
- Cloud, Hybrid and On Prem deployments
- High Availability, High Volume AS4 Messaging



# Additional AS4 Deployments

- Drummond Group International AS4 ITQ Reference System – 2011 to 2015
- ComplianceTest AS4 SuperStream ITQ Test and Reference System – 2012 - 2016
- Ozedi AS4 SuperStream Gateway – FMS Server - 2013 to current
- NAV/IKT AS4 Secure Digital Post Application – 2014 to current
- EPP Domain Registration System – ZACR country codes and gTLDs – 2011 to current
- RosettaNet Invoicing System – Petroleum Industry – 2006 to 2019
- ECS International X4CONNECT AS2 <-> AS4 Bridge – Oil & Gas Industry – 2017 to current



**Q&A  
and  
Thanks**

**Coffee Break (we will start 15:45)**



# 10. Functionality Process

# Introduction



Csilla Bartok  
Network codes, Gas Dpt.  
Team Lead  
ACER

# Functionality Process goals

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## The purpose of the Functionality Process

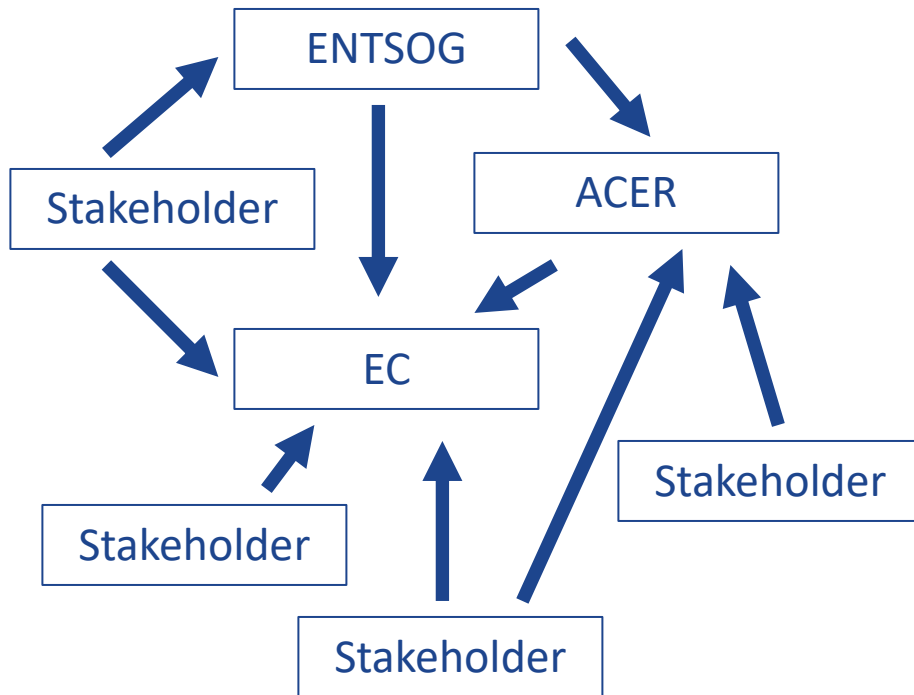
- Option for stakeholders to provide input on their concerns with the existing gas-related legislation\*
- Any issues associated with the NCs and GLs can be raised
- Ensure ENTSOG and ACER are working side by side with equal mandate in such discussions about gas-related legislation
- Issue solution(s)
- Run jointly by ACER and ENTSOG, supported by EC

*\*The application of Reg. 713/2009 and Reg. 715/2009 is not affected.  
This process is without prejudice to the existing obligations and powers of TSOs and NRAs.*

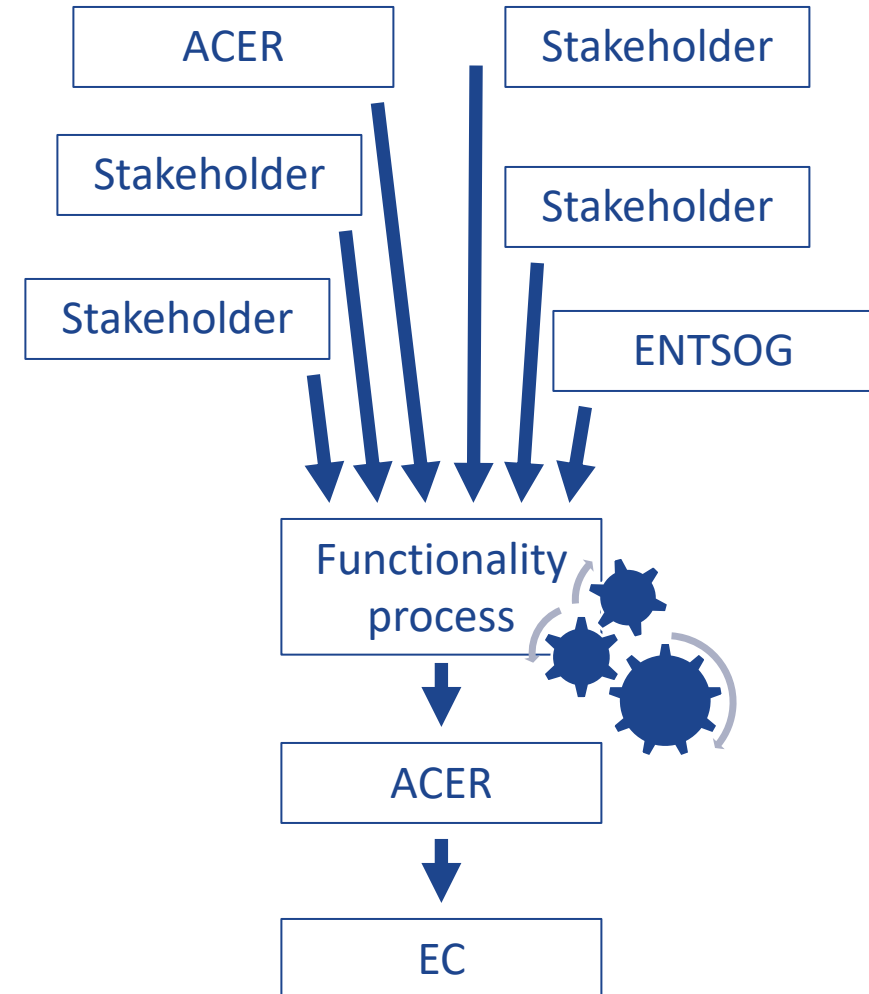




# Robust Transparent Conceptual Process



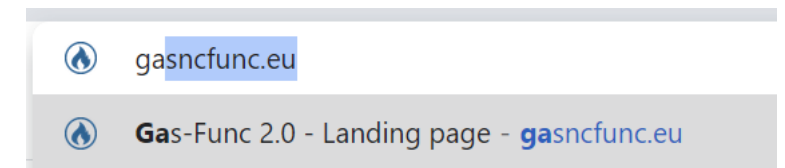
VS



# Functionality Platform – Main Figures



- Joint Functionality Process was set up jointly by the Agency and ENTSOG with the support of the European Commission in February 2016. In August 2017 platform has a broader scope.
- Since June 21 a new version of the platform enabling comments and support for issues
- FUNC has approx. 40 registered users and 19 reported issues.
  - Note: A new platform does not require registration for issue viewing, therefore a lower number of registered users
- In terms of website visits:
- Since the platform was established: 8300+ unique visitors, 37000+ page views, users from 95 countries.
- In 2020: 1700+ unique visitors, 7300+ page views from 54 countries (first five: UK, BE, DE, NL, AT).
- 84.3% come directly (putting gasfunc address into browser)
- Most popular page: “List of registered issues”
- Most popular issue: „Greater flexibility to book firm capacity at Ips”



# Missing harmonisation of interfaces on capacity booking platforms

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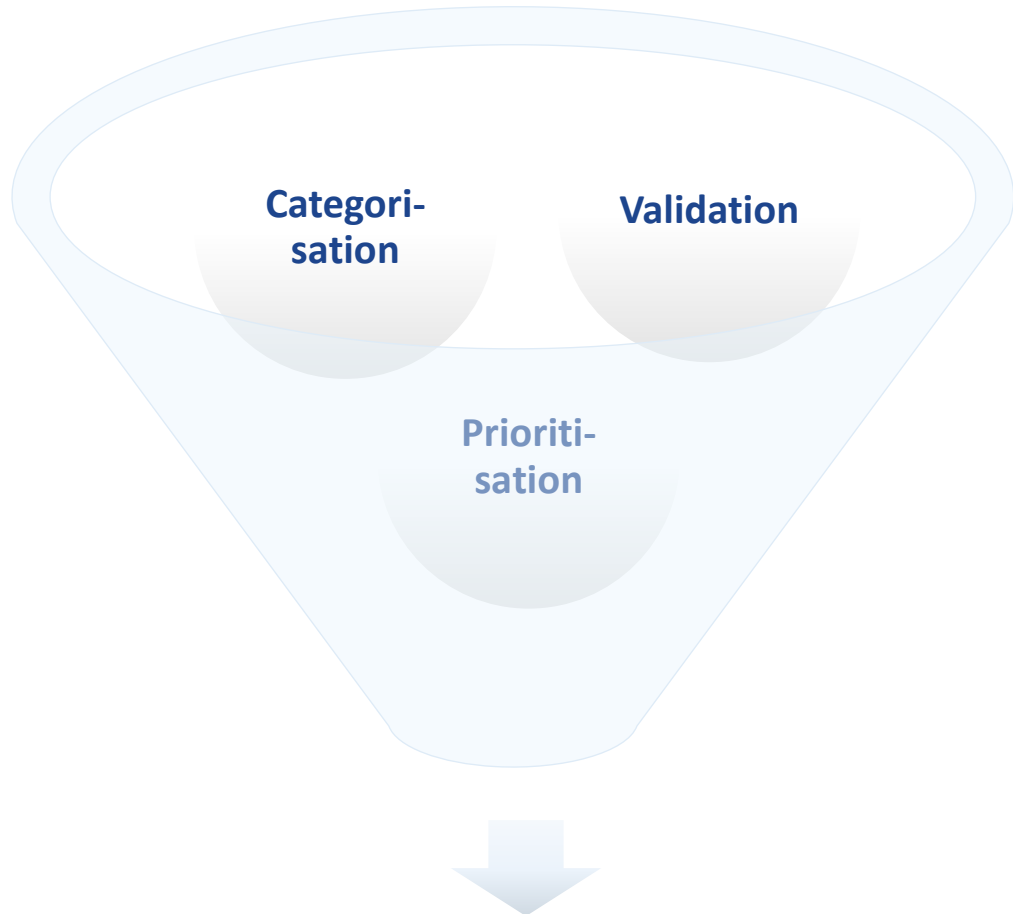
- GSA, PRISMA and RBP as well as some TSOs use different interfaces and data exchange solutions for capacity trading (and other processes)
- NUs active in different markets have to develop and maintain different interfaces, which generates avoidable costs
- Equinor and Engie would prefer a document-based data exchange solution for capacity trading (data format: Edig@s) while, according to the ENTSOG CNOT, an interactive data exchange solution should be used



