eDelivery Interoperability Forum

28 November 2023

Welcome

Maya Madrid





eDelivery Interoperability Forum

is...

a platform for the eDelivery BB and for solution and service providers to explore together the technical evolution, market opportunities and market needs around eDelivery

and aims to promote knowledge sharing, provide feedback on challenges, needs and preferences, and facilitate the discussion for the way forward

with the objective to...

keep eDelivery solution and services providers up to date with the evolution of the eDelivery building block (e.g., technical specifications)

bring projects and solution/service providers together to facilitate match-making between business needs and service offering

collect input from solution/service providers to guide building block's strategy

convenes...

online for one to two hours

2-4 times / year depending on participation, evolution and needs



Membership in the eDelivery Interoperability Forum



The eDelivery Interoperability Forum is organised in a membership approach. You only need to sign up once.



The registration to join as well as the privacy statement for the membership are available on the sign-up page: https://ec.europa.eu/eusurvey/runner/edeliveryInterope rabilityForum





Reminder



The meeting is not being recorded



Place your Qs in the chat section

Chat	
(-	
To: Everyone	
Enter chat mes	sage here



Mute your microfone when you do not speak



Today's agenda

Welcome (by Maya Madrid)

Introduction and presentation of the agenda

Recent updates (by Bogdan Dumitriu)

Presentation of conformant solutions Updates on changes to eDelivery profiles

5 eDelivery's contributions to Java web service security libraries (by Joze Rhitarsic)

A new digital Ecosystem using eDelivery: electronic Freight Transport Information (eFTI) Exchange Environment. (by Lia Potec) Overall presentation

The role for service providers





Digital Europe Programme (2021-2027)



Digital Europe Programme 2023-2024 ☑ Digital Europe Programme 2025-2027 □ 2028 onwards

Next eDelivery Interoperability Forum meeting

18 April 2024



eDelivery Interoperability Forum. 18 April 2024 eDelivery User Community -(europa.eu)

eDelivery Recent updates

Bogdan Dumitriu

Presentation of Conformant Solutions



Increased visibility of vendors



- The **eDelivery Support Office** adapted the onboarding process of the connectivity testing service to provide configuration information that is generic instead of specific to the eDelivery sample software.
- The **EU Send Support Office** confirmed they changed the onboarding documentation to be more generic about the eDelivery solution being onboarded and to provide information about how to contact other vendors.
- The eDelivery building block's communication strategy is being adapted to better support the entire ecosystem:
 - Active positioning of non-sample software options in presentations.
 - Defining model for increasing promotion of conformant products and services (**please provide suggestions in Q&A!**).
 - Improvement to the website displaying conformant solutions which will include links to products and services. This will **make products and services more accessible to potential users.**



Conformance Testing Service

New conformance testing platform

The new conformance testing platform is available:

https://edelconfag.westeurope.cloudapp .azure.com:8091/

New display of conformant solutions

Conformant eDelivery AS4, SMP and SML products will be displayed in a new way to make sure recently tested products (and product versions) are clearer to the users.



Recap



New conformant solutions listing



Planned public release: April 2024

- Services and products will be presented on separate pages
- Until then, share your feedback with us!
- Our support team will reach out to get resources (like links, presentations, emails) that we can publish on the new (improved) pages

How vendors / service providers benefit from the new listing:

- Stand out by having your service/product tested recently
- Use eDelivery badges for other purposes (they are public URLs)
- Feel free to contribute with your presentation/support/contact info



New visualisation



Concept loosely inspired by Euro NCAP



How potential users benefit:

- Clear separation between services and products (version indicated for clarity)
- Traffic-light colouring to reflect the status of the conformance service version
- Badges indicate the versions of the conformance service & profile
- Improved view of which solutions have been tested against most recent (stringent) rules
- Further related resources about product/service available in the listing
- Business users can quickly identify which solution is the most suitable for their needs



New conformant solutions listing



Badge contains:

