CEF eDelivery

v1.05

Market Guide for AS4 Solutions and Services

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1. INTRODUCTION

In the context of the Connect Europe Facility (CEF) eDelivery building block, the European Commission is promoting the adoption of the eDelivery AS4 profile of the AS4 OASIS Standard AS4 [AS4], originally developed during the e-SENS Large Scale Pilot project [E-DeliveryAS4]. By using open standards such as AS4, which is also used by other communities internationally, eDelivery benefits from and contributes to the synergies and network effect of using open, internationally adopted standards. Multiple implementations exist for AS4 that are available to public administrations and companies in Europe. Users of eDelivery can procure these solutions in an environment in which multiple solution providers compete for business. This competition incentivises providers to provide quality solutions and value for money.

This document provides an overview of some of the main AS4 solutions available to users of eDelivery. It covers both solutions already used for eDelivery AS4, solutions that are used for the similar AS4 profile developed by the European Network of Transmission System Operators for Gas (ENTSOG), as well as other solutions. The document also addresses AS4 conformance and interoperability testing done within CEF and by the Drummond Group. With this document end users can save time collecting their long-list of candidates and so accelerate their implementations.

N.B.

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If you would like to add your solution to the guide, or if your solution is listed and you would like the details to be updated, contact us at CEF-BUILDING-BLOCKS@ec.europa.eu

2. GENERAL PURPOSE AS4 MESSAGING SOFTWARE SOLUTIONS

This section provides an overview of general purpose AS4 message software solutions. These are solutions that have been developed with a broad range of potential users and applications in mind. For each solution, a short introduction is provided as well as a listing of the following main information items:

Company Name:	If the product is provided by a commercial company, the name of the company
Public Administration Name:	If the product is provided by a public administration, the name of the public administration
Headquartered:	The city and country in which the main offices of the provider of the product are based. Note that international companies do business via national or regional subsidiaries, partners or resellers.
Product Name(s):	The name of the product
Drummond Certified:	Whether the company has been certified in one of the AS4 interoperability rounds of the Drummond Group
EDELIVERY AS4 tested:	Whether the company has passed or is in the process of passing the conformance testing according to the eDelivery AS4 profile:
Programming Language:	The programming language in which the product is implemented, or for which the product provides an API
Internet:	An Internet URL at which more information about the product is provided.
Contact:	An Internet URL or email address at which the company may be contacted
Open Source License:	If the product is available under an open source license, the applicable license form

2.1. ADES AS4

ADES is a software and service company, based in Vienna, Austria. In 2014, Gas Connect Austria (GCA) used its ADES AS4 product in the ENTSOG AS4 proof-of-concept that showed successful interoperability with four other implementations.

The product has since been deployed in production for gas document exchange by ADES customers in Europe. A distinctive feature of the product is that it is very lightweight and can run on simple industrial platforms (e.g. Raspberry Pi) as well as within an enterprise environment.

Company Name:	ADES Echtzeitdatenverarbeitungssysteme GmbH
Headquartered:	Vienna, Austria (AT)
Product Name(s):	ADES AS4
Drummond Certified:	No
EDELIVERY AS4 tested:	Planned
Programming Language	C/C++ and Perl
Internet:	http://www.ades.at/home.html
Contact:	http://www.ades.at/html/kontakt.html

2.2. Ademico Software

Ademico Software is a privately-held, independent company specialized in managed eDelivery solutions and services. The company offers complete B2B integration and communication services, cloud-based or on-premise, based on specific customer needs. Its cloud-based solutions are deployed in the Amazon AWS cloud in High Availability mode.

Additionally, the company provides consulting and training services on all eDelivery related aspects relevant to its customer's business. Its team members all have multiple years of experience with the eDelivery AS4 specifications and the development of the eDelivery sample software, including the Domibus Access Point implementation. They know the Domibus Access Point architecture inside out.

