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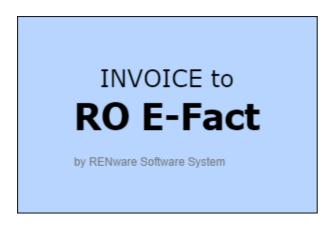
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# I. INVOICEtoROefact



**RENware Software Systems** 

# 1 INVOICEtoROefact

version 0.5.2.dev2

Facturi emise in Excel, problema rezolvata cu INVOICEtoROefact!

Emiteti si folositi in continuare facturi in Excel. Acest sistem va produce fisierul XML de care aveti nevoie pentru sistemul ANAF E-Factura

(https://www.anaf.ro/anaf/internet/ANAF/despre\_anaf/strategii\_anaf/proiecte\_digitalizare/e.factura).

Si mai mult, daca aveti nevoie, puteti Integra aceste facturi si alte sisteme externe prin metode moderne, uzuale, curente, incetatenite de ani de zile si binecunoscute de specialistii din IT.

# 1.1 Componentele si facilitatile sistemului

Sistemul INVOICEtoROefact ofera urmatoarele componente:

- xl2roefact version 0.4.1.dev1 procesarea facturilor in mod linie de comanda
- web2roefact version n/a procesarea facturilor din interfara web
- xl2roefact python library version 0.4.1.dev1 procesarea facturilor prin cod / program (development propriu)
- invoice template version 0.1.20 model / sablon factura in Excel

Descrierea tuturor acestora poate fi accessata aici.

# 1.2 Date identificare

• p/n: 0000-0095

• code-name: api\_to\_roefact

- commercial name: INVOICEtoROefact
- site web (https://invoicetoroefact.renware.eu/)
- git repository (https://github.com/petre-renware/api\_to\_roefact)
- copyright: RENware Software Systems
- author: Petre Iordanescu (petre.iordanescu@gmail.com)
- general system license

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# 2 Componentele sistemului

### **Cuprins:**

- · Componentele sistemului
  - Componente
    - xl2roefact
    - xl2roefact Python library
    - web2roefact
    - invoice template
  - · Criterii de clasificare
  - Note

Sistemul consta din mai multe componente toate avind acelasi obiectiv central: **emiterea de facturi si procesarea facturilor emise existente deja**. Faptul ca sunt mai multe componente asigura *mai multe cai alternative* de a atinge obiectivul central, cai ce pot fi utilizate in paralel (concurent, in acelasi timp) in functie de "dotarea tehnica" a fiecaruia, de afinitatea fiecaruia la un "gen" de sisteme sau pur si simplu de preferinta de moment a fiecaruia.

# 2.1 Componente

Sistemul ofera urmatoarele componente:

- xl2roefact version 0.4.1.dev1 procesarea facturilor in mod linie de comanda
- xl2roefact Python library version 0.4.1.dev1 procesarea facturilor prin cod / program (development propriu)
- web2roefact version n/a procesarea facturilor din interfara web
- invoice template version 0.1.20 model / sablon factura in Excel

Facilitatile generale ale fiecareia din acestea sunt prezentate in continuare.

### 2.1.1 xl2roefact

Aplicatie linie de comanda pentru procesarea facturilor. Facilitati (vezi "Criterii de clasificare"):

- · Operare: CLI
- Introducere si import factura (INp):
  - XLSX

JSON
FORM
Export si salvare factura electronica (EXp);
✓ JSON
✓ XML
<b>♥</b> EXCEL (pentru recipisa incarcare ROeF)
<b>⊘</b> PDF

✓ ROeF

Ready to Run

Descriere detaliata aici

# 2.1.2 xl2roefact Python library

Pachet (biblioteca) public *Python* utilizabil pentru dezvoltare / extindere aplicatii proprii. Facilitati (*vezi "Criterii de clasificare"*):

- Operare: din cod software
- Introducere si import factura (INp):
  - XLSX
  - JSON
  - FORM
- Export si salvare factura electronica (EXp);
  - JSON
  - XML
  - ✓ EXCEL (pentru recipisa incarcare ROeF)
  - PDF
- Ready to Run
- ROeF

Descriere detaliata aici

## 2.1.3 web2roefact

Aplicatie web pentru procesarea facturilor. Facilitati (vezi "Criterii de clasificare"):

• Operare: WEB

•	Introducere si import factura (INp):
	✓ XLSX
	✓ JSON
	✓ FORM
•	Export si salvare factura electronica (EXp);
	✓ JSON
	✓ XML
	✓ EXCEL (pentru recipisa incarcare ROeF)
	✓ PDF
<b>2</b>	Ready to Run
<b>2</b>	ROeF
2	1 A invoice templete
_	.1.4 invoice template
Sa	ablon factura in format Office Excel. Facilitati (vezi "Criterii de clasificare"):
•	Operare: din aplicatie Office Excel
•	Introducere si import factura (INp):
	✓ XLSX
	JSON
	FORM
•	Export si salvare factura electronica (EXp);
	JSON
	✓ XML
	✓ EXCEL
	✓ PDF (din aplicatia Office Excel)
<b>2</b>	Ready to Run
	ROeF
	Descriere detaliata aici

# 2.2 Criterii de clasificare

In scopul identificarii mai usoare a componentelor necesare acestea sunt clasificate dupa urmatoarele criterii:

• Operare interfata de operare al componentei:

- CLI linie de comanda (din consola tip "command prompt" sau terminal)
- WEB web din browser
- din cod software
- · din aplicatia locala Office Excel
- INp modul de introducere si import a facturii:
  - XLSX import dintr-un document Office Excel unde a fost deja introdusa anterior preluarii. Ca si instrument de introducere poate fi folosit oricare din cele ce permit salvarea / exportul in format XLSX (alte formate, in special cel anterior XLS nu sunt importabile ci trebuiesc "convertite" la formatul xlsx)
  - JSON import din format JSON
  - FORM factura se poate introduce manual direct in sistem, acesta punind la dispozitie un formular dedicat acestei operatii
- **EXp** formatul de exportare si salvare a facturii electronice<sup>1</sup>:
  - JSON format folosit pentru interschimbarea, interfatarea datelor cu sisteme standard REST (de exemplu Oracle EBS)
  - XML format folosit pentru interschimbarea, interfatarea datelor cu sisteme standard SOAP <sup>2</sup> (de exemplu RO eFact, SAP)
  - EXCEL format Office Excel xlsx
  - PDF format Adobe PDF tiparibil
- **Ready to Run** specifica faptul ca acea componenta poate fi folosita ca atare, fara o instalare prealabila ("ready to run") altfel aceasta trebuie instalata inainte de utilizare
- ROeF specifica faptul ca acea componenta permite incarcarea automata<sup>3</sup> a facturii in sistemul ANAF SPV RO
  eFact

## 2.3 Note

- 1. Exportul facturilor in formatele EXCEL si respectiv PDF se face utilizind formatul vizual al documentului din componenta invoice template ←
- 3. incarcarea automata a facturii in sistemul ANAF RO eFact este conditionata de configurarea respectivei componente cu credentialele necesare autentificarii in acest sistem (altfel acesta informatie va fi ceruta utilizatorui pentru introducere manuala) ←

# II. xl2roefact

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# 3 xl2roefact

- Site dedicat INVOICEtoROefact (https://invoicetoroefact.renware.eu/). Pentru accesul la toate link-urile din acest document vizitati site-ul dedicat acestui sistem.
- Pachet pe PyPi (https://pypi.org/project/xl2roefact/)
- Pachet pe GitHub (https://github.com/petre-renware/api\_to\_roefact/)

# 3.1 Facilitati



Aceasta componenta este "totul despre crearea de facturi electronice" din formatul Excel office (xlsx). Aplicatia poate genera factura in format JSON, XML, PDF si o poate incarca in sistemul *RO E-Fact*<sup>1</sup>.

Aceasta componenta ofera urmatoarele facilitati (acestea fiind obiectivele fundamentale ale componentei):

- transformarea facturilor din Excel in formatul XML cerut de catre sistemul ANAF RO E-Fact pentru incarcare
- incarcarea acestora in sistemul ANAF RO E-Fact<sup>1</sup>
- transformarea facturilor din Excel intr-un format JSON intermediar, independent de platforma si care permite integrarea acestora cu alte sisteme (standard REST)
- **generarea facturii in format PDF** pentru transmiterea acesteia catre client, semnarea electronica, tiparirea si arhivarea acesteia in format fizic (in general manipularea facturii in format "human readable")

Componenta ofera doua instrumente pentru realizarea si indeplinirea acestor obiective:

- x12roefact o aplicatie de tip linie de comanda (disponibila pentru sistemele de operare Windows, Linux si MacOS)
- x12roefact PyPi o blioteca standard Python utilizabila pentru dezvoltari proprii in scopul extinderii altor sisteme existente (custom development)

# 3.2 Instalarea aplicatiei xl2roefact

Pachetele de instalare sunt disponibile aici. Pachetele disponibile contin in numele lor versiunea de aplicatie utilizata si sistemul de operare pentru care sunt disponibile:

• MSI pachet instalare pentru Windows

- DEB pachet instalare pentru *Linux Debian* (verificati disponibilitatea pentru varianta sistemului de operare folosit de dvs)
- EXE executabil Windows in format "portabil" (un singur fisier)
- Pachet Python pe PyPi (https://pypi.org/project/xl2roefact/) este de fapt biblioteca xl2roefact care poate fi
  folosita ca si script independent de sistemul de operare daca aveti Python 3 instalat

NOTA 1: pentru echivalent utilizare portabila pentru Linux se va instala biblioteca Python (vezi sectiunea x12roefact PyPi library) dupa care devine utilizabil scriptul Python "ca orice alta comanda Linux"

NOTA 2: pachetul MSI pentru Windows este disponibil in orice variante / versiuni al sistemului. Optiunile pentru Linux sunt mult mai flexibile si astfel celelalte pot lipsi insa pot fi disponibile graruit, la cerere.