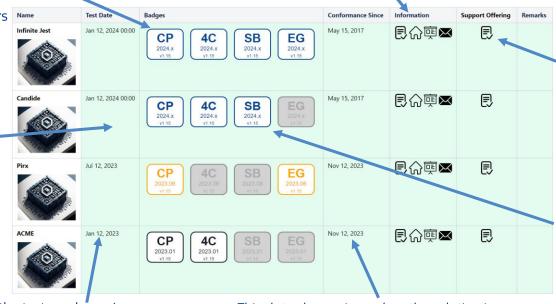
- profile/profile enhancement name,
- eDelivery profile version,
- conformance service version

(reflected by different colours for each version of the conformance service)

Row background colour indicates how "old" the conformance service version used to test your solution is compared to the most recent version.

Green is for the most recent!

Test reports from the ITB platform and resources you share with us for your solution, like the name of the company, the link to the website of the solution, presentation of the solution (PDF format) and the email to contact.



Provide the link to your support offering. You are free to define/maintain anything relevant to the support service on your website and organise contact approach.

As is already the case, the badges for conformance with a given profile/profile enhancement remain clearly distinguished from those that are greyed out ("not passed").

This date indicates when the tests under a given conformance service version were performed.

This date shows since when the solution is conformant.



New presentation (I)



Name	Туре	C	Conformant Service Version	
		Next (2024.x)	Current (2023.06)	Previous (2023.01)
eDelivery AS4 Common Profile	MANDATORY	CP 2024.x v1.15	CP 2023.06 v1.15	2023.01 v1.15
Four Corner Topology (Profile enhancement)	OPTIONAL	4C 2024.x v1.15	4C 2023.06 v1.15	4C 2023.01 v1.15
Standard Business Document Header (SBDH) (Profile enhancement)	OPTIONAL	SB 2024.x v1.15	SB 2023.06 v1.15	SB 2023.01 v1.15
Dynamic Receiver (Profile enhancement)	OPTIONAL	TESTS PLANNED	NO TESTS	NO TESTS
Dynamic Sender (Profile enhancement)	OPTIONAL	TESTS PLANNED	NO TESTS	NO TESTS
Pull Feature (Profile enhancement)	OPTIONAL	PF 2024.x v1.15	NO TESTS	NO TESTS
Large Message Splitting and Joining (Profile enhancement)	OPTIONAL	NO TESTS	NO TESTS	NO TESTS
ENTSOG (Separate profile compatible with eDelivery AS4)	OPTIONAL	EG 2024.x v1.15	EG 2023.06 v1.15	EG 2023.01 v1.15



- Legend with resources to learn more about profiles & profile enhancements
- Publicly available page with context to understand the conformance testing process



New presentation (II)





How will the listing page evolve?

- Over three-year periods, conformant solutions' test date will be clearly indicated with the background colour (green – yellow – red)
- With the introduction of tests under eDelivery profile v2.0, we will publish separate pages to distinguish between profile versions



Discussion and Q&A





Profile updates

Progress update regarding the changes to eDelivery AS4 and SMP profiles in response to the public consultations



Feedback to Public Consultation



The public consultation for eDelivery AS4 and SMP 2.0 specification changes was open from 19 June to 10 November 2023.

Interoperability Forum on 27 June 2023

- Publication of recommendations of cryptography experts.
- Cryptography expertise requested concerning key transport vs key agreement
- Note added to the consultation for the eDelivery SMP 2.0 profile concerning using separate values for the U-NAPTR service field.

🔶 4 written responses

- One meeting request (meeting to be scheduled in December)
- One confirmation without comments
- Two remaining responses are currently being analysed



Further internal evolution (1)



The public consultation for eDelivery AS4 and SMP 2.0 specification changes was open from 19 June to 10 November 2023.