# FUNC issue – common interface for booking platforms



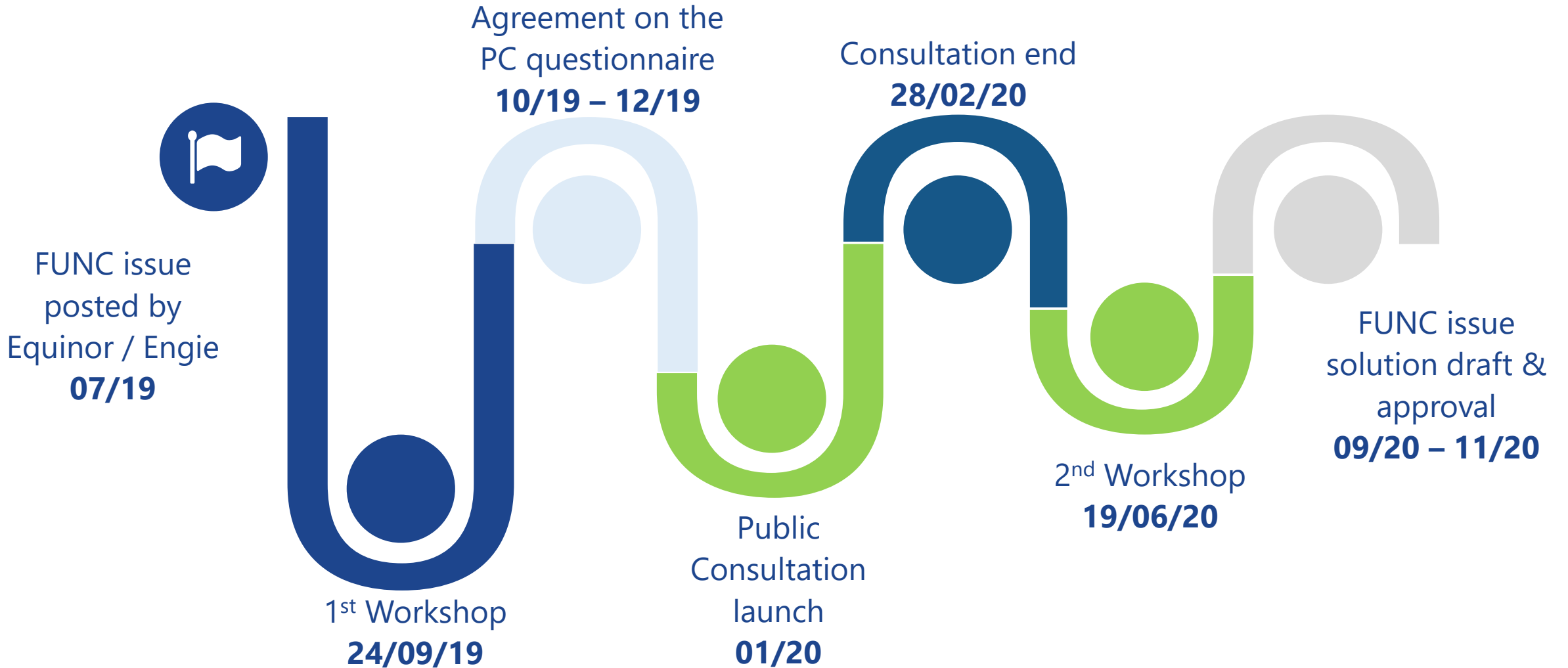
Assessment of the case



**Valid, European issue of medium priority**



# Steps taken

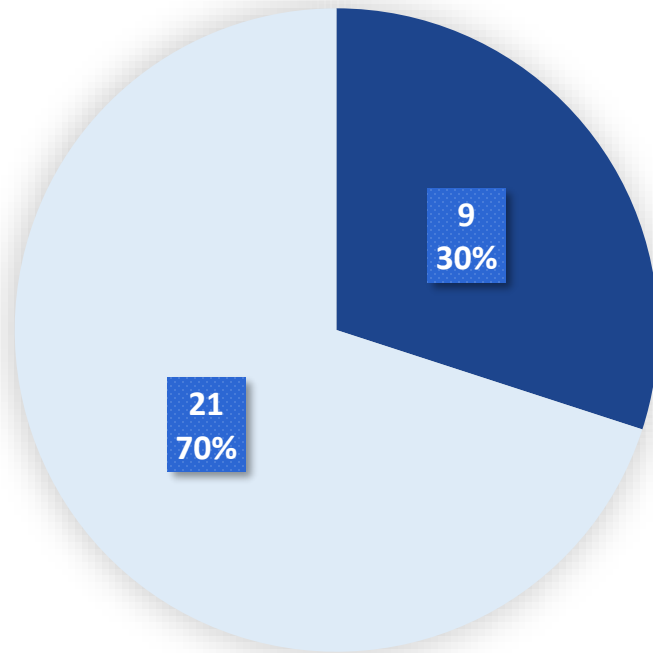


# Public Consultation Results

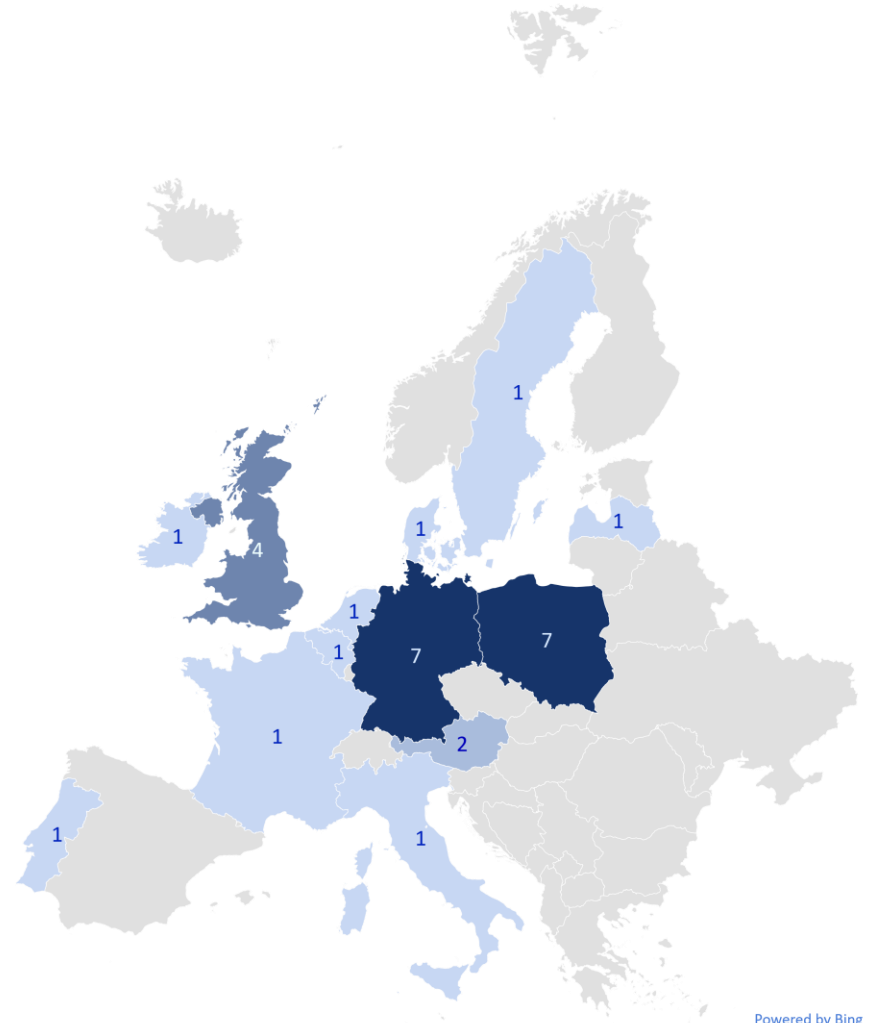


Marin Zwetkow  
