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European eInvoicing Standard in Italy

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eDelivery Access Point implementation report

Deliverable D4.8

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Deliverable Info

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**Version Control**

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| Version | Date | Author | Description of change |
| 1.0.0 | 31/01/2019 | Intercent-ER | First version development |
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Glossary

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| **B2B** | Business to Business |
| **B2C** | Business to Consumer/Citizen |
| **B2G** | Business to Government |
| **BII** | Business Interoperability Interfaces |
| **C2G** | Citizen to Government |
| **CCTS** | Core Component Technical Specification |
| **CEF** | Connecting Europe Facility |
| **CEM** | Certified Electronic Mail – Legal Mail (PEC Posta Elettronica Certificata in Italy) |
| **CEN** | European Committee for Standardisation |
| **CII** | Cross Industry electronic Invoice |
| **CIUS** | Core Invoice Usage Specification |
| **DSI** | Digital Service Infrastructures |
| **EDIFACT** | Electronic Data Interchange For Administration, Commerce and Transport |
| **EMSFEI** | European Multi-Stakeholder Forum on eInvoicing |
| **e-SENS** | Electronic Simple European Networked Services |
| **FatturaPA** | Public administration electronic invoice framework (FatturaPubblica Amministrazione) |
| **G2G** | Government to Government |
| **INEA** | Innovation and Networks Executive Agency |
| **OASIS** | Organization for the Advancement of Structured Information Standards |
| **PEPPOL** | Pan-European Public Procurement Online |
| **PEPPOL-BIS** | Pan-European Public Procurement Online Business Interoperability Specifications |
| **SDI** | Electronic exchange system in Italy (Sistema Di Interscambio) |
| **UBL** | Universal Business Language |
| **UN/CEFACT** | United Nations Centre for Trade Facilitation and Electronic Business |
| **UNTDID** | UN Trade Data Interchange Directory |
| **URI** | Uniform Resource Identifier |
| **URL** | Uniform Resource Location |
| **URN** | Uniform Resource Name |
| **XML** | Extensible Mark-up Language |

1. Executive summary

This document explains the deploy of the web applications solutions for Intercent-ER.

1. Introduction

The technological choice adopted by Intercent-ER to develop a PEPPOL conformant Access Point is Oxalis. This technology is used by Intercent-ER for both AS2 and AS4 transport protocols scenarios (Oxalis Access Point is mainly developed by Difi[[1]](#footnote-1), its reference can be found at <https://github.com/difi/oxalis/> – Intercent-ER implementation reference can be found at <https://github.com/gozus19p/oxalis> instead).

Intercent-ER also implements a Service Metadata Publisher technical infrastructure (SMP). Intecercent-ER uses Phoss SMP Server (whose reference can be found at <https://github.com/phax/peppol-smp-server>).



## Integration between Oxalis and NoTI-ER

Intercent-ER developed a software integration logic between Oxalis native implementation and NoTI-ER - *Nodo Telematico di Interscambio della Regione Emilia-Romagna*. NoTI-ER is a software solution used by Emilia-Romagna’s Public Administrations to handle electronic de-materialized invoices, orders, dispatch advices and annexes.

The main intent here is to receive documents from PEPPOL Network using Oxalis and forward them to NoTI-ER using RESTFul webservices. If something goes wrong during this process Oxalis persists documents on its own file system and notify Intercent-ER Technical Support that will take care of the issue.

From a technical point of view, Intercent-ER defines two different web applications:

* the first web application is complete, it contains both AS2 and AS4 plugins plus custom libraries developed in order to establish a communication channel between Oxalis and NoTI-ER;
* the second web application contains only AS4 inbound plugin and works mainly as a proxy – its goal is to forward received documents to NoTI-ER using web services and HTTP connection (SSL context is defined).

## Servers configuration

Both Oxalis and Phoss SMP Server are deployed in two parallel servers that works simultaneously in cluster mode. Servers use Linux OS.

# **Access Point Peppol Receiver**

Intercent-ER handles two different Tomcat Server[[2]](#footnote-2) instances to manage separately AS2 inbound and AS4 inbound workflow.

Every Tomcat instance is related to Tomcat Server version 9.0.12.

## Endpoints

The whole set of AS2 and AS4 endpoints of Intercent-ER are defined below:

* <https://notier.regione.emilia-romagna.it/oxalis/as2> - it handles AS2 inbound scenario;
* <https://notier.regione.emilia-romagna.it/oxalis/as4> - it handles AS4 inbound scenario.

## Oxalis configuration

The configuration of Intercent-ER Oxalis PEPPOL Access Point is defined below.