ConcatKDF vs HKDF

- <u>RFC 9231</u> was adopted in June 2022, obsoleting <u>RFC 6931</u>, lists URIs intended for use with XML digital signatures, encryption, canonicalization, and key management
- <u>RFC 9231</u> was incomplete errors regarding HKDF Key Derivation, rendering it unusable in a standard-compliant way
- A contribution for correction was made to the editor for inclusion in <u>RFC</u> <u>9231bis</u>
- Initial eDelivery AS4 2.0 draft specification was based on ConcatKDF. The intention is to change it to use HKDF instead (preferred cryptographic option, even though ConcatKDF is still considered adequate)



Further internal evolution (2)



The public consultation for eDelivery AS4 and SMP 2.0 specification changes was open from 19 June to 10 November 2023.

Use of additional **AES symmetric key** in step 8 of Section 3.2.6.3. "Security Header Processing Example" under analysis:

- 6. [...]
- 7. The shared secret is used as an input into the key derivation method (ConcatKDF) to derive an **AES key wrap key**. [...]
- 8. An **AES symmetric key** is generated at random and used to encrypt the MIME payload parts following [WSSSWA].
- 9. The AES key generated at step 8 is wrapped.
- 10. [...]



Further internal evolution (3)



The public consultation for eDelivery AS4 and SMP 2.0 specification changes was open from 19 June to 10 November 2023.

Specifications needed about how to encode the public ephemeral X25519 key (since it only has one point, not two as EC public key):



Preliminary reactions



The public consultation for eDelivery AS4 and SMP 2.0 specification changes was open from 19 June to 10 November 2023.



Key transport vs key agreement:

- Cryptography expert advice will be included in "Disposition of public review comments" and presented in upcoming meeting
- Strategic objective remains to introduce new security baseline for the next decade (absent fast advances in post-quantum cryptography)



Removal of SBDH profile enhancement:

• The eDelivery team will submit the removal of the SBDH profile enhancement from the eDelivery AS4 profile to public consultation (due to limited use)



Consultation follow-up



The public consultation for eDelivery AS4 and SMP 2.0 specification changes was open from 19 June to 10 November 2023.

- The eDelivery team will prepare and publish "Disposition of public review comments" and second iteration of draft specifications, *followed by*
- Q1 2024 (tentative) meeting of the Interoperability Forum to discuss the disposition document, *followed by*
- Launch of the public consultation for second iteration of draft specifications and organisation of interoperability event





AS4 & SMP 2.0 Profiles Roadmap 2023 2024 2025 Second public **Discussion in** consultation & Interop. Forum **Adoption & Interoperability Presentation in Product** Publication Event Interop. Forum support **Roll-out** in projects 28 November 2024 2025 onwards 2023

AS4 2.0 Profile consultation https://ec.europa.eu/digital-building-blocks/wikis/x/dVTZJw SMP 2.0 Profile consultation https://ec.europa.eu/digital-building-blocks/wikis/x/zSs0K



eDelivery BB's contributions to Java WS security libraries

Joze Rihtarsic

eDelivery contribution to third-party open-source projects



Reasons

- Fulfilling the EC's open-source software strategy 2020-2023:
 - "We strive to be an active member of the diverse open-source ecosystem."
 - "We share our code and enable incidental contributions to related open-source project."
- Effort we made benefits to a wider circle of users through the existing Open-Source Community
 - Contributions are limited to the knowledge and expertise of the eDelivery team (Java ecosystem).
 - Direct impact: Java-based third-party developers, software vendors can re-use libraries in their own solutions.
 - Indirect impact: can be used as example and testing platform for development of the same features using other programming languages and libraries.
- Improves Project Quality
 - Changes are reviewed by external experts.
 - Less or no maintenance compared to custom fixes and workarounds.
- Collaborate with external developers (Learning and experiences)





Santuario #90: Support for EdDSA XML signatures: Ed25519 and Ed448

eDelivery contribution to open-source projects



- Apache/xmlsec (Santuario)
 - Contribution created on: 14/11/2022
 - Released on: **30/03/2023**, Versions: 2.3.3 and 3.0.2
- Currently used by various eDelivery sample implementations
 - Reduced development costs because:
 - the feature was only developed once and reused many times,
 - Less impact to product because reuses the existing configuration approach of an existing open-source library.