INT & Data Exchange  
Subject Manager  
ENTSOG

# Participants



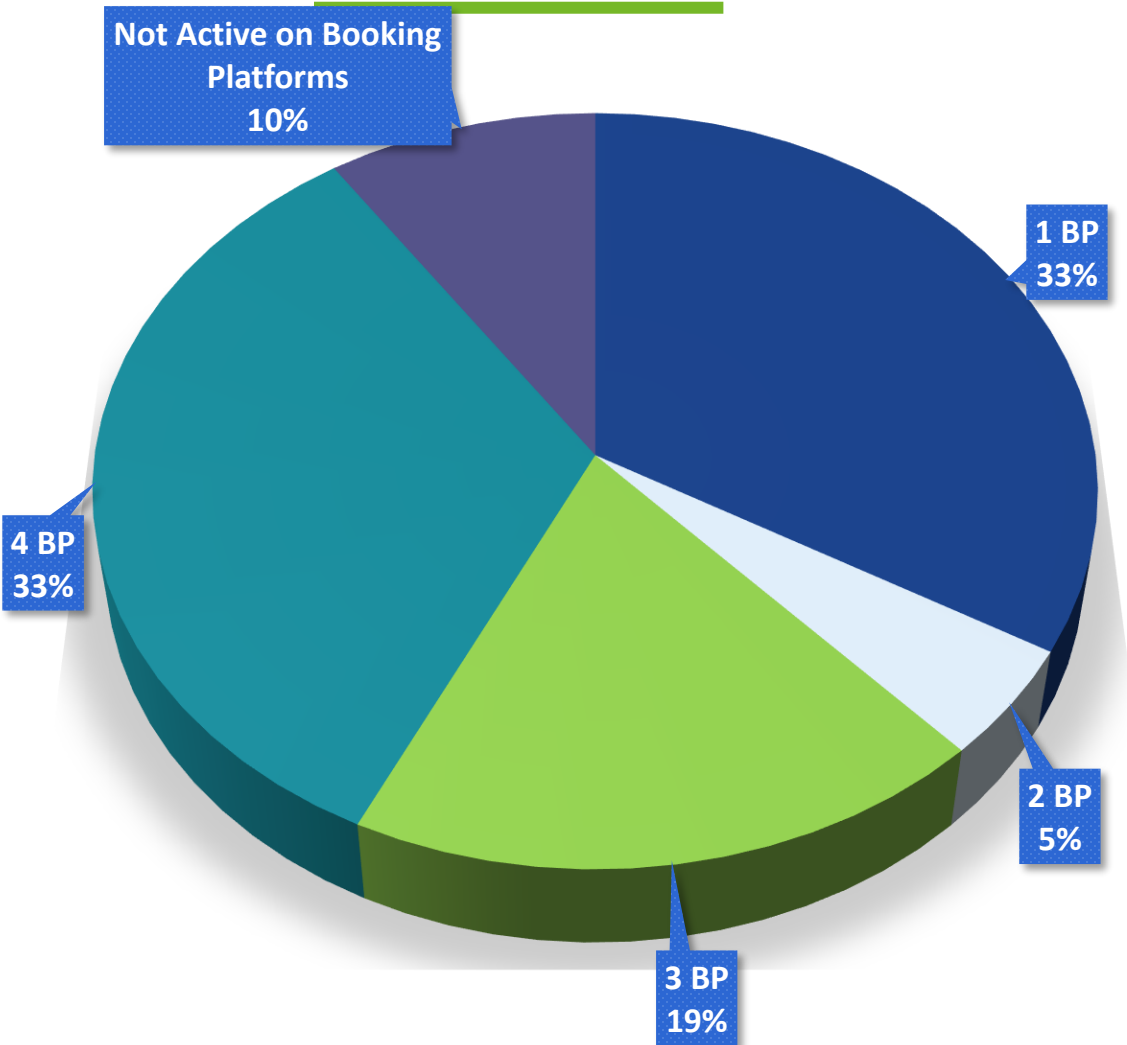
Countries



■ TSO / Capacity Booking Platform Operator ■ BRP/CRP/LNG/SSO/Other Roles

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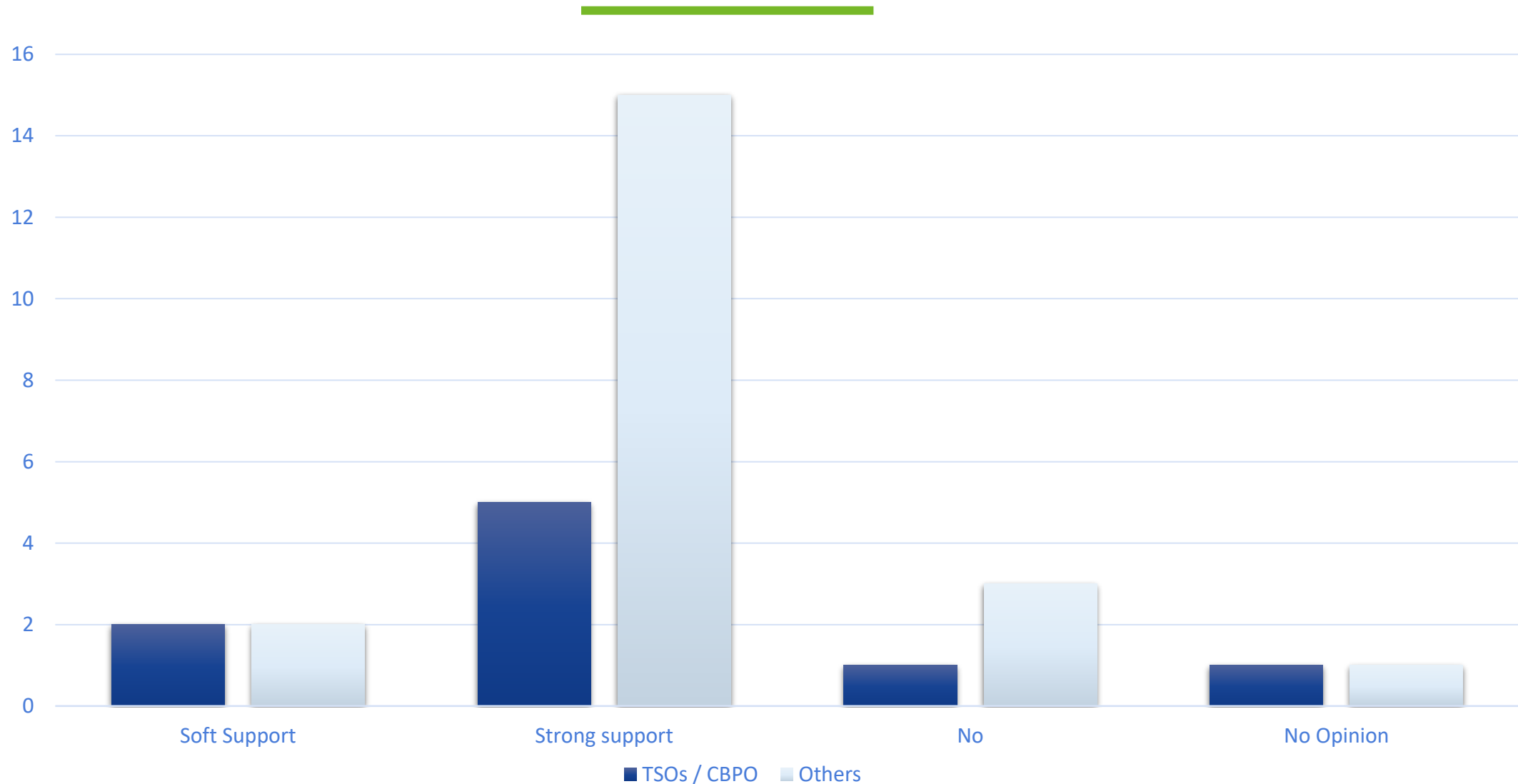
# How many Capacity Booking Platforms do you use?