# 3.3 Configurarea aplicatiei xl2roefact

Parametrii de configurare aplicatiei se gasesc in fisierul *config\_settings.py*. Acestia sunt sub elaborati in limbaj Python prin utilizarea conventiilor de constante conform recomandarilor PEP (numele capitatlizat) si sunt acompaniti de linii de explicatii privind aplicabilitatea lor.

Configurare aplicatiei se poate face interactiv si din aplicatie. Pentru a obtine help referitor la detaliile comenzi se va folosi

```
xl2roefact settings --help
```

Configurarile existente si regulile recomandate in configurarea aplicatiei se afiseaza folosind comanda:

```
xl2roefact settings --rules
```

# 3.3.1 Configurarea din fisier extern

Configurarea aplicatuiei se poate face si prin intermediul unui fisier extern numit "sablon de configurare" (en: configuration template). Sablonul permite configurarea aplicatiei prin modificarea fragmentelor de text care trebuiesc cautate in fisierul Excel pentru identificarea diverselor informatii aferente facturii.

Sablonul este in format YAML (https://yaml.org/) iar informatiile ce trebuiesc descrise sunt explicate individual in comentarii insotitoare. De asemenea este util a fi citite si recomandarile date in pagina de descriere a aplicatiei.

Pentru a beneficia de cobfigurarile facute de dumneavoastra trebuie sa creati un fisier app\_settings.yml in directorul curent din care lansati aplicatia, fisier ce contine noile configurari dorite. Numele fisierelui este obligatoriu a fi respectat.



### Fisiere de configurare multiple

De retinut ca acest fisier este considerat (daca exista) cel din directorul curent de unde lansati aplicatia. Deci daca v-ati creat mai multe directoare de lucru (de exemplu pentru clienti diferiti) puteti crea fisiere de configurare specifice, cite unul in fiecare director.

#### Fisier de configurare global

In conditiile folosirii kitului MSI pentru o instalare locala a aplicatiei (cu utilizari multiple si repetate) si in situatia in care se doreste schimbarea configurarii implicite a aplicatiei se vor urma acesti pasi:

- in directorul de instalare a aplicatiei se va crea daca nu exita directorul data/
- in acest director se va crea un fisier app\_settings.yml cu configurarea globala dorita

Aceasta configurare inlocuieste configurarea implicita si se va aplica global in utilizarea aplicatiei. In continuare configurarile existente in directorul curent suprascriu configurarea globala (se aplica cu precedenta).

Aici puteti gasiti pentru descarcare un model de sablon de configuare.

# 3.4 Comenzile aplicatiei

Interfata aplicatie este realizata utilizind conventiile si practicile uzuale pentru aplicatii tip linie de comanda consola. Pentru informatii privind comenzile se poate folosi optiunea de **help**, dispobilia atit la nivelul general:

```
xl2roefact --help
```

cit si la nivel detaliat pentru fiecare comanda

```
xl2roefact [COMMAND] --help
```

#### Lista comenzilor:

- about Afiseaza informatii despre aceatsa aplicatie (copyright, scop, etc)
- settings \_ Afiseaza parametrii de configurare a aplicatiei. Vezi sectiunea de configurare a aplicatiei
- xl2json Transforma fisierul (fisierele) Excel in forma JSON pentru utilizare ulterioara ca forma de date standardizat pentru schimbul de informatii cu alte sisteme electronice

### Comenzile detaliate:

### 3.4.1 xl2roefact

function called when no command is invoked and to provide only application version (for external users to test it!).

### Usage:

```
xl2roefact [OPTIONS] COMMAND [ARGS]...
```

### Options:

```
--version show application version
--install-completion Install completion for the current shell.
--show-completion Show completion for the current shell, to copy it or customize the installation.
```

#### 3.4.1.1 about

provide a short application description.

Usage:

```
xl2roefact about [OPTIONS]
```

### 3.4.1.2 settings

display application configuration parameters and settings that are subject to be changed by user.

Args: rules: show recommended rules to follow when change application configurable settings (available in both RO & EN languages). Defaults to False.

Usage:

```
xl2roefact settings [OPTIONS]
```

### Options:

```
-r, --rules show settings recommended update rules
```

### 3.4.1.3 xl2json

extract data from an Excel file (save data to JSON format file with the same name as original file but .json extension).

Args: file\_name: files to process (wildcards allowed). files\_directory: directory to be used to look for Excel files. Defaults to invoice\_files/. NOTE: if default directory does not exists will consider current directory instead verbose: show detailed processing messages". Defaults to False.

### Usage:

```
xl2roefact xl2json [OPTIONS] [FILE_NAME]
```

### Options:

# 3.5 Practici si regului referitoare la continutul facturilor din Excel

Acest capitol se refera la modul in care este "tratat" continutul fisierului Excel cu factura, mai exact la modalitatea in care informatia facturii este cautata, identificata si gasita in scopul de a fi salvata in oricare din formatele de "factura electronica / E-Fact".

Utilizarea sablonului de factura Excel ce este livrat impreuna cu aplicatia **ESTE O VARIANTA DE LUCRU RECOMANDATA**, dar nu obligatorie. Chiar si in cazul utilizarii acestuia, prin modificarea "structurii" acestuia, informatia poate ajunge *nerecognoscibila / neidentificabila* total sau partial daca nu sunt urmate regulile expuse.

In general trebuie facuta diferenta intre datele facturii si modul in care aceasta va fi tiparita (va aparea la tiparire / previzualizare).

Mai exact **continutul informational** al facturii nu trebuie nici confundat si nici mixat cu **formatul de afisare al acesteia** (layout). Pentru acesta din urma se recomanda a fi folosite cu precadere *regulile de formatare* din Excel si nu cele stocare a datelor. Un exemplu este un numar zecimal oarecare unde:

- una este valoarea introdusa intr-o celula (de ex cu 3 zecimale) si
- alta este valoarea afisata (cu 2 zecimale) aceasta din urma trebuie obtinuta prin formatarea celulei respective de a afisa 2 zecimale prin rotunjire insa valoarea efectiva trebuie sa fie cea originala cu 3 zecimale, lucru (diferenta) care se poate vedea la editarea continutului celulei.

# 3.5.1 Reguli recomamdate in configurarea aplicatiei pe specificul Excel al facturilor dumneavoastra

### Reguli recomandate pentru adaptarea aplicatiei la modelul dvs de factura in Excel:

- fiecare parametru are un hep scurt (liniile ce incep cu caracterul #) citi-l inainte de a modifica uun parametru
- nu schimbati numele parametrilor asa cum este el specificat inainte de semnul egal (=)
- listele sunt incluse intre paranteze drepte ( [ . . . ] ) si elementele lor sunt separate prin caracterul virgula ( , )
- sirurile de caractere sunt incluse intre ghilimele (caracterul ")
- daca doriti stergerea unei listei (de ex daca nu doriti nici o optiune pentru acea lista) doar lasati acel parametru cu valoarea [] nu stergeti in nici un caz acel parametru
- nu adaugati parametrii suplimentari (altii decit cei specificati aici), acestia nu vor fi utilizati fara a modifica aplicatia (de asemenea riscati sa induceti erori in cod)

• pentru datele calendaristice in celulul Excel a se utiliza formatul standard de data ( date ) si modificati formatul de afisare in formatul dorit pe factura tiparibila

### (en-us) Recommended rules to configure the application to your Excel invoice model:

- each parameter has a short help (lines starting with # character) read it before changing that parameter
- do not change parametrs name as specified before equal ( = ) sign
- lists are enclosed in sqaured brackets ( [ . . . ] ) and items are separated by comma character ( , )
- strings are enclosed in " characters
- if you want to clear a list (for example you do not wants any options inside) just let it as <PARAMETR NAME> = [] do not drop that parameter
- do not add supplementary parameters, they will not be used without software changes (also risk to induce potential errors)
- for calendaristic dates Excel cells use date format and change it as display option to show wanted format

# 3.6 Tutorial utilizare aplicatie

## 3.6.1 Organizarea informatiei

Aplicatia xl2roefact "promoveaza" structurarea informatiei procesate astfel incit sa fie evitata situatia "de aglomerare" a directorului curent cu fisiere ce trebuiesc identificate si izolate in situatia in care se fac procesari in masa (pe mai multe fisiere / facturi sursa).

Astfel, aplicatia se asteapa ca fisierele Excel sursa (adica facturile de procesat) sa fie copiate in directorul invoice\_files/ de unde vor fi citite si tot aici vor fi create fisierele rezultate (JSON, XML, etc). Acest director este relativ la directorul curent de unde este lansata aplicatia si considerat "implicit" cu acest nume dar daca se doreste un alt director acest lucru poate fi facut folosind parametrul --files-directory (sau prescurtat -d) la lansarea aplicatiei astfel:

```
xl2roefact -d "calea si numele directorului dorit"
```



Nota

Ghilimelele sunt necesare numai daca numele si calea (path) contin caracterul spatiu.