Santuario #90: Support for EdDSA XML signatures: Ed25519 and Ed448

eDelivery usage example

Keystore administration	Selected certificate data		
Keystore is contains keys for singing responses and Client keys for SML integrations .	Public key type Ed25519	Alias test-ed25519	
Filter certificate/keys by alias	SMP certificate ID CN=Test-Ed25519,O=DIGIT,C=EU:C	000000000002710	- <ns5:servicegroup> <smpversionid>2.0</smpversionid></ns5:servicegroup>
Import keystore	Subject Name C=EU,O=DIGIT,OU=EDELIVERY,CN	=Test-Ed25519	<participantid schemeid="test-scheme-id">example-id</participantid> - <signature> -<signedinfo></signedinfo></signature>
Alias	Valid from date 14/11/2022, 14:14:05	Valid to date 12/11/2032, 14	< CanonicalizationMethod Algorithm="http://www.w3.org/TB/2001/REC-xm]-c14n-20010315"/>
testcertificatea_001	lssuer		- <reference uri=""> -<transforms></transforms></reference>
smp-conformance-test	C=EU,O=DIGIT,OU=EDELIVERY,CN	=Test-Ed25519	<pre>-< framsforms/ <transform algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"></transform></pre>
test-ed25519	Serial Number 2710		 <digestmethod algorithm="http://www.w3.org/2001/04/xmlenc#sha256"></digestmethod> <digestvalue>MnEPOflQ+p9/TVNBDrxx0ZNTpHT5BHkh7RzADyNlmoc=</digestvalue>
			<x509subjectname>C=EU,O=DIGIT,OU=EDELIVERY,CN=Test-Ed25519</x509subjectname>
			<pre>-<x309certificate> MIIBPTCB8KADAgECAgInEDAFBgMrZXAwSDEVMBMGA1UEAwwMVGVzdC1FZDI1NTE5MRIwEAYDVQQL DAIFRE Fw02MjExMTIxMzE0MDVaMEgxFTATBgNVBAMMDFRIc3QtRWQyNTUxOTESMBAGA1UECwwjRURFTEIW RVJZMC JIuDtax+HjU8GbwaLfFrqFSjyzAFBgMrZXADQQBudKycpXEpGpyMn+EDDHDsBNx9X9buTW9ueI/k XI0l/jb7mM83Gl </x309certificate></pre>
			30

Santuario #90: Support for EdDSA XML signatures: Ed25519 and Ed448



Code example: apache xmlsec/santuarion library

KeyStore keyStore = KeyStore.getInstance(EDDSA_KS_TYPE);
org.w3c.dom.Document docToSign = TestUtils.newDocument();
PrivateKey privateKey =
 (PrivateKey) keyStore.getKey("Ed25519-Alias", "******".toCharArray());
SignatureAlgorithm signatureAlgorithm = new SignatureAlgorithm(doc, XMLSignature.ALGO_ID_SIGNATURE_EDDSA_ED25519);

XMLSignature sig = new XMLSignature(docToSign, null, signatureAlgorithm.getElement(), canonElem);

sig.sign(privateKey);

Find more examples in repository:

https://github.com/apache/santuario-xml-security-java

Tests:

...

test/java/org/apache/xml/security/test/javax/xml/crypto/dsig/SignatureValidatorEdDSATest.java test/java/org/apache/xml/security/test/dom/signature/EDDSASignatureTest.java



Santuario #219: Update protectAgainstWrappingAttackNode Wrapping method for proxy elements

eDelivery contribution to open-source projects

• Exception detected by eDelivery development team using Tomcat with JDK 11, xmlsec 2.3.0 with the SOAP messaging library com.sun.xml.messaging.saaj:saaj-impl:1.5.3:

javax.xml.crypto.URIReferenceException: Multiple Elements with the same ID [...] were detected at org.apache.jcp.xml.dsig.internal.dom.DOMURIDereferencer.dereference(DOMURIDereferencer.java:85)