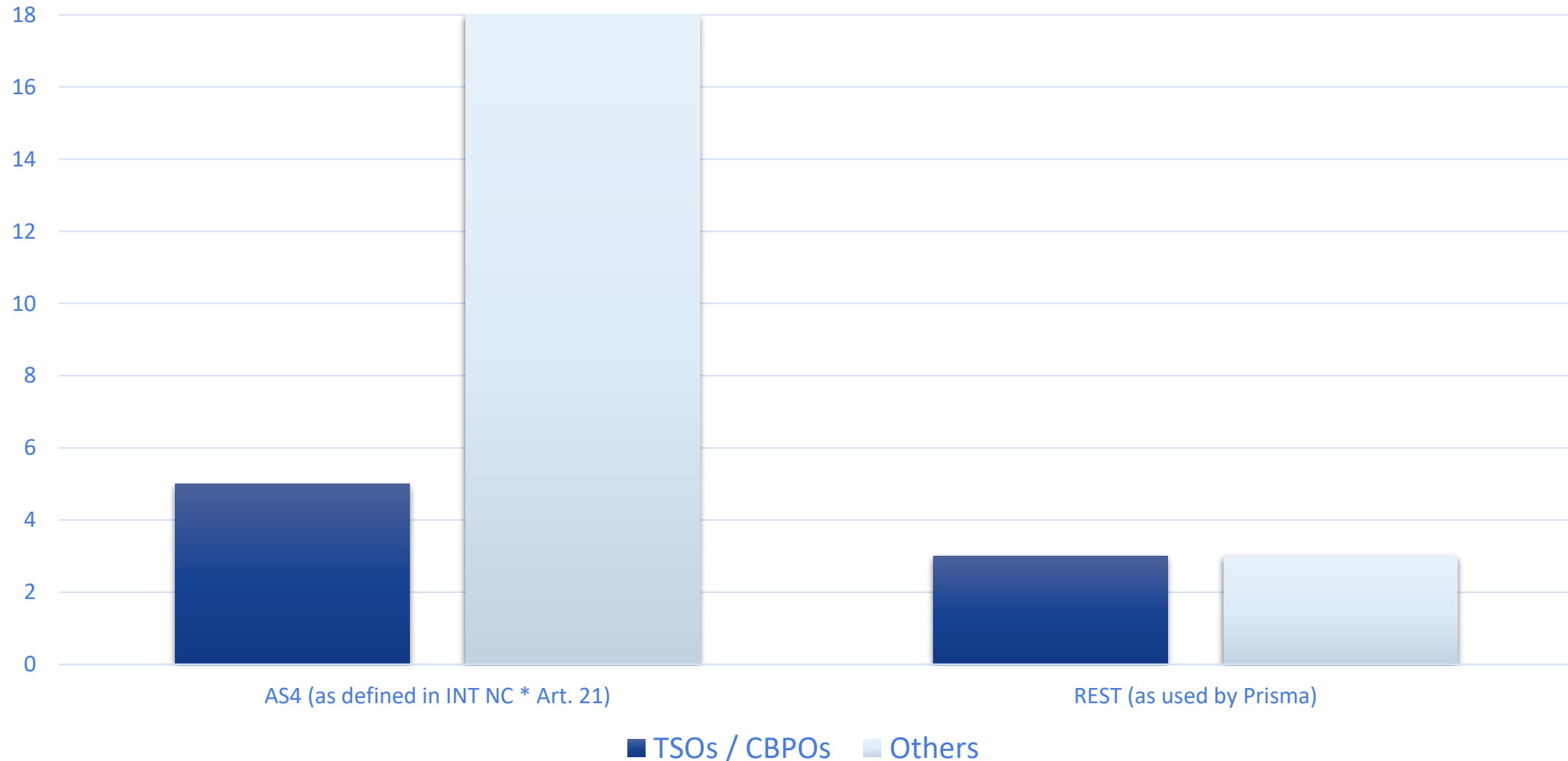
This evaluation does not consider TSOs & Platform Operators



# Support of Edig@s XML for Booking Platforms



# Preferred protocol for communication to capacity booking platforms



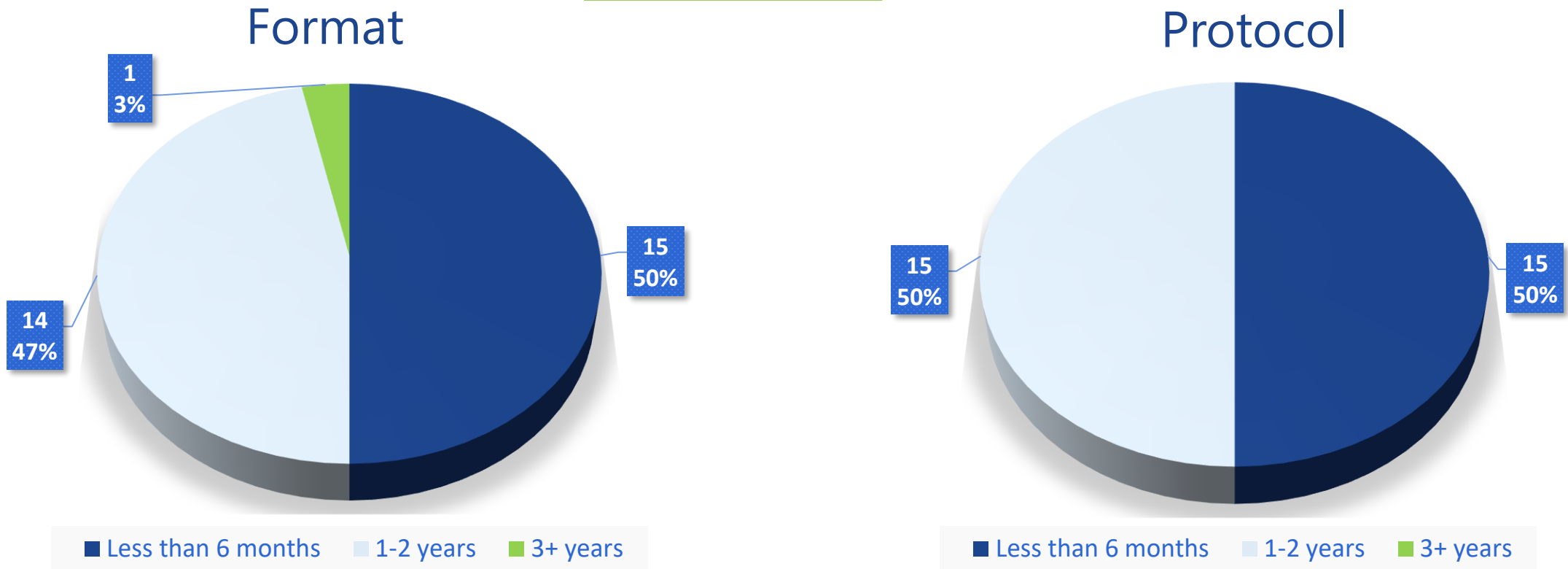
The majority of the participants prefers AS4 as a protocol for the communication to Booking Platforms

# Feedback on the questioned Protocols

Protocol	Pros	Cons
AS4	<ul style="list-style-type: none"><li>• Interoperability (24)</li><li>• Security (authentication) (22)</li><li>• Security (non-repudiation) (18)</li></ul>	<ul style="list-style-type: none"><li>• Speed of implementation (7)</li><li>• Speed of message processing (4)</li></ul>
REST	<ul style="list-style-type: none"><li>• Speed of message processing (10)</li><li>• Speed of implementation (9)</li></ul>	<ul style="list-style-type: none"><li>• Interoperability (12)</li><li>• Security (non-repudiation) (10)</li><li>• Security (authentication) (9)</li></ul>

- AS4 (following ENTSOG's definitions) was indicated as the protocol ensuring a high level of security
- REST (as implemented by Prisma) was indicated as the protocol providing faster initial implementation of the data exchange process

# Implementation time for a new format and protocol



- The implementation period for a new format and protocol was indicated as “less than 6 months” by 50% of the participants.
- The remaining participants could implement a new format and protocol within 2 years
- Remark: please note that this question addresses the implementation of a new format/protocol in general

## FUNC solution

- The approved FUNC solution includes 2 additional documents:
  - Annex I: Capacity Booking Platforms Operators to be included in the INT & DE NC
  - Proposed amendments:
    - Art 1(2), 20 (1) & (2) and 23(1) & (2)
  - To be approved by the EC
- Annex II: Proposed amendment of the Common Data Exchange Solution Table (CDEST) ([link](#))
- Need to be consulted



Public Consultation

# FUNC Solution draft (CDEST 1<sup>st</sup> draft)



## Replacement of “Interactive” to “Document-based” for all processes between CBPO and NU

Information Flow	From Party Role Value	To Party Role Value	Confidentiality Level	Common Data Exchange Solution	Date of Publication	Optional Data Exchange Solution
Network User Registration	Network User	Transmission System Operator	Private			Recommendation - Interactive
Network User Registration to Auction Office	Network User	Auction Office	Private			Recommendation - Interactive
Approved Network Users	Auction Office	Registered Network User	Private			Recommendation - Interactive
Surrender Capacity Rights	Registered Network User	Auction Office	Private	Interactive	1/11/2016	Document Based
Offered Capacity	Auction Office	Registered Network User	Public	Interactive	1/11/2016	Document Based
Capacity Bid	Registered Network User	Auction Office	Private	Interactive	1/11/2016	Document Based
Allocated Capacity	Auction Office	Registered Network User	Private	Interactive	1/11/2016	Document Based
Aggregated Auction Results	Auction Office	All	Public	Interactive	1/11/2016	Document Based
Surrendered Capacity Sold	Transmission System Operator	Registered Network User	Private	Document Based	1/11/2016	Interactive
Reverse Auction Bid	Registered Network User	Auction Office	Private	Interactive	1/11/2016	Document Based
Allocate Reverse Auction Results	Auction Office	Registered Network User	Private	Interactive	1/11/2016	Document Based
Secondary Market Sales	Registered Network User	Transmission System Operator	Private	Interactive	1/11/2016	Document Based
Secondary Market Sales	Transmission System Operator	Registered Network User	Private	Interactive	1/11/2016	Document Based