#### **Exemple:**

pentru stabilirea directorului curent ca sursa pentru fisierele factura Excel:

```
xl2roefact -d ./
```

• procesarea tuturor facturilor facturilor din luna iunie, copiate intr-un director dedicat sub directorul curent:

```
xl2roefact -d ./facturi_iunie/
```

# 3.6.2 Exemplu de procesare a unei facturi

• se creaza directorul recomandat pentru stocarea facturilor in Excel:

```
md invoice_files
```

- se copiaza factura factura\_A.xlsx in acest director apoi se revine in directorul anterior daca acesta a fost schimbat pentru efectuarea copierii
- · se lanseaza aplicatia:

```
xl2roefact xl2json
```

In urma acestor operatii, in directorul invoice\_files vor rezulta:

- factura\_A.xlsx ca fiind fisierul Excel original cu factura
- factura\_A.json acesta fiind fisierul format JSON rezultat in urma procesarii si ce poate fi folosit pentru interschimbarea electronica a informatiei intre sisteme

# 3.7 Aspecte tehnice referitoare la formatul fisierului JSON aferent facturii

Acest fisier este cel generat de catre aplicatie in urma executiei acesteia cu comanda x12 j son . Formatul JSON are urmatoarra structura de baza:

```
{
   "Invoice": {...},
   "meta_info": {...},
   "excel_original_data": {...}
}
```

Cheile de la primul nivel contin:

- Invoice datele efective ale facturii
- meta\_info
  - informatii referitoare la procesarea facturii si mapa de conversie a cheii Invoice din formatul JSON in formatul XML cerut de sistemul RO E-Fact
  - harta de ajutor in conversia formatului JSON in formatul XML acceptat de sistemul RO E-Fact (cheie meta\_info.map\_JSONkeys\_XMLtags) si definititiile XML aferente (cheie meta\_info.invoice\_XML\_schemes)

- alte informatii despre fisierul Excel prelucrat (numele, worksheet cu factura, data si ora procesarii, CRC pentru verificare, etc)
- excel\_original\_data informatiile originale din fisierul Excel, asa cum au fost ele identificate si gasite precum si locatia (adresele celulelor). Aceste informatii sunt utile in cazul in care exista neclaritati in urma procesuluicde conversie pentru "a intelege" de unde si cum arata informatiile originale din fisierul Excel

Pentru detalii suplimentare despre formatul JSON trebyie consultata componenta referitoare la *biblioteca x12roefact destinata dezvoltarii* software

# 3.8 Descarcare (download) aplicatie xl2roefact CLI

- · Pachet instalare aplicatie Windows
- Pachet instalare script Python
- Model de sablon de configuare

# 3.9 Date identificare

- part number (p/n): 0000-0095-x12roefact
- · producator si copyright: RENWare Software Systems
- author: Petre Iordanescu (petre.iordanescu@gmail.com)

# 3.10 License

# 3.11 Note

1. Toate interactiunile cu sistemul ANAF RO E-Fact necesita o conexiune la internet si un set de credentiale ANAF RO E-Fact ale companiei pentru care se incarca factura. In lipsa acestora, fisierul XML generat de aplicatie poate fi incarcat ulterior (de ex de catre departmentul contabilitate) 

—

# III. web2roefact

# 4 Under construction page



UPCOMING...

# IV. xl2roefact python library

# 5 xl2roefact python library

- · xl2roefact python library
  - · System modules
    - · rdinv module logic
  - · Install library
    - Install from PyPi
    - · Install from distribution packages
  - · Working directories
  - Aspecte tehnice referitoare la formatul fisierului JSON aferent facturii
  - API Reference
  - · Download xl2roefact library

# 5.1 System modules

x12roefact main and basic modules are:

- rdiny read an Excel file and extract invoice data to a JSON file format
- wrxml write, convert the JSON invoice file to a XML file format, respecting schemes required by RO EFact standard
- chkxml check generated XML file
- ldxml load an invoice (ie, its XML associated file) to ANAF SPV system
- chkisld check if an invoice is already loaded in ANAF SPV system
- config\_settings define system settings & parameters mainly used in invoice info / data detection and extract from invoice Excel format file
- app\_cli contains the code for x12roefact application command line (CLI) format

Below is presented the *skeleton logic* of those modules which and where is relevant ie meaning where is not enough obvious from code or code complexity exceed usual limits (*for example nore than 100 lines of code per function*). For more technical details and specification regarding modules see API Reference

# 5.1.1 rdinv module logic

Main function of rdinv module is rdinv(...) which has the following logic sections which are in **strict sequence in presented order**:

- search of invoice\_items\_area sub-table. This area is expected to contain invoice lines and is "processed" first because it is more structured and easier to identify; after its identification the header area is considered upper of it and footer area below it
- solve invoice\_items\_area in 2 step.... In this step the code-data-variables of items area will be initialized in order to hold information that will be found
- *localize and mark areas for...* section that follows natural the previous one by initializing code-data-variables forcheader and footer areas to hold their corresponding information
- solve invoice\_header\_area detailed initialize of header area code-data-variables
- ReNaSt -RegNameStrategy section that identify and extract the legal registered name of invoice customer
- section to (Excel data)--->(JSON) format preparation and finishing section which prepare Excel original data found to be be saved as JSON as a more "electronic interchangeable" structure
- for more details about code logic description and presentation, please contact RENware Systems (http://www.renware.eu)

# 5.2 Install library

Library can be installed using 2 methods:

- · install from PyPi
- install from distribution packages

# 5.2.1 Install from PyPi

The library installation should be done using standard Python instruments:

pip install xl2roefact

## 5.2.2 Install from distribution packages

To install from distribution packages first download the package version intended to install (see download section), choose the package type (if you have no special option, then choose WHEEL format) and install it using pip as any other Python library installation (detailed in Python official documentation).

# 5.3 Working directories

Below is a short description of most important directories that will (can!) be found on local development environment.

invoice\_files/ default directory for Excel files which is intended to be processed

- build/ this directory which will contain intermediary files resulted from building CLI application, library distribution parts, etc. Directory is subject of .gitignore
- dist/ package files (wheels, dist), Windows executables, etc, generally all files subject of "public" distribution and download
- test\_\*/ contains test invoice samples (from client, a RENware one, a 3rd party one) and some useful specs in dev & test process

# 5.4 Aspecte tehnice referitoare la formatul fisierului JSON aferent facturii

Acest fisier este cel generat de catre aplicatie in urma executiei acesteia cu comanda x12 j son . Structura de baza a acestui fisier este:

```
{
    "Invoice": {...},
    "meta_info": {...},
    "excel_original_data": {...}
}
```

Cheile de la primul nivel contin:

- Invoice datele efective ale facturii
- meta\_info
  - informatii referitoare la procesarea facturii si mapa de conversie a cheii Invoice din formatul JSON in formatul XML cerut de sistemul RO E-Fact
  - harta de ajutor in conversia formatului JSON in formatul XML acceptat de sistemul RO E-Fact (cheie meta\_info.map\_JSONkeys\_XMLtags) si definititiile XML aferente (cheie meta\_info.invoice\_XML\_schemes)
  - alte informatii despre fisierul Excel prelucrat (numele, worksheet cu factura, data si ora procesarii, CRC pentru verificare, etc)
- excel\_original\_data informatiile originale din fisierul Excel, asa cum au fost ele identificate si gasite precum si locatia (adresele celulelor). Aceste informatii sunt utile in cazul in care exista neclaritati in urma procesuluicde conversie pentru "a intelege" de unde si cum arata informatiile originale din fisierul Excel

An example of JSON generated file is available here

# 5.5 API Reference

# 5.6 Download xl2roefact library

Pachete instalare biblioteca Python formate WHEEL si DIST

# 6 xl2roefact python library API Reference

- xl2roefact python library API Reference
- app\_cli
  - about
  - settings
  - xl2json
  - called\_when\_no\_command
  - run
- chkisld
- chkxml
- config\_settings
  - DEFAULT\_SUPPLIER\_COUNTRY
  - python\_object
- Idxml
- libutils
  - complete\_sexe\_file
  - invoice\_taxes\_summary
  - dict\_sum\_by\_key
  - isnumber
  - find\_str\_in\_list
- rdinv
  - rdinv
  - get\_excel\_data\_at\_label
  - mk\_kv\_invoice\_items\_area
  - get\_invoice\_items\_area
- wrxml
- \_\_init\_\_
  - \_version\_\_
- \_\_main\_\_
- \_\_version\_\_
  - normalized\_version
- data

# 7 app\_cli

app\_cli: the command line application for all xl2roefact functionalities.

Identification:

- copyright: (c) 2023 RENWare Software Systems
- author: Petre Iordanescu (petre.iordanescu@gmail.com)

#### 7.0.0.1 about

```
@app_cli.command()
def about()
```

provide a short application description.

### **7.0.0.2 settings**

```
@app_cli.command()
def settings(rules: Annotated[
    bool,
    typer.
    Option("--rules", "-r", help="show settings recommended update rules"),
] = False)
```

display application configuration parameters and settings that are subject to be changed by user.

### **Arguments**:

• rules - show recommended rules to follow when change application configurable settings (available in both RO & EN languages). Defaults to False.

### 7.0.0.3 xl2json

```
@app_cli.command()
def x12json(
    file_name: Annotated[
        str, typer.Argument(
            help="files to process (wildcards allowed)")] = "*.xlsx",
    files_directory: Annotated[
        Path,
        typer.Option(
            "--files-directory",
            "-d",
            exists=False,
            file_okay=False,
            dir_okay=True,
            writable=True,
            readable=True,
            resolve_path=True,
            "directory to be used to look for Excel files (if default directory does not exists
will consider current directory instead)."
        ) .
    ] = "invoice_files/",
    verbose: Annotated[
       bool,
        typer.
        Option("--verbose", "-v", help="show detailed processing messages"),
    ] = False)
```

extract data from an Excel file (save data to JSON format file with the same name as original file but .json extension).

### **Arguments**:

- file\_name files to process (wildcards allowed).
- files\_directory directory to be used to look for Excel files. Defaults to invoice\_files/. NOTE: if default directory does not exists will consider current directory instead
- verbose show detailed processing messages". Defaults to False.

### 7.0.0.4 called\_when\_no\_command

```
@app_cli.callback(invoke_without_command=True)
def called_when_no_command(
   ctx: typer.Context,
   version: Annotated[
        bool,
        typer.Option("--version", help="show application version"),
] = False)
```

function called when no command is invoked and to provide only application version (for external users to test it!).

### 7.0.0.5 run

NOTE: for run "reason to be" as copy of app\_cli see iss 0.1.22b 240216piu\_a

# 8 chkisld

chkisld: modul de verificare a starii de incarcare a unei facturi emise

Identification:

- code-name: chkisld
- copyright: (c) 2023 RENWare Software Systems
- author: Petre Iordanescu (petre.iordanescu@gmail.com)

### Specifications:

- document cerinte initiale: 110-SRE-api\_to\_roefact\_requirements.md section Componenta x12roefact
- INTRARI: fisier f-XLSX sau numarul / cheia / codul facturii
- IESIRI: valoarea echivalent TRUE daca factura a fost deja incarcata sau valoare echivalent FALSE daca factura nu a fost incarcata

# 9 chkxml

chkxml: modul de validare a facturii in sistemul ANAF E-Factura

Identification:

- code-name: chkxml
- copyright: (c) 2023 RENWare Software Systems
- author: Petre lordanescu (petre.iordanescu@gmail.com)

### Specifications:

- document cerinte initiale: 110-SRE-api\_to\_roefact\_requirements.md section Componenta xl2roefact
- INTRARI: fisier f-XML
- IESIRI: raport cu eventualele erori de validare

# 10 config\_settings

Configuration and setting parameters.