Company Name:	Ademico Software
Headquartered:	Leuven (BE)
Product Name(s):	Managed Domibus Solutions
Drummond Certified:	No
EDELIVERY AS4 tested:	Yes, based on Domibus, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+AS4+conformant+solutions#eDeliveryAS4conformantsolutions-Domibus
Programming Language	Java
Internet:	https://ademico-software.com/
Contact:	info@ademico-software.com
Open Source License:	EUPL v1.2

2.3. Axway B2BI and Gateway Interchange

Axway is an international software company that provides solutions for integration and other application areas. Axway has supported AS4 since October 2014, starting with B2Bi 2.1 and Interchange 5.12. Axway's products were

among the first Drummond certified products and have been re-certified in all subsequent Drummond AS4 interoperability testing rounds.

Axway AS4 has been used for e-Justice data exchange by a participant in e-CODEX and is currently used in production in me-CODEX. In 2014, Axway customer Gassco (Norway) participated in ENTSOG's AS4 interoperability proof-of-concept that showed successful interoperability with four other implementations. The product has since been deployed in production for gas exchanges for in Europe. A public reference for a large production end user for Axway AS4 is SuperChoice, one of the largest AS4 deployments in Australia.

Axway successfully participated in an informal eDelivery AS4 interoperability Proof-of-Concept in 2015. In 2017 its B2Bi 2.3 product successfully passed conformance testing for the eDelivery AS4 profile.

Company Name:	Axway, Inc.
Headquartered:	Scottsdale, AZ (US)
Product Name(s):	Axway B2BI, Axway Interchange
Drummond Certified:	Yes, in 2013, 2014/2015, 2016 and 2017 https://drummondgroup.com/as-certified-products-list/
EDELIVERY AS4 tested:	Yes, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions
Programming Language:	Java
Internet:	https://www.axway.com/en/enterprise-solutions/b2bi https://www.axway.com/en/datasheet/axway-interchange
Contact:	https://www.axway.com/en/contact-sales

2.4. Bosch SI inubit BPM

Bosch Software Innovation is an international software company providing solutions in a variety of application areas, including BPM and messaging. The company supports AS4 in its inubit BPM product, which is used in production by a number of energy companies in Europe for AS4 communication.

Company Name:	Bosch Software Innovation (Bosch SI)
Headquartered:	Berlin (DE)
Product Name(s):	Inubit BPM
Drummond Certified:	No
EDELIVERY AS4 tested:	No
Internet:	https://www.bosch-si.com/bpm-and-brm/inubit-bpm/business-process-management.html
Contact:	https://www.bosch-si.com/bpm-and-brm/contact/bpm-and-brm-experts.html

2.5. Chasquis Consulting Holodeck B2B

Holodeck B2B is an open source implementation of AS4 that was used successfully in the eDelivery AS4 interoperability proof-of-concept in 2015. It has been used extensively in the e-SENS pilots as well as in the EU-CEG, ENTSOG, IATA and ATO (Superstream) domains. Holodeck B2B was one of the very first AS4 products to pass CEF conformance tests.

Chasquis Consulting as developers and maintainers of Holodeck B2B provide support, implementation consultancy and hosted AS4 gateways.

Company Name:	Chasquis Consulting
Headquartered:	Leiden (NL)
Product Name(s):	Holodeck B2B
Drummond Certified:	No
EDELIVERY AS4 tested:	Yes, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions
Programming Language:	Java
Internet:	http://chasquis-consulting.com/
Contact:	info@chasquis-consulting.com
Open Source License:	GPL3; API (interfaces) LGPL3

2.6. Domibus

The Domibus open source AS4 implementation was developed and used in the former e-CODEX project. Domibus is also used by the majority of participants in the ongoing Me-CODEX project, as well as in several other data exchange projects internationally. It is currently maintained and actively supported by the European Commission's Directorate General Informatics (DIGIT) as the sample implementation of eDelivery AS4.

Public Administration:	European Commission, Directorate-General Informatics (DG DIGIT)
Headquartered:	Brussels (BE)
Product Name(s):	Domibus
Drummond Certified:	No
EDELIVERY AS4 tested:	Yes, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions
Programming Language:	Java
Internet:	https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/Domibus

Contact:	CEF-EDELIVERY-SUPPORT@ec.europa.eu
Open Source License:	EUPL v1.1

2.7. Flame Message Server and Light Client

Flame Computing Enterprises is a South African software development and support company. It developed messaging solutions for various industries. The Flame Message Server (FMS) and Light Client products were among the earliest implementations of AS4. Flame was also among the four first Drummond certified AS4 vendors and has been re-certified in several subsequent Drummond interoperability testing rounds. A number of end user customers use FMS for AS4 in production in Australia and in Europe.