Information Flow	From Party Role Value	To Party Role Value	Confidentiality Level	Common Data Exchange Solution	Date of Publication	Optional Data Exchange Solution
Network User Registration	Network User	Transmission System Operator	Private			Recommendation - Interactive
Network User Registration to Capacity Platform Re	Network User	Capacity Platform Responsible	Private			Recommendation - Interactive
Approved Network Users	Capacity Platform Responsible	Registered Network User	Private			Recommendation - Interactive
Surrender Capacity Rights	<b>Registered Network User</b>	<b>Capacity Platform Responsible</b>	Private	Document Based	1/11/2016	Interactive
Offered Capacity	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Public	Document Based	1/11/2016	Interactive
Capacity Bid	<b>Registered Network User</b>	<b>Capacity Platform Responsible</b>	Private	Document Based	1/11/2016	Interactive
Allocated Capacity	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Private	Document Based	1/11/2016	Interactive
Aggregated Auction Results	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Public	Document Based	1/11/2016	Interactive
Aggregated Auction Results	Capacity Platform Responsible	<b>All but Registered Network User</b>	Public	Interactive	1/11/2016	Document Based
Surrendered Capacity Sold	Transmission System Operator	Registered Network User	Private	Document Based	1/11/2016	Interactive
Reverse Auction Bid	<b>Registered Network User</b>	<b>Capacity Platform Responsible</b>	Private	Document Based	1/11/2016	Interactive
Allocate Reverse Auction Results	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Private	Document Based	1/11/2016	Interactive
Secondary Market Sales	Registered Network User	Transmission System Operator	Private	Interactive	1/11/2016	Document Based
Secondary Market Sales	Transmission System Operator	Registered Network User	Private	Interactive	1/11/2016	Document Based

# Focusing on “heavily used” processes



- Only “heavily used” processes will be amended → document-based
- “Light” processes will remain with the “interactive” solution
- The processes marked “blue” were indicated by all CBPOs as “light” processes -> < 10 active parties and < 10 interactions per year

Information Flow	From Party Role Value	To Party Role Value	Confidentiality Level	Common Data Exchange Solution	Date of Publication	Optional Data Exchange Solution
Network User Registration	Network User	Transmission System Operator	Private			Recommendation - Interactive
Network User Registration to Capacity Platform Respons	Network User	Capacity Platform Responsible	Private			Recommendation - Interactive
Approved Network Users	Capacity Platform Responsible	Registered Network User	Private			Recommendation - Interactive
Surrender Capacity Rights	<b>Registered Network User</b>	<b>Capacity Platform Responsible</b>	Private	Interactive	1/11/2016	Document Based
Offered Capacity	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Public	Document Based	1/11/2016	Interactive
Capacity Bid	<b>Registered Network User</b>	<b>Capacity Platform Responsible</b>	Private	Document Based	1/11/2016	Interactive
Allocated Capacity	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Private	Document Based	1/11/2016	Interactive
Aggregated Auction Results	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Public	Document Based	1/11/2016	Interactive
Aggregated Auction Results	Capacity Platform Responsible	<b>All but Registered Network User</b>	Public	Interactive	1/11/2016	Document Based
Surrendered Capacity Sold	Transmission System Operator	Registered Network User	Private	Document Based	1/11/2016	Interactive
Reverse Auction Bid	<b>Registered Network User</b>	<b>Capacity Platform Responsible</b>	Private	Interactive	1/11/2016	Document Based
Allocate Reverse Auction Results	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Private	Interactive	1/11/2016	Document Based
Secondary Market Sales	Registered Network User	Transmission System Operator	Private	Interactive	1/11/2016	Document Based
Secondary Market Sales	Transmission System Operator	Registered Network User	Private	Interactive	1/11/2016	Document Based

# CDEST detailed view



Information Flow	From Party Role Value	To Party Role Value	Confidentiality Level	Common Data Exchange Solution
Network User Registration	Network User	Transmission System Operator	Private	
Network User Registration to Capacity Platform Respons	Network User	Capacity Platform Responsible	Private	
Approved Network Users	Capacity Platform Responsible	Registered Network User	Private	
Surrender Capacity Rights	<b>Registered Network User</b>	<b>Capacity Platform Responsible</b>	Private	Interactive
Offered Capacity	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Public	Document Based
Capacity Bid	<b>Registered Network User</b>	<b>Capacity Platform Responsible</b>	Private	Document Based
Allocated Capacity	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Private	Document Based
Aggregated Auction Results	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Public	Document Based
Aggregated Auction Results	Capacity Platform Responsible	<b>All but Registered Network User</b>	Public	Interactive
Surrendered Capacity Sold	Transmission System Operator	Registered Network User	Private	Document Based
Reverse Auction Bid	<b>Registered Network User</b>	<b>Capacity Platform Responsible</b>	Private	Interactive
Allocate Reverse Auction Results	<b>Capacity Platform Responsible</b>	<b>Registered Network User</b>	Private	Interactive
Secondary Market Sales	Registered Network User	Transmission System Operator	Private	Interactive
Secondary Market Sales	Transmission System Operator	Registered Network User	Private	Interactive

## Legend



Unchanged



"heavily used" processes (changed)



"light" processes (unchanged)




separation of the process



slido

FUNC issue – common interface for booking platforms

 Start presenting to display the poll results on this slide.

# The team working on this case



Zivile Jaselskyte  
ACER



Madeleine  
Hammerman  
ENTSOE



Alessandro Ischia  
ACER

# Q & A

# The moderator team on Slido



Rosa Puentes Fernandez  
Adviser GQ & H<sub>2</sub>  
ENTSOG




Jarle Rønnevik  
EASEE-gas

# Workshop Feedback

slido

## Your Feedback

 Start presenting to display the poll results on this slide.

# 11. Closing

# Evolution

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- Increased interest over the last 3 years
- 2018 – 52 Participants
- 2019 – 57 Participants
- 2020 – 127 Registrations
- Good cooperation between different organisations



European Union Agency for the Cooperation  
of Energy Regulators







# Thank you for your attention & being an active part at this event

Marin Zwetkow, Subject Manager Interoperability & Data Exchange

[marin.zwetkow@entsog.eu](mailto:marin.zwetkow@entsog.eu)

ENTSOG - European Network of Transmission System Operators for Gas

Avenue de Cortenbergh 100, 1000 Bruxelles

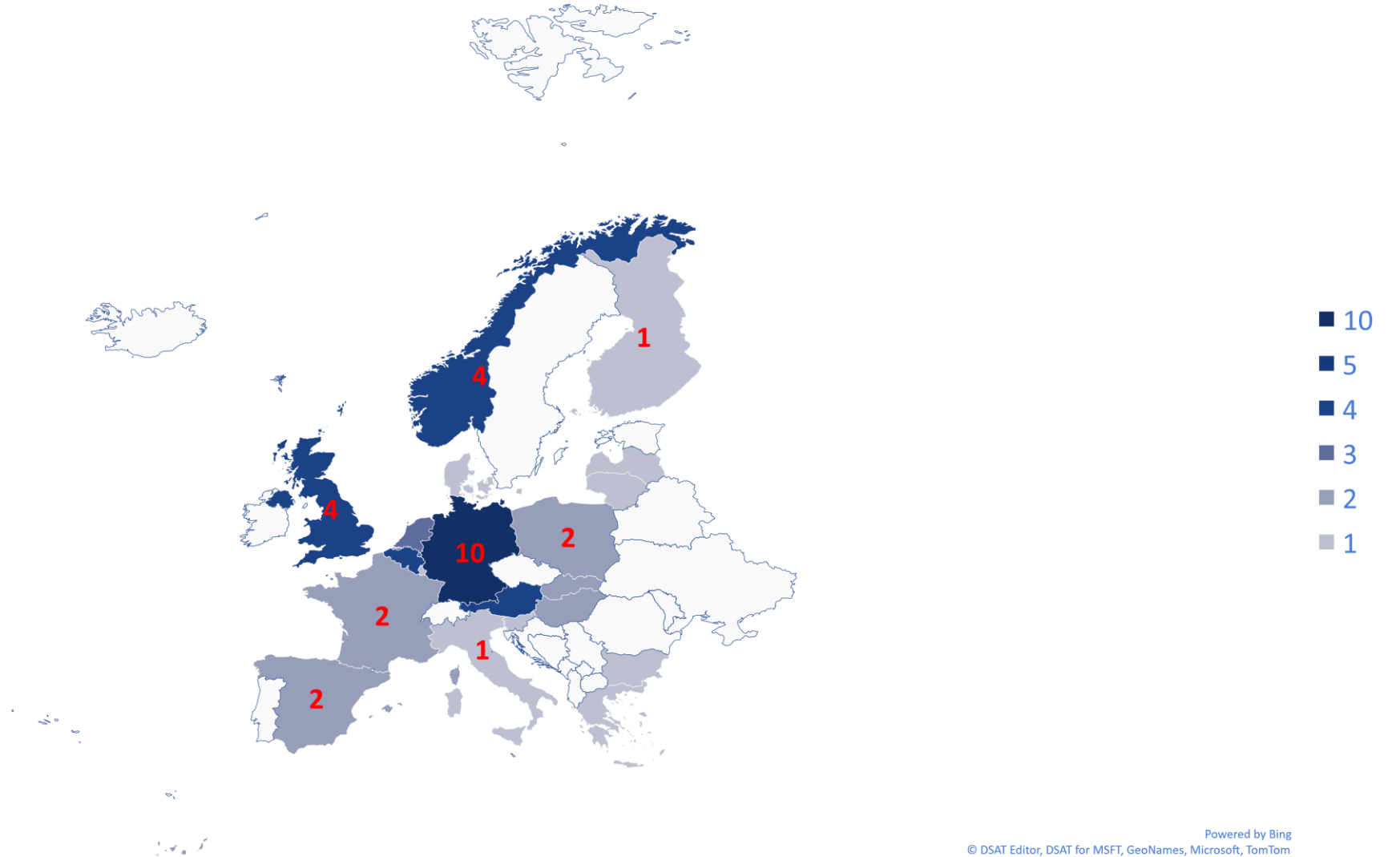
[www.entsog.eu](http://www.entsog.eu) | [info@entsog.eu](mailto:info@entsog.eu)