- Quick custom workaround was made for internal development on 31/10/2022
- Contribution to Apache / Santuario (XMLSEC)
 - Contribution created on **06/10/2023**,
 - Added to release on **19/10/2023** Versions: 2.3.4 and 3.0.3



Support for the Diffie-Hellman-ES encryption with EC and XEC keys



eDelivery contributions to open-source projects to support eDelivery AS4 2.0 profile

- Support for the Diffie-Hellman-ES encryption with EC and XEC keys
 - Cryptographic algorithms used by upcoming eDelivery AS4 2.0 profile
- Contributions:
 - Apache/xmlsec(Santuario) #223 v2.3.x (JDK8, Jakarta EE 8): Created 17/10/2023 (Ongoing)
 - Apache/xmlsec(Santuario) #234 v3.0.x, v4.0.x (JDK8, JDK11, Jakarta EE >8): Created 23/10/2023 (Ongoing)

	0-511: Implementation of the Diffie- ange for EC and XEC keys #234	-Hellman-
Open jrihtarsic want	s to merge 11 commits into apache:main from jrihtarsic:main-branch-ecd	h-es-feature р
Conversation 66	-> Commits 11 ₱ Checks 3 ₱ Files changed 57	+3,666 -205
٢	coheigea approved these changes yesterday	View reviewed changes
	coheigea left a comment	Contributor
	Awesome contribution @irihtarsic	



Other Open contributions

• ...



eDelivery contributions to open-source projects to support eDelivery AS4 2.0 profile

- **Apache/WS-WSS4J**: Support for EdDSA XML signatures: Ed25519 and Ed448: Created 14/11/2023 (PR: #210)
- **Apache/WS-WSS4J**: Support for ECDH-ES using updated xmlsec library: Created: 19/11/2023 (PR: #216)
- **Apache/CXF**: Unit tests to validate ECDH for WSS4J interceptors using updated apache xmlsec and ws-wss4j library. Created: 20/11/2023 (#1482)
- **Apache/xmlsec (santuario):** implementation of the key derivation function based on the HMAC message authentication code (HKDF) (Ongoing).

the final goal is to integrate the latest security cryptographic algorithms proposed in eDelivery AS4 2.0 draft specification into the apache cxf web service framework in a way that they can be used as a regular configuration option.

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Discussion and Q&A



eDelivery Digital Ecosystems

"eDelivery Digital Ecosystems include a wider range of projects and programmes, public and/or private organisations that use eDelivery for a joint purpose."







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A new digital Ecosystem using eDelivery electronic Freight Transport Information (eFTI) Exchange Environment.

Lia Potec



Electronic Freight Transport Information (eFTI) Regulation (EU 2020/1056)

eDelivery Interoperability Forum,

28 November 2023

Lia Potec, DG MOVE

Objectives

Promote use of digital technologies to fulfill regulatory requirements within the EU

Reduce administrative cost for operators and enhance the efficiency of rule enforcement

Acceptance by public authorities of freight transport information made available electronically

Uniform implementation of the obligation of acceptance by authorities

-(4)-

Interoperability of the IT systems and solutions used

"This Regulation establishes a [harmonised] legal framework for the electronic communication of regulatory information between the economic operators concerned and competent authorities in relation to the transport of goods on the territory of the Union" (Article 1)



Key elements



Information (already) required by EU & national legislation

- Legislation applicable to the transport of goods on the EU hinterland
- Legislation concerning the means of transport and the personnel not concerned

Obligation for all competent authorities in all EU Member States

- · Accept the information electronically
- Use common requirements/technical specifications for acceptance (defined by EU implementing legislation)

Option for the economic operators

- Facilitation possibility to present the information electronically; no obligation
- When opting, obligation to use certified eFTI platforms or service providers