Regulile recomandate se gasessc in documentul doc/README\_app\_config\_rules.md

Public objects:

rules\_content: contains the rules text (rendered)

- copyright: (c) 2023 RENWare Software Systems
- author: Petre Iordanescu (petre.iordanescu@gmail.com)

### 10.0.0.1 DEFAULT\_SUPPLIER\_COUNTRY

### NOTE: "pattern-uri" (sabloane) de identificare si regasire a datelor folositi de

\_\_ comanda x12json reprezentind functionalitatea de extragere a datelor din Excel si exportul lor in formatul JSON (modulul `rdinv)\_\_

### 10.0.0.2 python\_object

suppose no info found

# 11 ldxml

ldxml: modul de incarcare a facturii in sistemul ANAF E-Factura

#### Identification:

- code-name: ldxml
- copyright: (c) 2023 RENWare Software Systems
- author: Petre Iordanescu (petre.iordanescu@gmail.com)

### Specifications:

- document cerinte initiale: 110-SRE-api\_to\_roefact\_requirements.md section Componenta xl2roefact
- INTRARI: fisier f-XML
- IESIRI: raport cu validarea si identificatorul incarcarii

# 12 libutils

general utilities library for all x12roefact components and modules.

### Identification:

- code-name: libutils
- copyright: (c) 2023, 2024 RENWare Software Systems
- author: Petre Iordanescu (petre.iordanescu@gmail.com)

### Components:

- complete\_sexe\_file() -> bool: Rename and move resulted exe file (called from build\_sexe script)
- dict\_sum\_by\_key(dict, str) -> float:Sum a dictionary for a given key at all depth levels
- find\_str\_in\_list(list, list) -> int: Search more strings (ie, a list) in list of strings
- invoice\_taxes\_summary(list[dict]) -> dict: Calculates invoice taxes summary as required by ROefact requirements
- isnumber(str) -> bool: Test a string if it could be used as number (int or float)

#### 12.0.0.1 complete\_sexe\_file

```
def complete_sexe_file(drop_source: bool = True) -> bool
```

Rename and move resulted exe file. This function is dedicated only to development phase, so various objects are hard coded.

- Specs: file to process .../dist\_sexe/x12roefact\_to\_update\_name.exe --> `.../dist/xl2roefact-version-win64.exe
- NOTE: all function code suppose that current directory is root of x12roefact, ie where is located pyproject.toml of package

#### Arguments:

drop\_source - indicate to delete source file after copying, ie make a "move" operation, otherwise make a copy
keeping the source file. Default behaviour is to delete source.

#### Returns:

• bool - True if file was found, renamed and moved with no error

### 12.0.0.2 invoice\_taxes\_summary

```
def invoice_taxes_summary(invoice_lines: list[dict]) -> list
```

Calculates invoice taxes summary as required by ROefact requirements.

#### Arguments:

• invoice\_lines - section with item lines from 'big' invoice dictionary

#### Returns:

• list - usable for "cac\_TaxSubtotal" key

### 12.0.0.3 dict\_sum\_by\_key

```
def dict_sum_by_key(search_dict: dict | list[dict], sum_key: str) -> float
```

Sum all dictionary (or list off dictionaries) items, at all levels, for a given key.

### **Arguments**:

- search\_dict dictionary to be searched for
- sum\_key key to be searched

#### Returns:

• float - with required sum

#### 12.0.0.4 isnumber

```
def isnumber(a_string: str) -> bool
```

test if a string is valid as any kind of number.

#### **Arguments:**

• a\_string - input string.

#### Returns:

• True - if input string is valid as any kind of number, orherwise False.

### 12.0.0.5 find\_str\_in\_list

```
def find_str_in_list(list_of_str_to_find: list, list_to_search: list) -> int
```

find a substring from list\_of\_str\_to\_find in elements of list\_to\_search.

### **Arguments**:

- list\_of\_str\_to\_find list of strings to search for.
- list\_to\_search liste where to search for substrings.

#### Returns:

• index - the index of list item which contains str\_to\_find (first found) or None if not found.

# 13 rdinv

rdinv: modul de procesare a fisierului Excel ce contine factura si colectare a datelor aferente.

Formatul acceptat fisier Excel este XLSX.

#### Identification:

- code-name: rdinv
- copyright: (c) 2023 RENWare Software Systems

• author: Petre Iordanescu (petre.iordanescu@gmail.com)

### Specifications:

- document cerinte initiale: 110-SRE-api\_to\_roefact\_requirements.md section Componenta xl2roefact
- INTRARI: fisier format XLSX ce contine factura emisa (cod: f-XLSX)
- IESIRI: fisier format JSON imagine a datelor facturii (cod: f-JSON)

#### 13.0.0.1 rdiny

```
def rdinv(file_to_process: str,
    invoice_worksheet_name: str = None,
    *,
    debug_info: bool = False) -> dict
```

read Excel file for invoice data.

Produce a dictionary structure + JSON file with all data regarding read invoice: canonical KV data, meta data, map to convert to XML and original Excel data.

#### **Arguments**:

- file\_to\_process the invoice file (exact file with path).
- invoice\_worksheet\_name the worksheet containing invoice, optional, defaults to first found worksheet.
- debug\_info key only, show debugging information, default False.

#### Returns:

• dict - the invoice extracted information from Excel file as dict(Invoice: dict, meta\_info: dict, excel\_original\_data: dict) TODO subject of documentation update.

NOTE ref important variables: \* db: pylightxl object: EXCEL object with invoice (as a whole) \* ws: pylightxl object: WORKSHEET object with invoice

#### 13.0.0.2 get\_excel\_data\_at\_label

get "one key Excel values", like invoice number or invoice issue date.

#### **Arguments**:

- pattern\_to\_search\_for for example for inv number, will pass the PATTERN\_FOR\_INVOICE\_NUMBER\_LABEL.
- worksheet the worksheet containing invoice (as object of pyxllight library).
- area\_to\_scan area of cells to be searched, default whole worksheet.

- targeted\_type what type expect (will try to convert to, if cannot will return str), default str.
- down\_search\_try establish if DOWN search method is tried, default True.

#### Returns:

None if not found OR dictionary containing: \* "value": int | float | str - the value found covenred to requested targeted\_type if possible or str otherwise; if "out of space" then returns None \* "location": (row, col) - adrees of cell where found value

#### Notes:

normal scan order is 1.RIGHT, 2.DOWN (if allowed), 3.IN-LABEL only in given area and pattern.

### 13.0.0.3 mk\_kv\_invoice\_items\_area

```
def mk_kv_invoice_items_area(invoice_items_area_xl_format) -> dict
```

transform invoice\_items\_area in "canonical JSON format" (as ky pairs).

#### **Arguments**:

• invoice\_items\_area\_xl\_format - invoice items area in Excel format (ie, DataFrame with row, col, data).

#### Returns:

• invoice\_items\_area\_xl\_format - dictionary with invoice items in Excel format (ie, rows, columns).

#### Notes:

• for ROefact XML model (& plan) see invoice\_files/\_\_model\_test\_factura\_generat\_anaf.xml.

### 13.0.0.4 get\_invoice\_items\_area

get invoice for invoice\_items\_area, process it and return its Excel format.

Process steps & notes: \* find invoice items subtable. \* clean invoice items subtable. \* extract relevenat data. \* NOTE: all Excel cell addresses are in (row, col) format (ie, Not Excel format like "A:26, C:42, ...")

### **Arguments**:

- worksheet -the worksheet containing invoice (as object of pyxllight library).
- invoice\_items\_area\_marker string with exact marker of invoice items table.
- NOTE this is the UPPER-LEFT corner and is determined before calling this procedure.
- wks\_name the wroksheet name (string) of the worksheet object.

#### Returns:

• invoice\_items\_area - dictionary with invoice items in Excel format (ie, rows, columns).

# 14 wrxml

wrxml: modul de generare a fisierului format XML

#### Identification:

- code-name: wrxml
- copyright: (c) 2023 RENWare Software Systems
- author: Petre Iordanescu (petre.iordanescu@gmail.com)

### Specifications:

- document cerinte initiale: 110-SRE-api\_to\_roefact\_requirements.md section Componenta xl2roefact
- INTRARI: fisier f-JSON
- IESIRI: fisier format XML conform cerintelor si sistemului ANAF E-Factura (cod: f-XML)

### 15.0.0.1 \_\_version\_\_

default conversion takes place over xl2roefact actual version

xl2roefact.main: Python package standard file to assure run as python -m xl2roefact.

#### Identification:

- code-name: \_\_main\_\_
- copyright: (c) 2023 RENWare Software Systems
- · author: Petre Iordanescu (petre.iordanescu@gmail.com)

### Deployments:

- · Windows: MSI installer with EXE application.
- Linux: x12roefact executable shell as wrapper for x12roefact.py.

# Specifications:

- command general format: python -m x12roefact [OPTIONS] COMMAND [ARGS]....
- help: python -m xl2roefact --help.

## 17 \_\_version\_\_

xl2roefact version info.

```
###################
####### ####
# ## # # #
             # # ## ##
 ## # #
            ### ### # ## #
##
## ## # #
## ## #
             # # # ## #
# ## # # #####
             # # # ## #
              # #
# ## # # #
                 ## ##
####### ######
              ####
                  ######
             ####### ###### ##### ##### ######
         # # # # ## ## ## ## ##
###### #####
# ## # # # # # # # # # #
                      #
                          # # ##### # #
 #####
                                # #
#############
  # ######
                      ####### #####
                                 ####
```

#### 17.0.0.1 normalized\_version

```
def normalized_version(raw_version: str = __version__) -> str
```

transform version string in canonical form.