FMS has been used successfully in the eDelivery AS4 interoperability proof-of-concept in 2015 and has been used for piloting in e-SENS. The product has been tested successfully for conformance to the eDelivery AS4 profile. Flame products are supported in Europe via a partner company, ECS International, which is based in the Netherlands.

Company Name:	Flame Computing Enterprises
Product Name(s):	Flame
Headquartered:	Johannesburg area (ZA)
Drummond Certified:	Yes, in 2013, 2014/2015. https://drummondgroup.com/as-certified-products-list/
EDELIVERY AS4 tested:	Yes, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions
Programming Language:	Java
Internet:	http://as4.business/
Contact:	For European Region, contact information available at: https://www.ecsinternational.eu/en/products/flame/

2.8. IBM B2B Advanced Communications

IBM B2B Advanced Communications intends to help IBM customers address the communication demands of complex global trading partner networks. In July 2013, IBM was contracted by the Australian Taxation Office (ATO) to provide ebMS3/AS4 messaging capabilities to its SuperStream and Standard Business Reporting (SBR) programmes, which have since become widely known deployments of AS4. The product was certified in Drummond's 2014/2015 interoperability testing round.

The B2B Advanced Communications product has also been used successfully in the eDelivery AS4 interoperability proof-of-concept in 2015 and has been used for piloting in e-SENS. The product has been tested successfully for conformance to the eDelivery AS4 profile.

Company Name:	IBM
Headquartered:	Armonk, NY (US)
Product Name(s):	IBM B2B Advanced Communications
Drummond Certified:	Yes, 2014/2015
EDELIVERY AS4 tested:	Yes, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions
Programming Language:	Java
Internet:	http://ibm.com/B2BCommunications
Contact:	Regional IBM Sales Representative or IBM Business Partner or https://www.ibm.com/contact/

2.9. IBM DataPower Gateway

IBM® DataPower® Gateway is a single multi-channel gateway that helps provide security, control, integration and optimized access to a full range of mobile, web, application programming interface (API), service-oriented architecture (SOA), B2B and cloud workloads. It is intended to enables its users to rapidly expand the scope of valuable IT assets to new channels—giving customers, employees and partners access to critical resources. It is available in the following form factors: physical, virtual, cloud, Linux and Docker.

Support for AS4 was first added in DataPower GateWay V7.5.0. The DataPower Gateway is said to comply with the AS4 ebHandler Conformance Profile of the ebMS 3.0 specification for exchanging B2B messages. DataPower GateWay V7.5.0 was tested for AS4 interoperability in the 2017 Drummond AS4 tests.

Company Name:	IBM
Headquartered:	Armonk, NY (US)
Product Name(s):	IBM B2B Advanced Communications
Drummond Certified:	Yes, 2017, https://drummondgroup.com/as-certified-products-list/
EDELIVERY AS4 tested:	No
Internet:	http://www-03.ibm.com/software/products/en/datapower-gateway
Contact:	Regional IBM Sales Representative or IBM Business Partner or https://www.ibm.com/contact/

2.10. Integration Cloud

Integration Cloud is a cloud-based, online integration platform, based on Microsoft Azure, that enables its users to connect their applications and business partners in a reliable and transparent cloud environment. The platform aims to help its users set up connections and integrations quickly and efficiently.

Integration Cloud is a developed by Codit, an IT services company headquartered in Belgium that provides consultancy, technology and managed services in business integration. Integration Cloud always includes managed services. Codit helps companies reduce operational costs, improve efficiency and enhance control by enabling people and applications to integrate more efficiently. Codit started as a Microsoft BizTalk Server specialist focused on integration but

now uses a wider range of Microsoft technologies, including innovative cloud-based solutions.