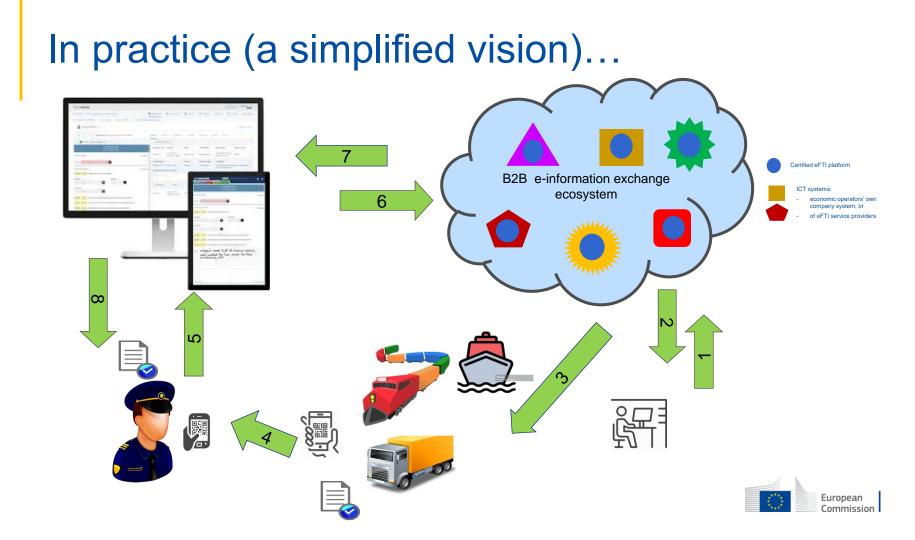
Common requirements for service providers and platforms

- For platforms' functionalities and, respectively, service providers' obligations
- Common implementation specifications (defined by EU implementing legislation)

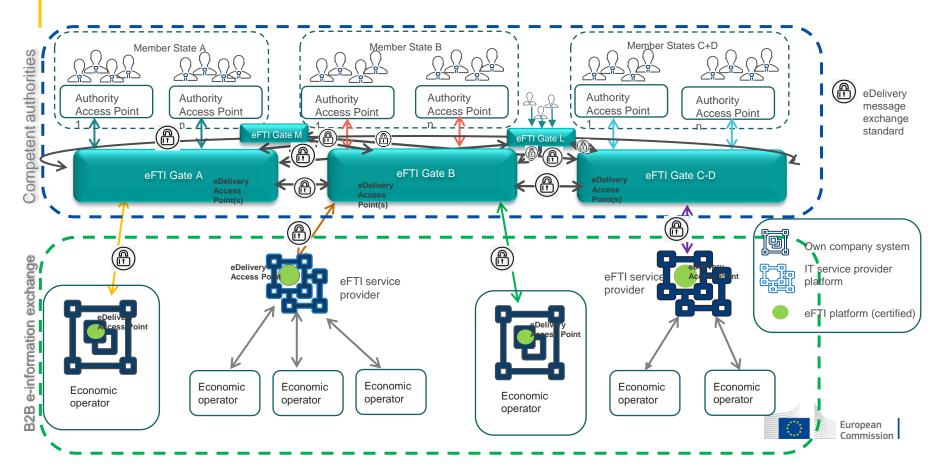


Harmonised third-party certification for service providers and platforms
• One stop shop, valid EU-wide





Proposed implementation architecture



Certification of eFTI platforms and eFTI service providers (1/2)

Third-party certification process, governed by Regulation (EC) No 765/2008





Certification of eFTI platforms and eFTI service providers (2/2)

Legal basis

>eFTI platforms main functional requirements (Art 9 of eFTI Regulation)

 Detailed specifications in future Implementing Regulation (expected July 2024) + technical guidance documents