Usage:- import x12roefact - x12roefact.\_\_version\_\_.normalized\_version()

#### **Arguments**:

raw\_version (str): a raw version string. Defaults to package current version string.

#### Returns:

str: canonical version string

18 data

# V. invoice template

Copyright (C) RENware Software Systems

## 19 invoice template

- · invoice template
  - Instalarea sablonului de factura emisa
  - Recomandari in utilizarea sablonului
  - Descarcare (download) sablon factura
  - License

versiune curenta 0.1.20 formate suportate XLSX

#### 19.1 Instalarea sablonului de factura emisa

Aceasta componenta consta dintr-un director (ce nu necesita instalare speciala ci simpla copiere locala acolo unde va fi utilizat). Acest director contine:

- fisierul pentru factura invoice\_template\_CU\_tva.xlsx ce este disponibil pentru descarcare aici
- directorul released\_packages/ ce contine versiuni anterioare de sablon ce sunt inca suportate
- · prezentul document

#### 19.2 Recomandari in utilizarea sablonului

Aceasta sectiune se refera la modul in care ar trebui "tratat" continutul fisierului Excel cu factura *in conditiile in care se intentioneaza ca aceasta sa fi procesata ulterior cu sistemul INVOICEtoROeFact*. Acest sablon este general valabil (este un fisier Excel ca oricare altul) deci in acest caz este important a "constientiza" faptul ca informatia aferenta facturii din Excel va fi cautata, identificata si gasita in scopul de a fi salvata in formatele de factura electronica (utilizarea acestui sablon de factura Excel impreuna cu sistemul INVOICETOROeFact ESTE O VARIANTA DE LUCRU RECOMANDATA, dar nu obligatorie).

Astfel se recomanda ca acest sablon sa fie utilizat asa cum este livrat, fara a efectua modificari majore in structura sa cum ar fi:

- modificarea formatelor (de tip de date) celulelor in scopul unei afisari "mai frumoase"
- adaugarea de informatii prin concatenare de siruri de caractere sau orice alte metode de a altera continutul vizibil al celulelor in scopul unei afisari "mai frumoase"
- modificarea locatiilor celulelor prin inserarea sau stergerea de linii, coloane sau celule noi

In general trebuie facuta diferenta intre datele facturii si modul in care aceasta va fi tiparita (va aparea la tiparire / previzualizare).

#### **DETALII TEHNICE:**

Continutul informational al facturii nu trebuie nici confundat si nici mixat cu **formatul de afisare al acesteia** (layout). Pentru acesta din urma se recomanda a fi folosite cu precadere *regulile de formatare* din Excel si nu cele stocare a datelor. Un exemplu este un numar zecimal oarecare unde:

- una este valoarea introdusa intr-o celula (de ex cu 3 zecimale) si
- alta este valoarea afisata (cu 2 zecimale) aceasta din urma trebuie obtinuta prin formatarea celulei respective de a afisa 2 zecimale prin rotunjire insa valoarea efectiva trebuie sa fie cea originala cu 3 zecimale, lucru (diferenta) care se poate vedea la editarea continutului celulei.

## 19.3 Descarcare (download) sablon factura

office Excel XLSX

### 19.4 License

VI. Help

## VI.I Manuale web2roefact

# INVOICE to RO E-Fact to ROWNER Solan

#### **INVOICEtoROefact System**

(c) 2023 RENware Software Systems

## 20 Catalogul manualelor de utilizare

#### **Cuprins:**

- Catalogul manualelor de utilizare
- ..



#### **INVOICEtoROefact System**

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## 21 Catalogul manualelor de configurare si administrare

#### **Cuprins:**

- Catalogul manualelor de configurare si administrare
- ...

## VI.II Cerintele sistemului

#### **RENware Software Systems**

## 22 Propunere tehnica

#### **Cuprins:**

- · Propunere tehnica
  - · Aria de cuprindere
  - Considerente generale de securitate
  - Considerente generale privind bazele de date proprii sistemelor
  - · Considerente generale privind auditarea informatiilor
- Client: n/a not public
- Data: 2023-Noiembrie
  - **1**

#### Codificarea documentelor

codificarea numelor documentelor si a proceselor este facuta in conformitate cu metodologia RENware SDEVEN (http://sdeven.renware.eu)

#### **Cuprins:**

- · Propunere tehnica
  - · Aria de cuprindere
  - · Considerente generale de securitate
  - Considerente generale privind bazele de date proprii sistemelor
  - · Considerente generale privind auditarea informatiilor

## 22.1 Aria de cuprindere

Solutiile propuse prin aceasta propunere tehnica sunt:

- INVOICEtoROefact (code-name api\_to\_roefact) integrare Sistemul National de Facturi Emise RO e-Factura descriere si cerinte aici
- PayValidaBoa (code-name payments\_validation\_board) Flux aprobare facturi primite pentru ordonantare la plata descriere si cerinte aici

In continuare se prezinta o serie de considerente generale valabile pentru toate sistemele din aria de acoperire.

## 22.2 Considerente generale de securitate

- (RSEC-01) fisierele de configurare a sistemelor (fiind format text UTF-8) vor avea ca owner un utilizator dedicat sistemului respectiv sau utilizatorul root. Numai acesti doi utilizatori pot avea acces RW la aceste fisiere
- (RSEC-02) toate documentele de provenienta externa sistemelor vor fi "purtatoare" ale unui certificat digital ce atesta validitatea documentelor. Acest certificat va fi de preferinta de tip "semnatura electronica" dar nu obligatoriu calificata. Este suficient un simplu certificat (cheie) tip RSA generat intern si distribuit utilizatorilor autorizati sa emita documentele respective. O copie a certificatului (sau a certificatelor daca se vor emite mai multe) ce atesta validitatea unui document va sta pe server in locatii ce sunt conforme cu RSEC-01

## 22.3 Considerente generale privind bazele de date proprii sistemelor

- (DBS-01) bazele de date vor contine o cheie primara "real primara" (adica avind toate caracteristicile tehnice pentru PK in sensul uzual cunoscut din teoria bazalor de date). Aceasta cheie va fi de tip Char (32) reprezentind tipul uuid4 (cunoscut si ca guid) convertit la sir de caractere UTF-8 si reversibil ca transformare din string in uuid4. Aceasta cheie va fi generata automat si intretinuta de sistem deservind scopuri pur tehnice de referentiere si relationare a datelor. Modificarea manuala nu este permisa putind genera situatii de hazard.
- (DBS-02) bazele de date vor contine si o alta "cheie primara uman recongnoscibila" ( AK in teoria bazelor de date) utilizata in scop de recunoastere si regasire a informatiei de catre utilizatori. Aceasta cheie va avea urmatoarele catacterisrici:
  - va fi unica, tip Char (10) (limitarea lungimii se va aplica la introducerea datelo si nu in baza de date)
  - agnostic case, nu se va face diferenta intre litere mari sau mici (pentru a evita confuziile)
  - obligatorie iar daca utilizatorul "nu o doreste" se va default-a la PK-ul anterior
- (DBS-03) bazele de date vor fi intr-unul din formatele: (a) relational sau (b) JSON standard. Pentru bazele de date in format relational va fi preferata o solutie de SGBD tip open source matura, intretinuta in urmatoarea ordine de aplicare:
  - 1. SQLite (https://www.sqlite.org/index.html) pentru baze de date ce nu vor depasi 10,000 de inregistrari
  - 2. PostgreSQL (https://www.postgresql.org/) pentru baze de date ce se esttimeaza ca vor depasi 10,000 de inregistrari
  - 3. MariaDB (https://mariadb.org/) pentru baze de date ce se esttimeaza ca vor depasi 10,000 de inregistrari
  - prima varianta va fi preferata datoritra "portabilitatii datelor"
  - a treia varianta este enumerata ca optiune preferata a utilizatorului la varianta 2.
- (DBS-04) bazele de date vor folosi numai cimpuri formate standard, clasice si elemetare:
  - sir de carectere ( CHAR sau VARCHAR )
  - numere intregi cu semn ( INTEGER )
  - numere reale cu semn (FLOAT)

- numere combinate a caror valoare poate fi intreg sau real ( NUMBER )
- valori logice sub forma intreg cu semn astfel: 1 pentru TRUE si 0 sau NULL pentru FALSE
- valori logice sub forma de caracter astfel: prima litera din lista [Y, y, D, d, T, t] pentru TRUE si orice altceva inclusiv NULL pentru FALSE
- (DBS-05) in cazul bazelor de date relationale, integritatile referentiale vor fi evitate la maximum prin intretinerea datelor numai cu ajutorul aplicatiei sau in cazull necesitatii modificarii manuale a datelor, aceasta modfica re sa fie efectuata numai de personal calificat
- (DBS-06) informatiile de tip data-timp (data, ora, etc...) vor fi stocate de preferinta sub forma de String in formatul ISO: YYYY-MM-DD HH:MM:SS.nnnnn.
- (DBS-07) informatii de data-timp vor fi stocate avind valori agnostice de "Time Zone" adica vor fi considerate

  UTC lucru care va permite comparabilitatea acestora indiferent de locatia /zpna de timp de unde au fost
  generate.