Company Name:	Codit
Product Name(s):	Integration Cloud
Headquartered:	Gent (BE)
Drummond Certified:	No
EDELIVERY AS4 tested:	Ongoing
Programming Language:	C#
Internet:	http://www.integrationcloud.eu/
Contact:	as4@codit.eu

2.11. Mendelson AS4 2017

mendelson-e-commerce is a company providing EDI software and data integration tools. mendelson AS4 2017 is an open source AS4 implementation developed and supported by mendelson-e-commerce GmbH. It supports ebXML AS4 (full implementation), ENTSOG AS4v2, ENTSOG AS4v3 and eDelivery AS4, and the version to be used can be specified per partner. The product is available in dual license model -a community (open source) and a commercial version. The commercial version can also be acquired with a support and maintenance plan.

The product is used by companies in the energy sector for ENTSOG AS4 and successfully passed eDelivery AS4 conformance tests.

Company Name:	mendelson-e-commerce GmbH
Product Name(s):	mendelson AS4 2017
Headquartered:	Berlin (DE)
Drummond Certified:	No
EDELIVERY AS4 tested:	Yes, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions
Programming Language:	Java
Internet:	http://as4.mendelson-e-c.com/
Contact:	service@mendelson-e-c.com
Open Source License:	GPL (for the open source version of the product)

2.12. /n software EDI Integrator and AS4 Adapter

/n software is a North American provider of enterprise class professional tools and components for Internet Communications, Security, and Business Integration. The company has supported AS4 since the end of 2015. Its software

is available as a product and as an adapter for use with Microsoft Biztalk. /n software has customers in Europe using AS4 in production for the ENTSOG AS4 profile.

Company Name:	/n software
Headquartered:	Chapel Hill, NC (US)
Product Name(s):	EDI Integrator, AS4 Adapter for Biztalk
Drummond Certified:	No, but the related RSSBUS Connect product has been tested successfully https://drummondgroup.com/as-certified-products-list/
EDELIVERY AS4 tested:	No, but the related RSSBUS Connect product has been tested successfully, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions
Programming Language:	Java or .NET
Internet:	https://www.nsoftware.com/kb/articles/as4.rst https://www.nsoftware.com/kb/articles/biztalkas4adapter.rst
Contact:	https://www.nsoftware.com/company/contact.aspx

2.13. OBAN Messaging Gateway

OBAN is an Australian company providing messaging solutions. The company implemented AS4 to support the Australian Superannuation programme. In Australia, AS4 is also used for B2G reporting, which is mandatory for all participants and is going to be a staged implementation. Additionally, B2B e-Invoicing is being introduced via an AS4 transport, however, the uptake is slow because it not mandated. AS4 is also used for superannuation in New Zealand.

OBAN solutions are available to European customers as a SAAS solution. AS4 is supported in the OBAN B2B Messaging Gateway product, which was one of the first Drummond certified products.

Company Name:	Oban Enterprise Solutions
Headquartered:	Kew, VIC (AU)
Product Name(s):	OBAN B2B Messaging Gateway
Drummond Certified:	Yes, in 3Q2013
EDELIVERY AS4 tested:	No
Internet:	http://www.obansolutions.com.au/as4_gateway.html
Contact:	http://www.obansolutions.com.au/contact.html

2.14. OpenText BizManager

OpenText is an international software company in the area of Enterprise Information Management. In this area, OpenText Business Network is a set of solutions that facilitate efficient, secure, and compliant exchange of information inside and outside of organisations. OpenText Business Network delivers a product set that integrates messaging and B2B Integration services within a single platform.

Company Name:	OpenText GXS
Headquartered:	Waterloo, Ontario (CA)
Product Name(s):	BizManager 3.3
Drummond Certified:	Yes, in 2016 and 2017, https://drummondgroup.com/as-certified-products-list/.
EDELIVERY AS4 tested:	No
Programming Language:	Java
Internet:	http://www.gxs.com/products/b2b-integration-software/b2b-gateway
Contact:	http://www.opentext.com/who-we-are/contact-us/contact-opentext

2.15. Oracle B2B

Oracle B2B provides secure and reliable exchange of business documents between businesses. The product can be used together with the Oracle SOA Suite to provide an architecture enabling a unified business process platform, end-to-end instance tracking, visibility, auditing, process intelligence, governance, and security.