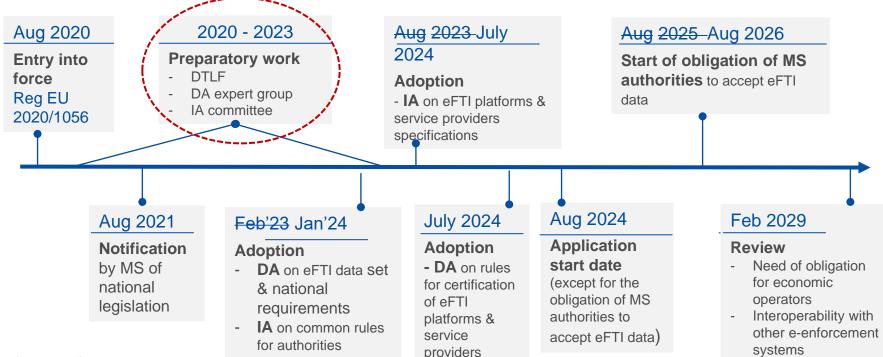
➢eFTI service providers main requirements (Art 10 eFTI Regulation)

- Detailed specification in future Implementing Regulation (expected July 2024) + technical guidance documents
- Requirement for certification of eFTI platforms and of eFTI service providers (Art 12 and Art 13 of eFTI Regulation)

Detailed rules for certification in future Delegated Regulation (expected July 2024)



eFTI Regulation implementation and application – Indicative timeline



European Commission

MS - Member States

DA - Delegated act (Commission Regulation)

IA - Implementing act (Commission Regulation)

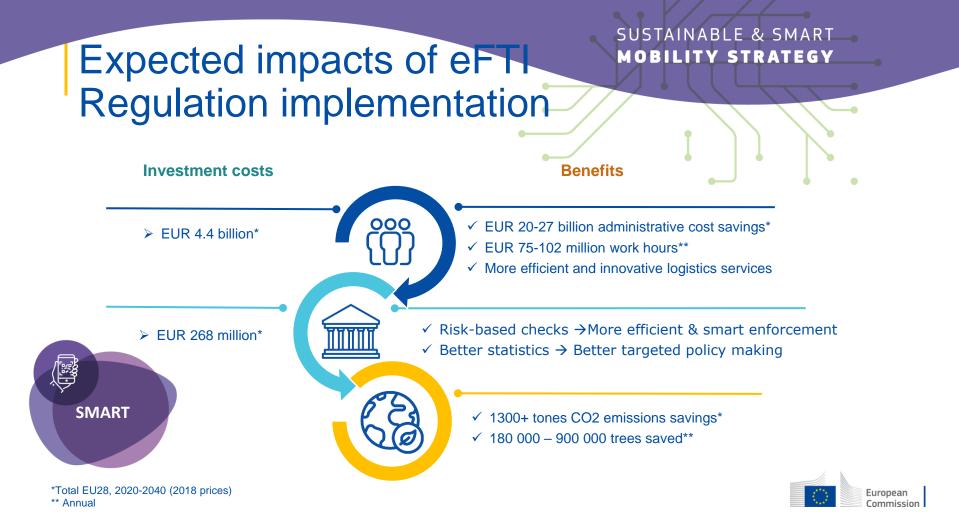
DTLF – Digital Transport and Logistics Forum

eDelivery for eFTI – Why?

- Decentralised cross-border architecture → need for agreed message exchange specifications among many actors/system components
 - ✓ eDelivery offers readymade standard specifications based on open standards
 - Don't reinvent the wheel: No need for complex, highly technical and lengthy discussions to agree on and update the specifications
 - ✓ eDelivery has already been implemented in several cross-border projects
 - Re-use: Member States and private stakeholders can leverage the experience and expertise already gained
 - > Convenience: Several compliant software solutions already available
 - Benefits of scale : A growing community of users that can exchange experience, discuss possible improvements

European

- ✓ eDelivery offers central support services
 - > Savings: Relying on the available tools & services reduces the need for additional resourd







European Commission, DG MOVE, Unit D.1 Maritime Transport and Logistics

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Thank you



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Discussion and Q&A





Thank you

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& stay in touch