## 22.4 Considerente generale privind auditarea informatiilor

- Cimpurile de audit ce indica utilizatori:
  - (AUD-01) pentru informatiile CONSTIENT GENERATE DE UTILIZATORI (adica generate prin activarea unor controale vizuale, prin lansarea manuala a unei aplicatii, etc), aceste cimpuri vor contine numele tip username al utilizatorului folosit pentru autentificarea in sistem
  - (AUD-02) pentru informatiile GENERATE DE SISTEM la rulari automate, periodice, de verificare, de validare, etc, aceste cimpuri vor contine textul system (pentru a evita confuzii cu utilizatori reali la nivel de sistem de operare)
- (AUD-03) Cimpurile de audit ce indica date calendaristice vor respecta standardul ISO fiind in formatul maximal YYYY-MM-DD hh:mm:ss

# INVOICE to RO E-Fact to Schwer Sedere Cedere

#### **INVOICEtoROefact System**

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## 23 Propunere tehnica sistem INVOICEtoROefact

#### **Cuprins:**

- Propunere tehnica sistem INVOICEtoROefact
  - Objective
  - Vedere de ansamblu a solutiei
  - Componenta xl2roefact
    - Diagrama logica de functionare a componentei
  - Componenta WEB\_DASHB
  - Componenta SYSTEM\_DB
- p/n: 0000-0095
- code-name: api\_to\_roefact
- commercial name: INVOICEtoROefact
- url propunere tehnica: http://apitoroefact.renware.eu/commercial\_agreement/110-SRE-api\_to\_roefact\_requirements.html
- git: https://github.com/petre-renware/api\_to\_roefact

### **Cuprins:**

- Propunere tehnica sistem INVOICEtoROefact
  - Objective
  - · Vedere de ansamblu a solutiei
  - · Componenta xl2roefact
    - Diagrama logica de functionare a componentei
  - Componenta WEB\_DASHB
  - Componenta SYSTEM\_DB

### 23.1 Objective

Acest sistem va asigura incarcarea facturilor emise in sistemul ANAF E-Factura (https://www.anaf.ro/anaf/internet/ANAF/despre\_anaf/strategii\_anaf/proiecte\_digitalizare/e.factura) cu respectarea reglementarilor publicate in acest sens (lista contine si legaturi catre fisierele publicate de catre ANAF):

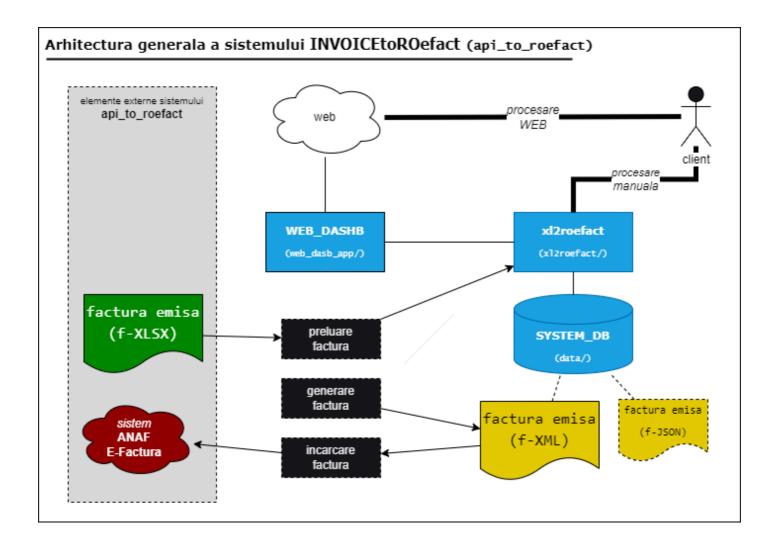
- Conformarea la modificarile legislative si utilizarea sistemului (https://static.anaf.ro/static/10/Anaf/Informatii\_R/Informatii\_modificare\_CIUS\_RO.pdf)
- Informatii de interes referitoare la implementarea sistemului național privind factura electronică RO e-Factura (https://static.anaf.ro/static/10/Anaf/Informatii\_R/Comunicat\_e-factura\_aprilie2022\_v2\_050422.pdf)
- Instrucțiuni de utilizare
   (https://static.anaf.ro/static/10/Anaf/Informatii\_R/API/Oauth\_procedura\_inregistrare\_aplicatii\_portal\_ANAF.
   pdf)

### 23.2 Vedere de ansamblu a solutiei

Solutia api\_to\_roefact consta din urmatoarele componente:

- api\_to\_roefact . x12roefact aceasta componenta are rolul de a implementa efectiv obiectivele principale ale sistemului INVOICEtoROefact. Componenta este capabila sa ruleze atit "standalone" (ca linie de comanda CLI) dar si prin utilizarea ei de catre componenta WEB\_DASHB si astfel utilizarea ei in varianta de sistem prezentat "over internet / intranet". Prezentarea detalita a acesteia se gaseste aici.
- api\_to\_roefact . WEB\_DASHB aceasta componenta are rolul de agrega componentele si de a prezenta solutia INVOICEtoROefact "over internet / intranet". De asemenea componenta asigura modulele UI necesare pentru administrarea sistemului. Prezentarea detalita a acesteia se gaseste aici.
- api\_to\_roefact . SYSTEM\_DB .Aceasta componente reprezita baza de date a sistemului INVOICEtoROefact atit partea relationala dar si partea no-sql a acesteia (utilizata pentru eventuale sincrnizari provenite din utilizarea CLI a componentei x12roefact ). Prezentarea detalita a acesteia se gaseste aici.

Figura urmatoare prezinta schematic rolul general al componentelor precum si interactiunea acestora cu mediul exterior sistemului api\_to\_roefact.



## 23.3 Componenta xl2roefact

- (RDINV) modul de procesare a fisierului format XLSX ce contine factura si colectare a datelor aferente
  - INTRARI: fisier format XLSX ce contine factura emisa (cod: f-XLSX)
  - IESIRI: fisier format JSON imagine a datelor facturii (cod: f-JSON)
- (WRXML) modul de generare a fisierului format XML
  - INTRARI: fisier f-JSON
  - IESIRI: fisier format XML conform cerintelor si sistemului ANAF E-Factura (cod: f-XML)
- (CHKXML) modul de validare a facturii in sistemul ANAF E-Factura
  - INTRARI: fisier f-XML
  - IESIRI: raport cu eventualele erori de validare <sup>1</sup>
- (LDXML) modul de incarcare a facturii in sistemul ANAF E-Factura
  - INTRARI: fisier f-XML
  - IESIRI: raport cu validarea si identificatorul incarcarii 1
- (CHKISLD) modul de verificare a starii de incarcare a unei facturi emise

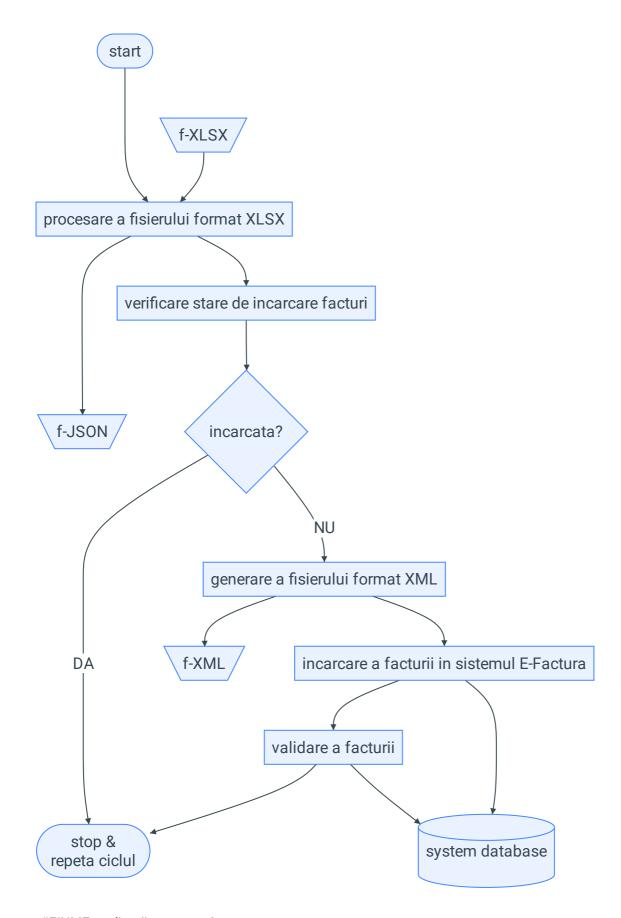
- INTRARI: fisier f-XLSX sau numarul / cheia / codul facturii
- IESIRI: valoarea echivalent TRUE daca factura a fost deja incarcata sau valoare echivalent FALSE daca factura nu a fost incarcata 2



### Formatul fisierelor Excel cu factura

XLSX este sigurul format de fisier acceptat

## 23.3.1 Diagrama logica de functionare a componentei



...#FIXME explicatii necesare?...

## 23.4 Componenta WEB\_DASHB



...INCOMING...

## 23.5 Componenta SYSTEM\_DB



...INCOMING...

- 1. raportul se scrie in baza de date a sistemului si in fisierul f-XLSX intr-un worksheet separat dedicat acestui scop ← ←
- 2. in cazul valorii echivalent TRUE se poate intoarce identificatorul incarcarii daca este disponibil 🗠

#### **RENware Software Systems**

## 24 Propunere tehnica sistem PayValidaBoa

#### **Cuprins:**

- · Propunere tehnica sistem PayValidaBoa
  - Objective
  - Vedere de ansamblu a solutiei
  - · Cerinte functionale generale
  - Componenta xxx
- p/n: 0000-0094
- code-name: payments\_validation\_board
- · commercial name: PayValidaBoa
- url propunere tehnica: http://apitoroefact.renware.eu/commercial\_agreement/110-SRE-payments\_validation\_board\_req.uirements.html
- git: n/a

#### **Cuprins:**

- · Propunere tehnica sistem PayValidaBoa
  - Objective
  - · Vedere de ansamblu a solutiei
  - · Cerinte functionale generale
  - Componenta xxx

### 24.1 Objective

Acest sistem asigura prezentarea unui "dashboard" cu lista facturilor primite si starea lor de **verificare si aprobare interna** in vederea ordonantarii lor la plata.

### 24.2 Vedere de ansamblu a solutiei

Sistemul payments\_validation\_board consta din urmatoarele componente:

• INV\_TOPMNG\_BOARD - aceasta componenta prezinta pentru MANAGEMNTul tip CFO lista facturilor primite si starea lor referitor la validarea si aprobarea lor finala si un control pentru APROBARE FINALA sau BUN DE PATA.