Company Name:	Oracle, Inc.
Headquartered:	Redwood Shores, CA (US)
Product Name(s):	AS4 available as a patch on Oracle B2B 12.1.3 (Feb. 2015)
Drummond Certified:	Yes, in 2014/2015
EDELIVERY AS4 tested:	No
Programming Language:	Java
Internet:	http://www.oracle.com/technetwork/middleware/b2b-integrations/overview/index.html
Contact:	https://www.oracle.com/corporate/contact/index.html

2.16. Ponton X / P

Ponton is a German software company providing solutions for B2B integration. Ponton X/P supports secure and reliable end-to-end integration for business communities. Several Ponton X/P users have already updated their software for AS4 support.

Company Name:	Ponton
Headquartered:	Hamburg (DE)
Product Name(s):	Ponton X/P 3.2, AS4 since 2014
Drummond Certified:	No
EDELIVERY AS4 tested:	No
Programming Language:	Java
Internet:	http://www.ponton.de/index.php?option=com_content&view=article&id=32
Contact:	info@ponton.de http://www.ponton-consulting.de/index.php?option=com_content&view=article&id=4

2.17. RSSBus Connect

RSSBus is a North American software company that provides high-performance, reliable, and fully-extensible products that aim to simplify the process of producing, consuming, and integrating data. The RSSBus products enable a simple yet effective layer of middleware that helps users drive information flow without the added complexity that is common across other integration solutions. RSSBus is a spin-off of /n software, a leading provider of enterprise-class tools for Internet communications, security, and e-business development.

Company Name:	RSSBus
Headquartered:	Chapel Hill, NC (US)
Product Name(s):	RSSBus Connect 2017
Drummond Certified:	Yes, in 2016 and 2017, https://drummondgroup.com/as-certified-products-list/.
EDELIVERY AS4 tested:	Yes, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions
Programming Language:	Java or .NET
Internet:	http://www.rssbus.com/ports/#as4
Contact:	info@rssbus.com

2.18. SEEBURGER

SEEBURGER is an international software company, which offers software solutions for all integration activities in B2B, MFT, EDI and EAI projects. Part of this platform is an AS4 communication service which supports the AS4 ebHandler conformance profile as profiled for ENTSOG. The AS4 communication service is offered in the SEEBURGER Cloud Service or as an on-premises solution. Customers from the utility industry are using the AS4 communication service in production. Interoperability tests with other AS4 implementations have been done in 2014.

Company Name:	SEEBURGER AG
Headquartered:	Bretten, Karlsruhe area, (DE)
Product Name(s):	AS4 Adapter for Business Integration Server 6.5.2 available as SEEBURGER Cloud Service or as an on-premises solution.
Drummond Certified:	No
EDELIVERY AS4 tested:	No
Programming Language:	Java
Internet:	https://www.seeburger.eu/
Contact:	http://www.seeburger.com/contact.html

2.19. Software AG WebMethods

Software AG is an international software company, offering solutions based on open standards, with integration, process management, adaptive application development, real-time analytics and enterprise architecture management as core building blocks.

The webMethods Module 9.5 for AS4 extends the Software AG webMethods product suite to provide an implementation of the AS4 ebHandler conformance profile specified in the AS4 Profile. The module facilitates the secure exchange of messages, independent of payload type, across a company's trading network.

A large end user reference deployment of the product is Superpartners, Australia's largest superannuation (pension) administrator, which operates one of the country's largest B2B networks.

In 2014, Gaz System in Poland used this product in the ENTSOG AS4 proof-of-concept that showed successful interoperability with four other implementations. It has since deployed AS4 in production.