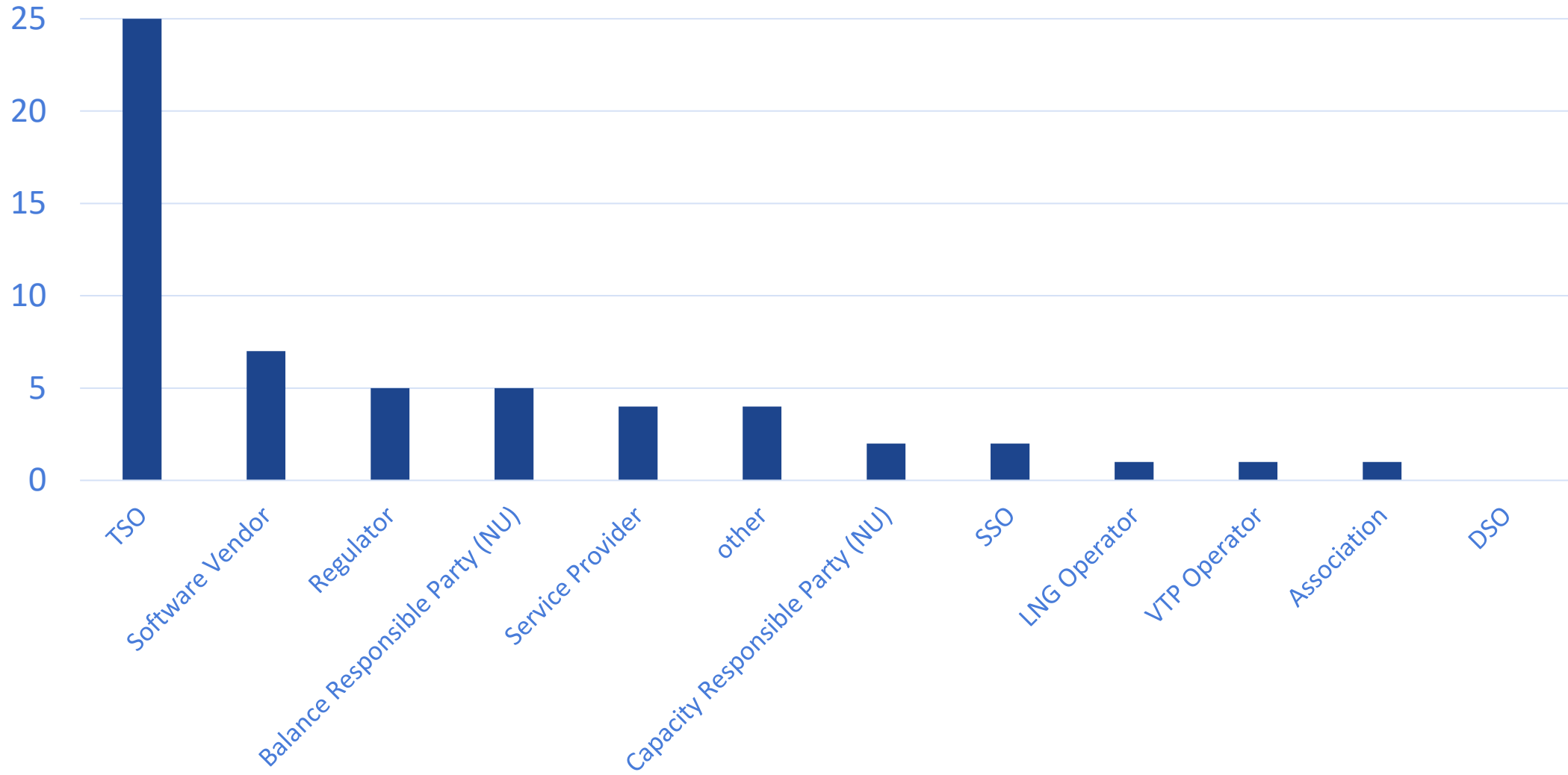
A horizontal banner with a blue-to-green gradient background. It contains various energy-related terms in white and light blue text, including 'Gas', 'Hydrogen', 'TSOG', 'aysys', 'em', 'reE', 'Hybrid E', 'n', 'er G', 'ible g', 'rgy/st', 'sec', 'Fut', 'rid', 'ncy Pla', 'ydes EU', 'tion', 'platform', and 'NDP sy'.