- INV\_CHK\_BOARD aceasta componenta prezinta pentru VERIFICATORI si APROBABTORI lista fa/turilor primite si diverse controale pentru aprobarea si scrierea de diverse note si observatii.
- INV\_NOTIF\_BOARD aceasta componenta prezinta notificari referitoare la diversele OBSERVATII si NOTE facture asupra facturilor primite in diverse stadii de aprobare de catre persoanele care efectueaza verificari asupra lor (prin componenta INV\_CHK). Notificarile sunt disponibile atit in interfata aplicatiei iar unele din ele pot fi transmise prin mail.
- INV\_LD\_FOR\_APPRV aceasta componenta permite incarcarea facturilor in fluxul de aprobare. Optiuni de incarcare:
  - manuala (dintr-un board al aplicatiei)
  - · automata dintr-un director
  - dintr-o baza de date externa sistemului (cu "marcarea" facturilor ce vor trebui incarcate)
  - la incarcare (indiferent de metoda) vor trebui specificati (sau dedusi din alte informatii) DESTINATARII ce primesc documentul
- ADMIN\_CFG aceasta componenta permite pentru ADMINISTRATORI diverse OPTIUNI DE CONFIGURARE:
  - lista utilizatorilor ce fac parte dinfluxul de aprobare
  - · adresele e-mail ale utilizatorilor
  - rolul utilizatorilor in accea ce priveste fluxul de aprobare facturile primite
  - certificate si semnaturile de certificare a "semnaturilor" de aprobare
  - ...

Figura urmatoare prezinta schematic rolul general al componentelor precum si interactiunea acestora cu mediul exterior sistemului payments\_validation\_board.



...IN PROGRESS...

## 24.3 Cerinte functionale generale



...INCOMING...

## 24.4 Componenta xxx



...INCOMING...

**RENware Software Systems** 

## 25 Optiuni tehnice

#### **Cuprins:**

- · Optiuni tehnice
  - · Optiuni sistem INVOICEtoROefact
    - Recomandari sistem INVOICEtoROefact
  - · Optiuni sistem PayValidaBoa
  - Optiuni generale de implementare

Acest document prezinta posibilele optiuni tehnice la cele doua sisteme, optiuni care vor trebui agreate si (preferabil) planificate cel putin din punct de vedere al prioritatii.

## 25.1 Optiuni sistem INVOICEtoROefact

#### Forma de utilizare si interactionare

- 🗆 (INVOICEtoROefact-RQ-01) varianta CLI (command line) cu utilizare "individuala"
- 🗆 (INVOICEtoROefact-RQ-02) varianta WEB cu utilizare centralizata

## Configurabilitate

- [INVOICEtoROefact-RQ-03] varianta in care se prelucreaza un model de fisier Excel in care sunt "fixate si blocate" locatiile celulelor ce contin date relevante
- [INVOICEtoROefact-RQ-04] varianta in care structura si formatul fisierului Excel contin "cuvinte cheie" ce determina regasirea date relevante (de exemplu textul "Client:" intr-o celula semnifica inceperea unei zone cu datele clientului de la acea celula in jos si pina prima celula necompletata ce va fi gasita)

#### 25.1.1 Recomandari sistem INVOICEtoROefact

- varianta (INVOICEtoROefact-RQ-01) este recomandata ca fiind "aproape obligatorie" deoarece chiar si in varianta WEB ea va trebui scrisa intr-o forma neutilizabila direct (sub forma de functie a sistemlui).
   Transformarea acestei functii in varianta CLI va permite o executie portabila ("la purtator") si offline (in situatii extreme se poate folosi doar fisierul XML generat si acesta va putea fi manual incarcat in ANAF-SPV).
   Informatia privind "starea de incarcare a facturii" va fi oricum salvata si in fisierul Excel aferent facturii si va putea fi preluata de catre varianta WEB pentru centralizarea informatiilor- a se vedea si modulul LDXML si notele de subsol aferente
- optiunea (INVOICEtoROefact-RQ-03) este recomandata ca varianta de start deoarece va permite realizarea unei variante OPERATIONALE (de lucru curent si testare) intr-un termen mai scurt, urmind ca aceasta optiune sa fie gradat extinsa si cu optiunea (INVOICEtoROefact-RQ-04). Aceasta "linie de lucru" nu va induce probleme, avind in vedere ca orice optiune / varianta aleasa ca varianta de start si planificata a fi extinsa va implica si MIGRAREA datelor deja produse la momentul extinderii ei

## 25.2 Optiuni sistem PayValidaBoa

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#### Framework standardizat de orchestrare

- $\square$  (PayValidaBoa-RQ-01) utilizarea unui framework specializat de orchestrare si integrare cu alte sisteme "externe"
  - Implicatii: poate mari durata de implementare
  - Avantaje: utilizarea ulterioara pentru integrare intre sisteme ce prezita interfata standardizata (REST, SOA, NTFS, EXT4, OAuth, ...)

## Д

#### Semnare electronica a facturilor verificate

- (PayValidaBoa-RQ-02) utilizarea de certificat tip "semnatura electronica" pentru autentificarea verificarii facturilor EMBEDDED IN FACTURA
- (PayValidaBoa-RQ-03) utilizarea de certificat tip "semnatura electronica" pentru autentificarea verificarii facturilor adiacet facturii disponibil pentru consultare numai in sistemul PayValidaBoa
- (PayValidaBoa-RQ-04) verificarea facturilor nu necesita certificat tip "semnatura electronica" ci simpla informatie existenta in sistemul PayValidaBoa este suficienta



#### Baza de date 'interna / specifica' sistemului PayValidaBoa

• a se vedea documentul "Considerente tehnice generale", sectiunea "Considerente generale privind bazele de date proprii sistemelor", item "(DBS-03)" pentru opptiuni privind baza de date ce va fi utilizata "pentru operatiuni interne si specifice" de catre sistemul PayValidaBoa

## 25.3 Optiuni generale de implementare

Sistemele tip infrastructura ce vor fi utilizate
• (general-RQ-01) - server web-HTTP pentru aplicatiile de tip WEB (ATENTIE: sistemele WEB ce vor fi implementate necesita interfata / mod de operare standard WSGI)
• 🗆 (general-RQ-02) - sistem de autentificare utilizat (intern aplicatie, Google, Identity Management propriu,)
• 🗆 (general-RQ-03) - sistemele vor rula pe infrastructura proprie sau aceastea vor rula in infrastructuri gazduite
Alte optiuni 'ad-hoc' (in sedinta)
•
•
•
•
•

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#### Versiunile development

Versiunile ce au in codul / numarul lor acronimul dev sunt considerate versiuni elaborate in faza de dezvoltare software. Aceste versiuni sunt functionale cu singura observatie ca testele facute sunt doar din punct de vedeare a codului si nu cu date de business, adica nu prezinta erori in functionare. Se recomanda a folosi aceste versiuni in cazurile de dezvoltari proprii sau integrari cu alte sisteme.

## 26 Descarcare resurse (downloads)

## 26.1 Format biblioteca Python

### 26.1.1 Pachetul xl2roefact pe PyPi

Versiunea de pe pe repository-ul public PyPi permite instalarea directa in mediul Python local astfel:

pip install xl2roefact

In acest mod va fi instalata automat ultima versiune publicata pe *PyPi* (https://pypi.org/project/xl2roefact/) . Accesati linkul anterior pentru a putea accesa alte versiuni publicate pe *PyPi* si modul de instalare a acestora.

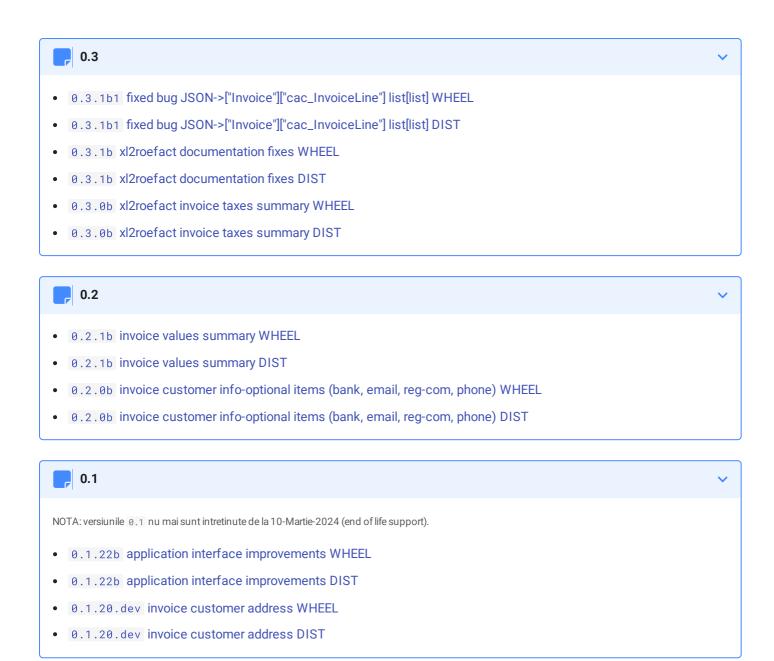
#### 26.1.2 Pachetul xl2roefact python library format sursa



#### 0.4



- 0.4.1.dev1 fix sEXE bug from v(0.4.1.dev0) version DIST
- 0.4.1.dev0 xl2roefact include a data directory in package WHEEL
- 0.4.1.dev0 xl2roefact include a data directory in package DIST
- 0.4.0.dev2 externalize recommended rules for updating app setting rules WHEEL
- 0.4.0.dev2 externalize recommended rules for updating app setting rules DIST
- 0.4.0.dev1 fixed x12roefact CLI app version addressing WHEEL
- 0.4.0.dev1 fixed x12roefact CLI app version addressing DIST



### 26.1.3 Pachetul web2roefact pe PyPi

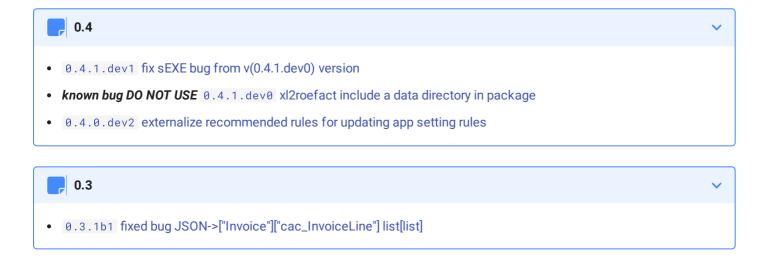
Nici o resursa disponibila.