Company Name:	Software AG
Headquartered:	Darmstadt (DE)
Product Name(s):	WebMethods Module 9.5
Drummond Certified:	Yes, in 2014/2015.
EDELIVERY AS4 tested:	No

Programming Language:	Java
Internet:	http://www2.softwareag.com/corporate/products/ webmethods_integration/integration/default.aspx
Contact:	https://www2.softwareag.com/corporate/contact/default.aspx

2.20. Tibco BusinessConnect

Tibco is an international provider of integration and analytics software. AS4 is supported in the Tibco BusinessConnect product, which was one of the first Drummond certified products. The product is used for AS4 in the Australian SuperAnnuation community.

In 2014, SNAM, ENI (both in Italy) and ENAGAS (Spain) used Tibco BusinessConnect in the ENTSOG AS4 proof-of-concept that showed successful interoperability with four other implementations. The product has since been deployed in production for gas business document exchanges in Europe.

Company Name:	Tibco
Headquartered:	Palo Alto, CA (US)
Product Name(s):	Tibco BusinessConnect
Drummond Certified:	Yes, in 2013.
EDELIVERY AS4 tested:	No
Programming Language:	Java
Internet:	https://www.tibco.com/products/tibco-businessconnect https://docs.tibco.com/pub/bcebxml/6.1.0/doc/bcebxml/pdf/TIB_bc ebxml_6.1_userguideebMS3.pdf
Contact:	https://www.tibco.com/contact-us

2.21. Unimaze Software eeFacta Server

Unimaze Software's mission is to help enterprises in national and international markets to streamline their procurement process. Its vision is a fully automated business environment where enterprises maximise their efficiency, benefit from reduced costs and reduce the effect on the environment.

The eefacta Server is a customizable on-site business messaging server serving as a front end to the enterprise back end systems. It targets the larger enterprises which need or want to tailor their document exchange solutions to protect their investment in existing systems and processes.

Company Name:	Unimaze
Headquartered:	Reykjavik (ISL)
Product Name(s):	eeFacta
Drummond Certified:	No

EDELIVERY AS4 tested:	Yes
Programming Language:	.NET
Internet:	http://www.unimaze.com/solutions/enterprise-solutions/eefacta-server
Contact:	http://www.unimaze.com/company/contact-us

3. USER IMPLEMENTATIONS OF AS4 MESSAGING SOFTWARE

Rather than deploying an existing AS4 solution, some user organisations have developed in-house solutions. Some of these organisations have subsequently decided to make these implementations available as open source solutions, allowing their implementations to be used by other users. Note that these solutions are not officially supported for third parties in the same way as the solutions listed in the previous section are.

3.1. EESSI AS4.NET

Electronic Exchange of Social Security Information (EESSI) is an IT system that will help social security bodies across the EU exchange information more rapidly and securely – as required by EU regulation concerning social security coordination. At the moment there is no EU-wide system and most exchanges are still paper-based. With EESSI, all communication between national bodies on cross-border social security files will take place using structured electronic documents. These documents will be routed through the EESSI (hosted centrally by the European Commission) to the correct destination in another EU country.

Public Administration:	European Commission, Directorate-General Employment (DG EMPL)
Headquartered:	Brussels, Belgium
Product Name(s):	AS4.NET
Drummond Certified:	No
EDELIVERY AS4 tested:	Yes, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions
Programming Language:	C#
Internet:	http://ec.europa.eu/social/main.jsp?catId=869 https://ec.europa.eu/cefdigital/code/projects/EDELIVERY/repos/eessi-as4.net/browse
Contact:	empl-eessi-edelivery@ec.europa.eu
Open Source License:	EUPL v1.1

3.2. Laurentius

The highest court in Slovenia is the Supreme Court of the Republic of Slovenia (Vrhovno sodišče Republike Slovenije), which is responsible for the uniform jurisprudence and thus normally only hears appeals concerning the proper application of law. This organisation developed Laurentius as a solution for secure and reliable electronic document exchange suited for use primarily in (public) institutions. Laurentius uses the AS4 protocol and implements the

eDelivery AS4 profile. It successfully passed CEF's AS4 conformance tests for that profile. The Supreme Court of the Republic of Slovenia uses Laurentius for secure electronic delivery of court documents. It is available as an open-source solution.