File system organization:

* **/opt/tomcat-icent/logs/:** the directory contains oxalis.log of the PEPPOL Access Point receiver related to AS2 scenario. The rolling policy is daily.
* **/opt/tomcat-icent-as4/logs/**: the directory contains oxalis.log of the PEPPOL Access Point receiver related to AS4 scenario. The rolling policy is daily.
* **/opt/tomcat-icent/webapps/ic\_web**: this directory contains Oxalis (AS2) Web Archive file.
* **/opt/tomcat-icent-as4/webapps**: this directory contains Oxalis (AS4) Web Archive file.
* **/home/tomcat/.oxalis/inbound**: it contains received documents that failed to persist on NoTI-ER.
* **/home/tomcat/.oxalis/oxalis.conf**: this file defines PEPPOL PKI v3 keystore’s location on file system as well as Oxalis integral setup.
* **/home/tomcat/.oxalis/notier-integration**: this directory holds all the configuration files used to define software integration between NoTI-ER and Oxalis.

# Access Point Peppol Sender

Intercent-ER makes use of only one Tomcat Server (9.0.12) instance to define outbound process.

The whole workflow is handled by an entire web application that contains the full version of Oxalis (including both AS2 and AS4 transport protocol management) as well as the business logic necessary to integrate itself with NoTI-ER.

## Outbound process

Oxalis is integrated with Quartz[[3]](#footnote-3), this allows the web application to schedule periodic HTTP calls performed against NoTI-ER technical infrastructure.

Describing below the outbound process:

1. Oxalis send an HTTP GET call to NoTI-ER, that responds with a payload that defines the whole set of indexes related to documents that need to be sent on PEPPOL Network;
2. Oxalis iterate progressively the set of documentary indexes received from NoTI-ER, processing again one HTTP GET per index;
3. With HTTP call defined at point two Oxalis receives the byte sequence that represents the document that needs to be sent on PEPPOL;
4. Oxalis sends the document to PEPPOL, catching the outcome of the process;
5. Oxalis sends the outcome of the single outbound process to NoTI-ER within an HTTP POST call;
6. Oxalis repeats point two to point five until it finishes the procedure.

This process is scheduled with Quartz. It runs every six minutes starting from minute zero, referred to each hour of each day (it works in every hour and every day of the week).

## Oxalis configuration

The configuration of Intercent-ER Oxalis PEPPOL Access Point is defined below.

File system organization:

* **/opt/tomcat-icent/logs/:** the directory contains oxalis.log of the PEPPOL Access Point outbound related to both AS2 and AS4 scenarios. The rolling policy is daily.
* **/opt/tomcat-icent/webapps/ic\_web**: this directory contains Oxalis (AS2) Web Archive file.
* **/opt/tomcat-icent-as4/webapps**: this directory contains Oxalis (AS4) Web Archive file.
* **/home/tomcat/.oxalis/oxalis.conf**: this file defines PEPPOL PKI v3 keystore’s location on file system as well as Oxalis integral setup.
* **/home/tomcat/.oxalis/notier-integration**: this directory holds all the configuration files used to define software integration between NoTI-ER and Oxalis (e.g. it defines URI of services exposed by NoTI-ER).

## Oxalis server functionalities

Oxalis also exposes some servlet as server. Those functionalities basic intent is to give the possibility to NoTI-ER to stop Oxalis outbound process as well as to restart it directly from a web graphic interface exposed on NoTI-ER.

The whole set of Oxalis server functionalities is defined below:

* Oxalis Quartz Console – Oxalis basically receives commands from NoTI-ER (in .json String format) that allows Oxalis to start, stop or check the status of its Quartz jobs;
* Oxalis Outbound on Demand – Oxalis can handle a runtime sending of a specific document. This is used exclusively in test environment, its purpose is to test integration with other PEPPOL Access Points;
* Oxalis Lookup on Demand – Oxalis receives a .json String representing a lookup request from NoTI-ER. After that Oxalis triggers PEPPOL Dynamic Lookup scenario, sending back to NoTI-ER an outcome (in .json String format) that represents the whole SMP registration configuration of the asked participant identifier (if the given participant identifier is registered on PEPPOL Central SML) or a negative outcome status (if the participant is not registered on SML).

Each one of these three functionalities is handled according to SSL PKI v3 standard.

1. The Agency for Public Management and eGovernment, or Difi, is a government agency subordinated to the Norwegian Ministry of Administration and Government Reform [↑](#footnote-ref-1)
2. Tomcat Server is an open source web server used to expose java web applications through the internet. It is developed by Apache. It works basically as a servlet container. Intercent-ER uses 9.0.12 version. Further information can be found at: <http://tomcat.apache.org/>. [↑](#footnote-ref-2)
3. Quartz is a Java library that allows web applications to develop custom procedures. Quartz handles the execution of those procedures referring to a configuration that defines *crono expressions* used to define timing of the schedules. Further informations can be found at: <http://www.quartz-scheduler.org/>. [↑](#footnote-ref-3)