### 26.2 Format executabil Windows x64

#### 26.2.1 Aplicatia xl2roefact linie comanda pachet instalare (win64-msi)



### 26.2.2 Aplicatia xl2roefact linie comanda executabil portabil (win64-exe)



#### 26.2.3 Aplicatia web2roefact pachet instalare (win64-msi)

Nici o resursa disponibila.

#### 26.3 Format DEB instalare Linux

Nici o resursa disponibila.

## 26.4 Sablon template factura



## 26.5 Sablon fisier configurare a aplicatiei xl2roefact

Sablonul permite configurarea aplicatiei prin modificarea fragmentelor de text care trebuiesc cautate in fisierul Excel pentru identificarea diverselor informatii aferente facturii.

Sablonul este in format YAML (https://yaml.org/) iar informatiile ce trebuiesc descrise sunt explicate individual in comentarii insotitoare. De asemenea este util a fi citite si recomandarile date in pagina de descriere a aplicatiei.

Pentru a beneficia de cobfigurarile facute de dumneavoastra trebuie sa creati un fisier app\_settings.yml in directorul curent din care lansati aplicatia, fisier ce contine noile configurari dorite. Numele fisierelui este obligatoriu a fi respectat.



#### Fisiere de configurare multiple

De retinut ca acest fisier este considerat (daca exista) cel din directorul curent de unde lansati aplicatia. Deci daca v-ati creat mai multe directoare de lucru (de exemplu pentru clienti diferiti) puteti crea fisiere de configurare specifice, cite unul in fiecare director.



#### Sablon de fisier

Urmarind acest link puteti descarca un sablon de fisier de configurare. De mentionat ca acest sablon este pre-completat cu situatii deja intilnite in practica, el fiind chiar sablonul implicit folosit de aplicatie.

VII. About

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#### 1. Source Code.

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# VII.I Despre INVOICEtoROefact

#### **RENware Software Systems**

#### INVOICEtoROeFact Project

- CHANGELOG
  - 0.5
    - 0.5rc0 invoice supplier (#TODO: ... in progress...)
  - 0.4
    - 0.4.1.dev0 xl2roefact include a data directory in package for various data files "built-in" package (240318 h09:00)
- Archived CHANGELOGs
  - 0.4 version
  - 0.3 version
  - 0.2 version
  - 0.1 version

## 27 CHANGELOG

- For version code structure meaning see SDEVEN methodology document (http://sdeven.renware.eu)
- <PROJECT ROOT>/doc\_src/ is the default starting location in a file path (if not clear from context) (ATTN in production environment is docs/)
- «WEB\_ROOT»/ is the HTTP server root directory, as default docs/ and supposed if no other parent is specified

#### 27.10.5

#### 27.1.1 0.5rc0 invoice supplier (#TODO: ... in progress...)

- tbd.Must...code: INV.SUPP ... x12roefact invoice supplier ( <cac:AccountingSupplierParty> )
  - start with search where produce "supplier\_area": "...future..." (JSON extract) or "FIXME: INV.SUPP"
  - ... idea is to reuse code for customer area as much as possible
- 0.5.2.dev2 release xl2roefact. 0.4.1.dev1 fix sEXE bug from 0.4.1.dev0 version;
  - ✓ 1. update config\_settings.py module to load app cfg from external file only when not sEXE frozen app (getattr(sys, 'frozen', False) == True)
  - 2. update xl2roefact version to 0.4.1.dev1 to genrate only sEXE deliverable
  - 3. test python code. Result: PASS
  - 4. generate sEXE

- 5. test pdm run x12roefact settings. Result: PASS
- 6. clean and make code "production like"
- 7. update INVOICEtoROefact project versions.yml:
  - xl2roefact = 0.4.1.dev1
  - INVOICEtoROefact = 0.5.2.dev2
- 8. build xl2roefact wheel and DLD doc
- 9. publish 0.4.1.dev1 on PyPi
- 10. build all deliverables
- 11. update downloads.md ref all deliverables
- · build site & publish
- 0.5.1.dev1 site readability improvements:
  - 1. main project README drop TOC statement
  - 2. update nav -> Help -> CHANGELOG sistem, change to "Istoric log sistem"
  - 3. update downloads.md doc, mark as "known bug DO NOT USE" entry:
    - section: "Aplicatia xl2roefact linie comanda executabil portabil (win64-exe)"
    - entry: "0.4.1.dev0 xl2roefact include a data directory in package"
  - update INVOICEtoROefact system ver to 0.5.1.dev1
  - · build site & publish

#### 27.2 0.4

# 27.2.1 0.4.1.dev0 xl2roefact include a data directory in package for various data files "built-in" package (240318 h09:00)

- 240318piu-yaml4sys-all-vers update mkdocs.yml use INHERIT: ./versions.yml option to inherit versions exactly to have extra section like actual one but in this external file.
- 240318piu-app-glob-cfg update xl2roefact README, app configuration section ref how make a "global config file" different than default app configuration
- 240317piu01 update downloads.md:
  - ✓ 1. include a template for app\_settings.yml => Created dedicated section which can be referred as .../downloads.md#sablon-fisier-configurare-a-aplicatiei-x12roefact
  - ✓ 1.a fixed 0.4.0.dev2 MSI & EXE deliverables file names (missing path number)
  - 2. refer it in xl2roefact README
  - 3. include 0.4.1.dev download;
    - · WHEEL & DIST references

- standalone EXE reference
- MSI reference
- 2403piu-config-code update config\_settings.py module to upload data from .../data/app\_settings.yml file. Specs:
  - ✓ 1. update app version to 0.4.1.dev0. Make a test what normalized\_version() returns (run xl2roefact -- version)
  - 2. update key README\_rules from app\_settings.yml, set it to point to markdown file containing rules list (x12roefact/x12roefact/data/README\_app\_config\_rules.md)
  - INFO-NOTE: after YAML import data will be dict with all actual code variables as keywords
  - 3. gross-raw code in config.settings.py for both below NOTES
    - INFO-NOTE: order to search and load for app\_config.yml:
      - (1) crt directory (with cwd) with Path(Path.cwd(), "data/app\_settings.yml")
      - (2) package directory and file with Path(os.path.dirname(\_\_file\_\_), "data/app\_settings.yml")
      - (3) settings from config\_settings.py
    - INFO-NOTE: methods of updates variables:
      - (1) using locals().update(YAML\_dict)
      - (2) using exec(YAML\_dict["key") by looping YAML resulted dictionary
    - regardless of method check the propagation running x12roefact settings which is a demo of using values external to config\_settings module
  - 4. apply reading order
  - 5. clean code & test YAML settings files from x12roefact/
  - ✓ 6. if read YAML was got some values then set as local() variables (not dictionary)
  - √ 7. updated x12roefact/setup.py to include data/app\_settings.yml file
  - build all: upd version (2 version files + mkdocs.yml) & pdm run build\_all
- 2403piu-app-data-dir actions:
  - ✓ 1.a build directory with a TOML file for setting parameters (used by config\_settings module)
  - 2 update pyproject.toml to include in package non python data files from x12roefact/data/ directory
  - ✓ 2.a test pdm building wheel ref brute errors = PASS =: package created ok and contains data/\* with exact flies that exists in this directory at package development phase
  - ✓ 3. add in .../x12roefact/data/ file owner\_data.json with owner data to be used as supplier info for future option --load-from-owner-file
  - 🗸 4. fixed bug xl2roefact CLI app ref command about printing \_\_version\_\_.\_\_doc\_\_ addressing
  - ✓ 5. updated .../data/app\_settings.yml with actual existing config data. Not usable as is, need refining and clarify how to indicate data types to app users (actually indicated as Python type hints)

## 28 Archived CHANGELOGs



### 28.1 0.4 version

• 0.4.0.dev2 externalize recommended rules for updating app setting rules (240316 T12:00)



### 28.2 0.3 version

- 0.3.2b0 single EXE version
- 0.3.1b1 fixed bug JSON->["Invoice"]["cac\_InvoiceLine"] list[list]
- 0.3.1b promote v0.3.0b0 deliverables: WHEEL, TRA.GZ, MSI to 0.3.1b
- 0.3.0b xl2roefact invoice taxes summary



### 28.3 0.2 version

- 0.2.2.dev project development environment improvements
- 0.2.1b invoice grand totals
- 0.2.0b xl2roefact invoice customer info-optional items (bank, email, reg-com, phone)



#### 28.4 0.1 version

- 0.1.22b xl2roefact application interface improvements
- 0.1.21.post3 cleaned system documentation and site
- 0.1.21.post2 xl2roefact app detailed section with commands & options "--help" like
- 0.1.21.post1 fixed missing links in site root index page
- 0.1.21 rollout news in system portal invoicetoroefact.renware.eu
- 0.1.20.dev invoice customer address
- 0.1.19.dev invoice customer and partial invoice total values calculations
- 0.1.18.dev invoice customer CUI partial invoice total values calculations
- 0.1.17.dev fixed all application & package running standard ways
- 0.1.16.dev improving Excel kv-data search with "IN-LABEL" method
- 0.1.15 updated solution portal http://invoicetoroefact.renware.eu/
- 0.1.14.dev invoice issue date
- 0.1.13.dev invoice currency
- 0.1.12.dev invoice number
- 0.1.11.dev packaging improvements for app & xl2roefact package
- 0.1.10.dev command interface improved, msi package building, invoice template & updated documentation
- 0.1.9.dev x12roefact.RDINV running executable and distribution kit
- 0.1.8.dev improved application structure and first executable release
- 0.1.7.dev x12roefact.RDINV invoice items & metadata + OPEN ISSUES
- 0.1.6.dev commercial agreement OPTIONS document
- 0.1.5.dev init component xl2roefact for CLI application
- 0.1.4.dev Create system backbone structure
- 0.1.3.dev Enhancing payments\_validation\_board technical proposal
- 0.1.2.dev Enhancing APItoROefact technical proposal
- 0.1.1.dev Elaborating technical proposal
- 0.1.0.dev System raw backbone