Public Administration:	Vrhovno sodišče Republike Slovenije
Headquartered:	Ljubljana, Slovenia
Product Name(s):	Laurentius
Drummond Certified:	No
EDELIVERY AS4 tested:	Yes, https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions
Programming Language:	Java
Internet:	https://vsrscif.github.io/Laurentius/ https://nio.gov.si/nio/asset/laurentius+sistem+za+varno+elektronsko+vrocanje-719?lang=en
Contact:	cif.vsrs@sodisce.si
Open Source License:	EUPL v1.1

4. DOMAIN-SPECIFIC SOLUTIONS

In some domains, some solutions have been developed that provide built-in AS4 messaging capabilities.

4.1. iFenix

iFenix is a subscription-based retail management solution developed for retail chains. It is a fully integrated and cloud-based solution that covers all of the company's core processes. iFenix is designed to quickly meet changing shopping behaviour at customers and consumers in both the physical and digital stores. The company offers integrated e-commerce solutions and specific functionality between headquarters and stores.

Company Name:	iFenix
Headquartered:	Stockholm (SE)
Product Name(s):	iFenix
Drummond Certified:	No
EDELIVERY AS4 tested:	Yes
Internet:	http://www.ifenix.se/
Contact:	info@ifenix.se

4.2. IP Systems – Navitasoft

Navitasoft is the international sales brand of IP Systems, a software provider specialized on the liberalized energy markets. The company supplies TSOs, SSOs, Traders and Energy Regulators with relevant IT solutions. AS4-IP is an interoperability tool for energy market communications. Besides AS4, the module supports various message types and market relevant protocols (e.g: latest Edig@s, SMTP, HTTP, S-SOAP, AS4, AS2, SFTP etc.) The deployment and introduction of the system require a very short period of time. It is a very flexible software product which is put on the top of your existing system. It uses the customer's existing data and converts it to the required protocol and form. The user interface is self-explanatory; therefore, little training is enough to get familiar with the straightforward process of data exchange and data communication.

AS4-IP has been designed for the future. Data exchange protocols and message formats can be extended, new modules can be introduced or switched on depending user needs.

Company Name:	IP Systems – Navitasoft
Headquartered:	Budapest (HU)
Product Name(s):	AS4-IP
Drummond Certified:	No
EDELIVERY AS4 tested:	Ongoing
Programming Language:	Java
Internet:	https://navitasoft.com/products/as4-ip
Contact:	sales@ipsystems.hu
	https://navitasoft.com/company/contact

5. AS4 Testing Services

To use AS4, it is important to verify that implementations implement the specification correctly and interoperate. To verify this, implementations should be tested. Drummond Group provides generic AS4 interoperability testing and the CEF building blocks (Trans-European Services, DIGIT.D3) unit provides conformance testing specifically for the eDelivery AS4 profile.

5.1. Drummond Group

The Drummond Group LLC, was established in 1999. One of the key focus areas of the company has been B2B Interoperability (IOP) testing and includes: AS1, AS2, AS3, AS4, ebMS2, and RosettaNet. AS2, AS4 and ebMS IOP are still active with AS2 running continuously since 2000 and ebMS2 about the same amount of time. The Drummond Group was instrumental and played a key role in Technical WG of OASIS that launched the AS4 profile. The Drummond Group has overseen AS4 Interoperability since 2013 and recently completed AS4 IOP for the year 2017.

Drummond Group utilises a patented technology which allows B2B IOP testing to be conducted remotely, over the internet, and mimics real-world production deployments. It also allows for IOP testing to be conducted automatically, and across time zones.

To learn more about Drummond Group, please visit www.drummondgroup.com To learn more about AS4 IOP and to participate in the current AS4 IOP testing please visit: https://www.drummondgroup.com/b2b-certified-products/b2b-standards/as4 and https://www.drummondgroup.com/joinregister

Any company interested to schedule time to discuss AS4 participation, and to inquire about pricing, is requested to contact:

Aaron Gomez
Director, B2B IOP Certification
Drummond Group LLC
aaron@drummondgroup.com