# Slido questions to the audience

# Which country is your company based in?



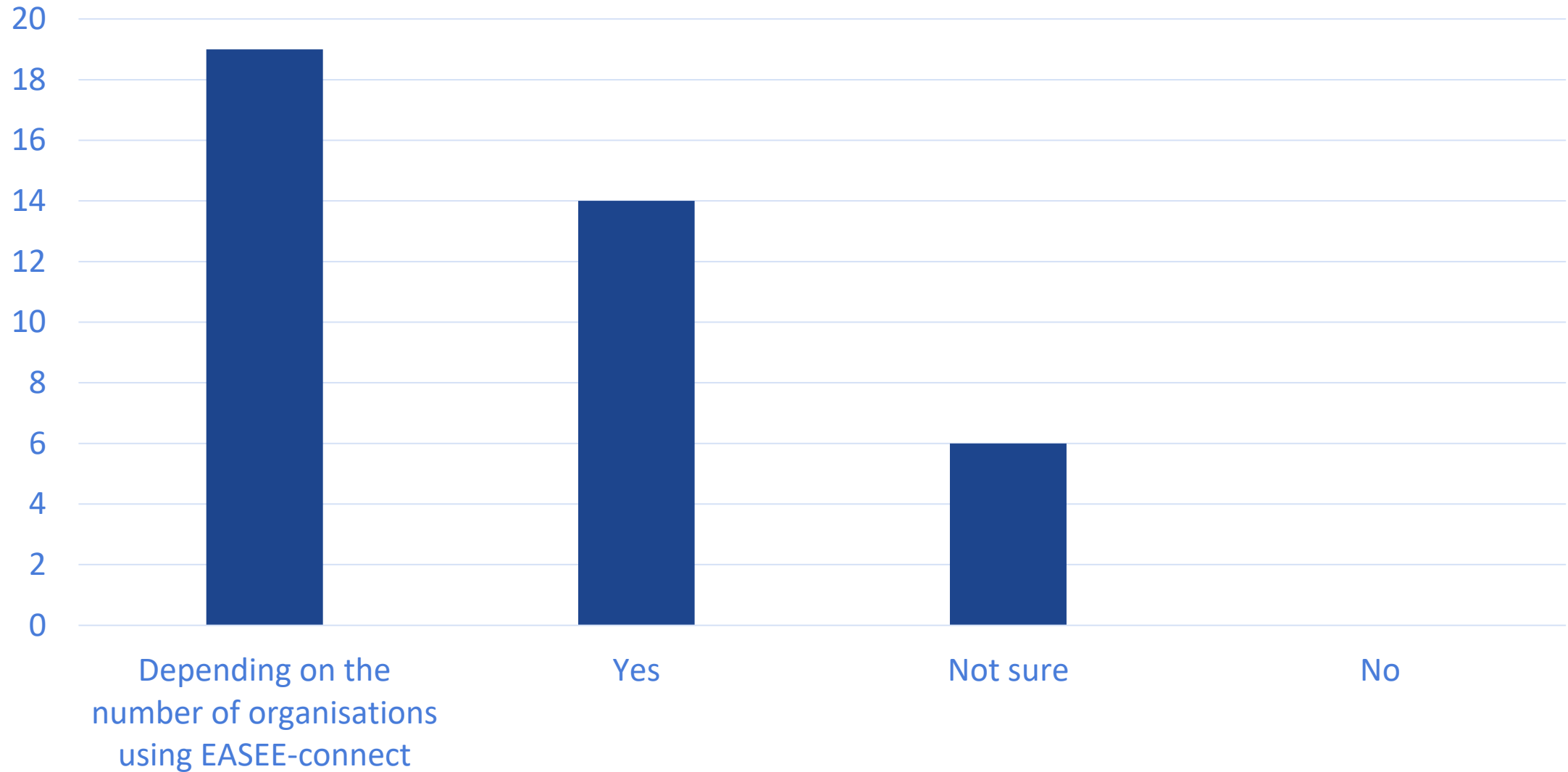
# Please indicate your role



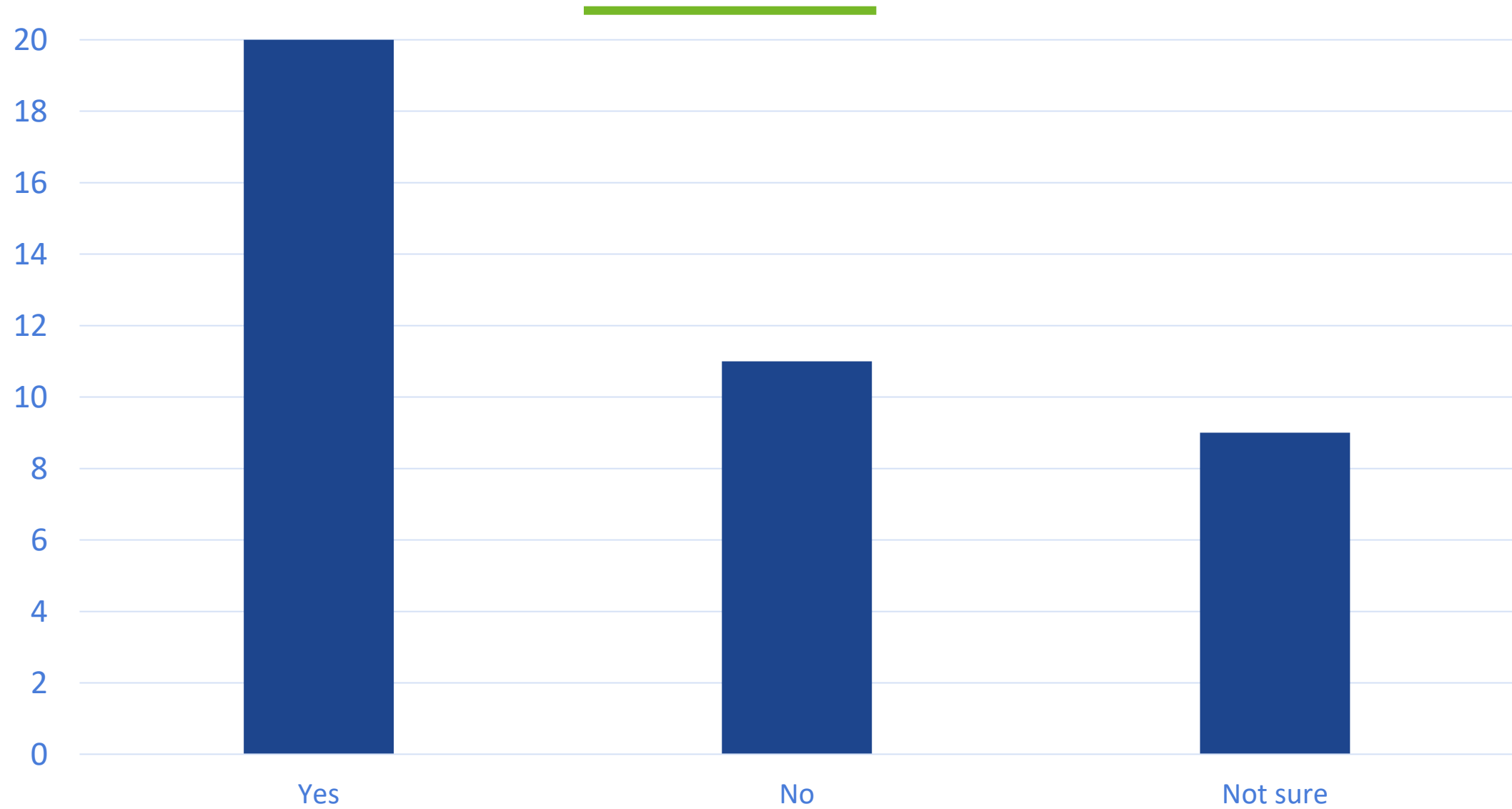
# Which area are you active in?



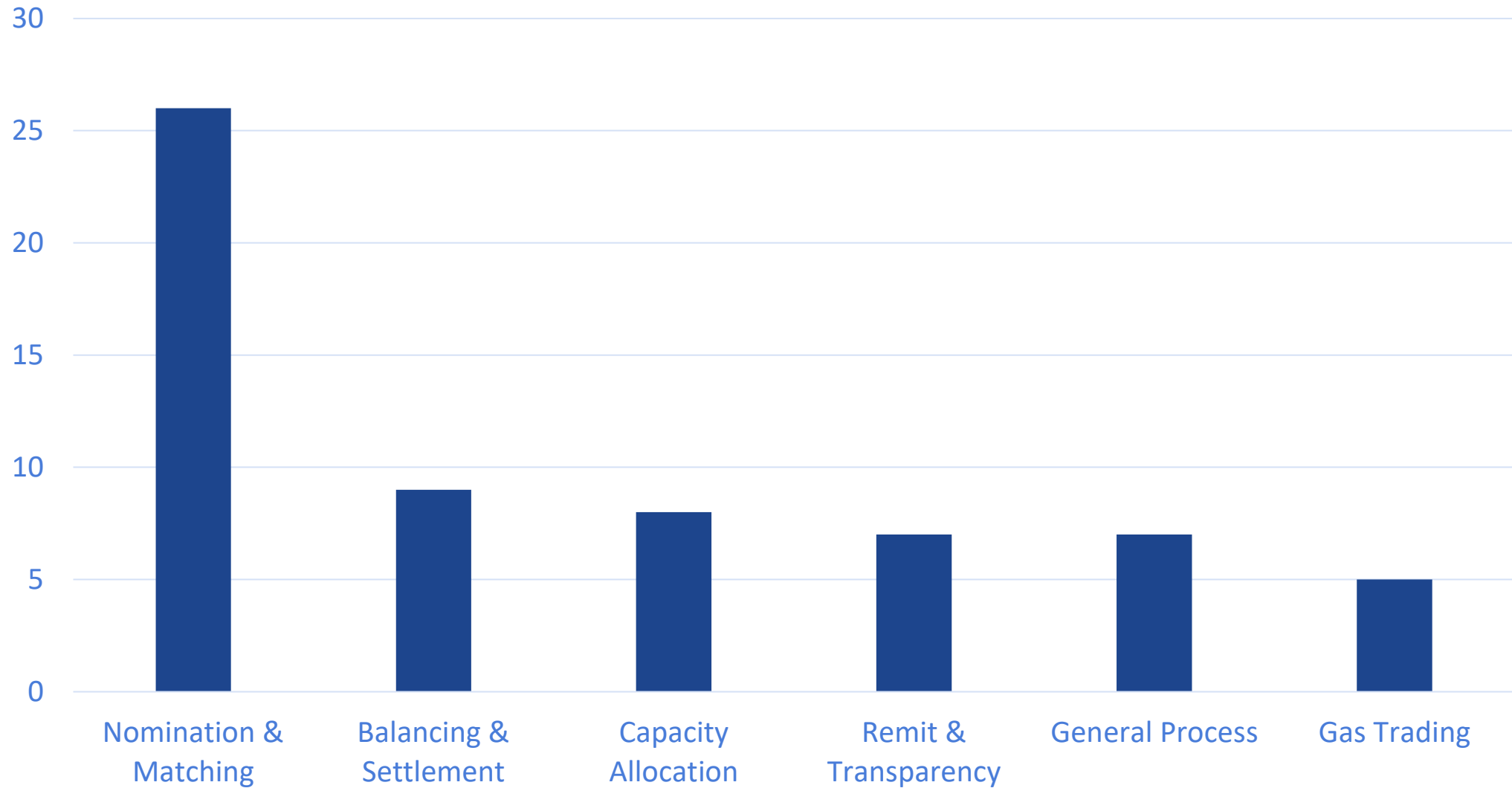
# Do you believe your organisation will benefit from EASEE-connect?