According to the last published overview, Drummond AS4 testing covers the AS4 ebHandler conformance profile, for which it provides 32 test cases covering AS4 push and pull, TLS, message layer security using username/password and XML Signature, XML encryption, Payloads in SOAP body or as MIME attachments, synchronous and asynchronous receipts. Testing covers large messages up to 50 MB, multiple payloads, compression, reception awareness, duplication detection and retries. The final report of the last completed interoperability round is available from the Drummond Group's site

https://drummondgroup.com/wp-content/uploads/2017/11/AS4_4Q17_Final_Report.pdf

September, 2017	Axway, OpenText GXS, RSSBus, IBM http://www.prweb.com/releases/2017/10/prweb14837905.htm
December 2016	Axway, OpenText, RSSBus https://drummondgroup.com/axway-opentext-and-rssbus-earn-drummond-as4-4q16-certification/
Sept. 2015-Feb. 2016	Axway, OpenText GXS, RSSBus
Sept. 2014/Feb. 2015	Axway, Flame Computing, IBM, Oracle, Sofware AG, https://drummondgroup.com/latest-as4-standard-based-products-drummond-certified/
April-December 2013	Axway, Flame Computing Enterprises, Oban Pty Ltd, TIBCO Software Inc. https://drummondgroup.com/first-drummond-certified-as4-interoperability-test-event-completed/

5.2. Connecting Europe Facility

The Connecting Europe Facility (CEF) building blocks (Trans-European Services, DIGIT.D3) unit of the European Commission's Directorate-General for Informatics (DIGIT) provides AS4 conformance testing as part of its CEF eDelivery Testing Services.
https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+Conformance+testing

These tests are aimed at the eDelivery AS4 profile, and therefore do not cover features that are not used in that profile. Examples of those untested features are use of username tokens, or the Pull binding. By contrast, the tests do cover eDelivery specific details such as choice of algorithms. Examples of those are the Galois Counter Mode (GCM) of the AES encryption algorithm that the profile mandates.

The base for the CEF eDelivery AS4 conformance test is a set of test assertions for the e-SENS profile, available from
https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+Conformance+testing?preview=/46992361/46993978/(CEFeDelivery).(eSENS_AS4).(TAD).(v1.02).pdf . This set covers 29 generic AS4 test assertions and 20 e-SENS specific test assertions.

Currently, products from eleven organizations successfully passed the eDelivery AS4 conformance tests: Axway, Domibus, eeFacta Server, EESSI AS4.NET, Flame, Holodeck, IBM, iFenix, Laurentius, Mendelson and RSSbus. Two others, ADES and Integration Cloud, are listed as having starting testing:
https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/e-SENS+AS4+conformant+solutions

6. REFERENCES

[AS4]   AS4 Profile of ebMS 3.0 Version 1.0. OASIS Standard, 23 January 2013. https://docs.oasis-open.org/ebxml-msg/ebms/v3.0/profiles/AS4-profile/v1.0/

[E-DeliveryAS4] E-Delivery AS4 Profile. Latest version 1.12, 18-10-2017. https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/eDelivery+AS4

[ENTSOGAS4] INT0488-161115. ENTSOG AS4 Profile. Version 3.5. For Publication in April 2017. http://www.entsog.eu/publications/as4#AS4-USAGE-PROFILE

7. REVISION HISTORY

Date	Editor	Changes
2017-05-15	PvdE	First version 0.1 for review
2017-06-20	PvdE	Minor updates, sent to listed companies for review
2017-07-20	PvdE	Feedback from ADES, BOSCH-SI, Flame/ECS, IBM, mendelson, n/software, OBAN, Oracle, Ponton, Seeburger, Drummond.
2017-07-30	PvdE	Feedback Axway, Chasquis Consulting, OpenText.
2017-07-31	CEF SMO	Editorial revision
2018-01-18	PvdE	New product, IBM DataPower. Included Drummond 2017 results. Updated conformance testing results. Broken links fixed. Updated some product version numbers. Start using eDelivery AS4 name instead of e-SENS AS4.
2018-01-25	PvdE	Feedback from Unimaze incorporated; v1.02
2018-01-30	PvdE	Removed Consulting and Implementation Support; v1.03.
2018-02-08	PvdE	Added IP Systems
2019-03-21	PvdE	Added Ademico