# Is your company using an AS4 certificate issued by EASEE-gas?

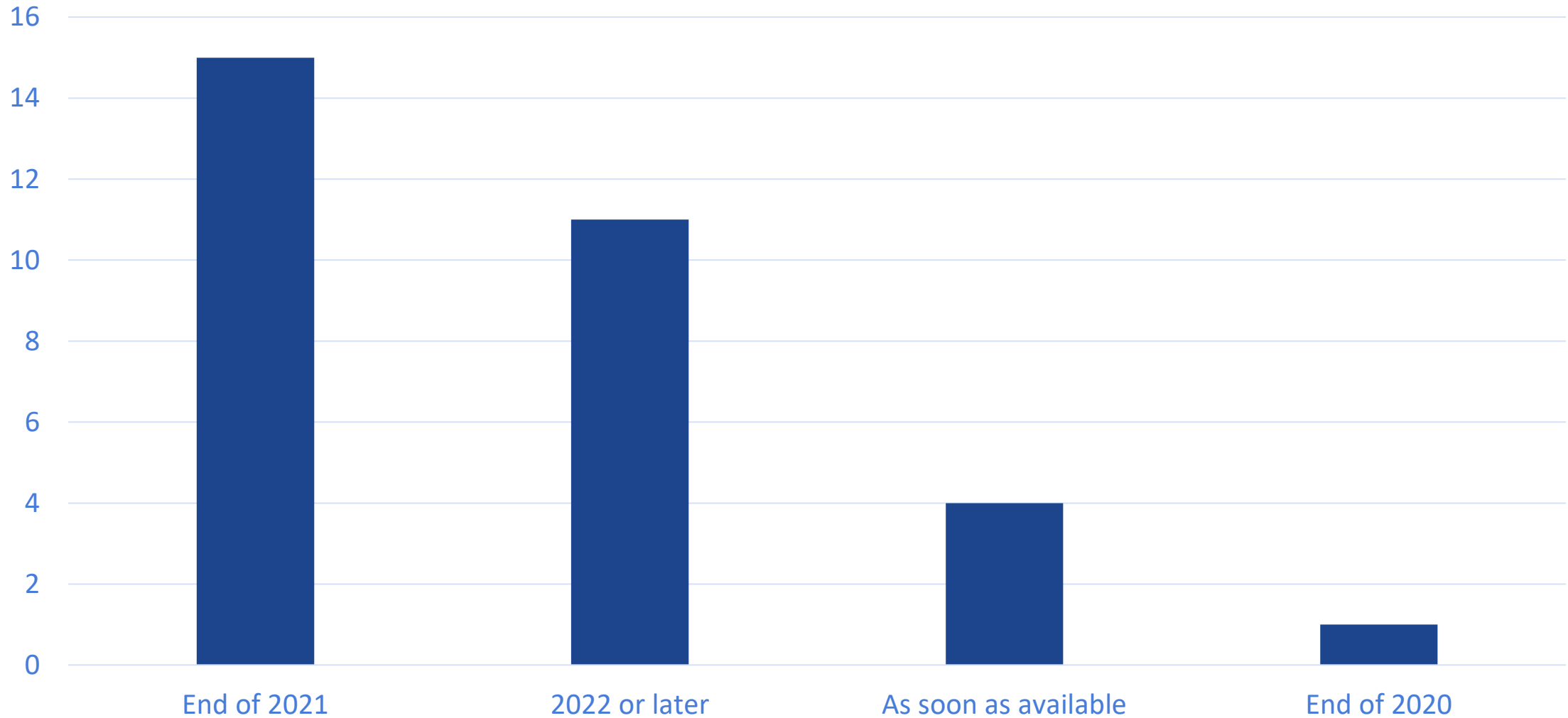


# Which processes are you considering implementing Edig@s 6 first?





# When do you plan to introduce Edig@s 6?



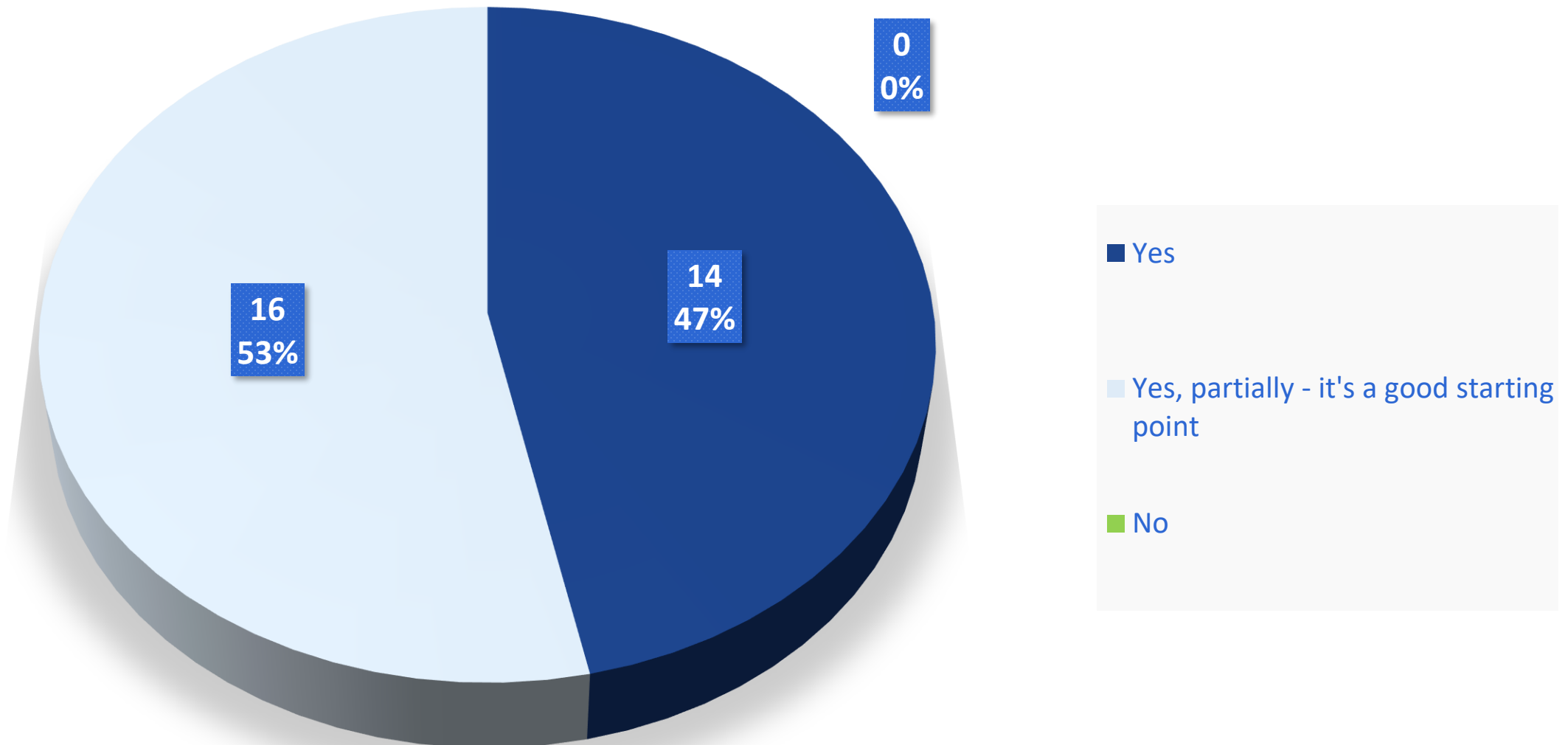
# What are the advantages of Edig@s 6?

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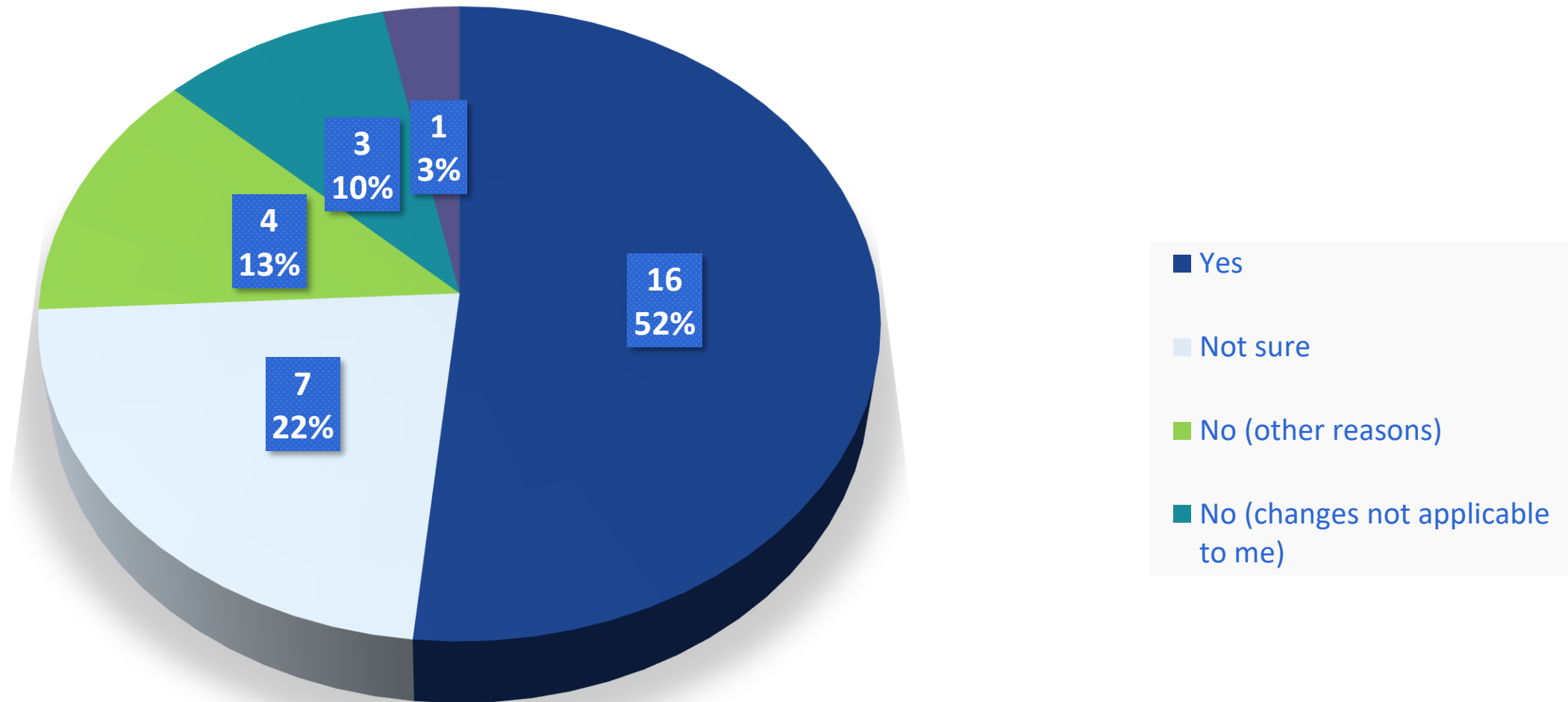


No advantages  
decision tables easy to implement  
easy to use unambiguous Standards  
Tracability **secure** none XML Uniform  
fantastic  
Capacity **Harmonization**  
Streamlining **Harmonisation**  
Standarts reliable internationally recognised  
harmonisation  
avoids technical trade barriers  
NC compliant

# Do you believe the proposed changes by ACER and ENTSOG will facilitate the harmonisation?



# Do you intend to participate in the Public Consultation on the amended Common Data Exchange Solution Table?



Do you have any suggestions for improvements on this FUNC process?

---



Common solution

Implementation Date?

Interactive should stay

More transparency

Interactive + Document Base

Get EC to act on outcome

**What would you change in terms of Data Exchange in the current  
version of the INT & DE NC?**



more possibility  
would be later

REST

Implementation and use of CNOT  
should be mandatory