

# INVOICE X

Electronic Invoicing Tools for Python  
[invoice-x.org](http://invoice-x.org)

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By Manuel Riel, MSc.



Google  
Summer of Code



debian

# The Problem

Computers need structured information. Humans can handle unstructured.



Au bon moulin SARL - 1242 chemin de l'olive - 84340 Malaucène - France  
 ☎ +33 4 50 44 68 99 - ⌂ http://www.aubonmoulin.fr  
 TVA : FR1199999998 - SIRET : 9999999800010 - APE : 4778C - SARL au capital de 120 000,00 €

**Invoice FA-2017-0008**

**Delivery Address**

Me gusta olive  
 87 camino de la calor  
 41700 Dos Hermanas  
 Spain  
 ☎ +34 954 93 12 29  
 ⌂ contact@megustaolive.es

**Sales Contact**

Tony Dubois  
 ☎ +33 4 72 07 08 56  
 ☎ +33 6 11 22 33 44  
 ⌂ tony.dubois@aubonmoulin.fr

<b>Invoice Date</b>	11/03/2017
<b>Payment Terms</b>	30% advance payment, balance at 30 days
<b>Due Date</b>	12/03/2017
<b>Your Reference</b>	COMPRA0832
<b>Agreement Ref.</b>	FROLIVE2017
<b>Customer VAT Number</b>	ESA12345674
<b>Incoterms</b>	DELIVERED DUTY UNPAID

Description		Quantity	Unit Price	Disc.	Price w/o Tax
Nougat de l'Abbaye 250g		8 Unit(s)	4.55 €	10%	32.76 €
Biscuits aux raisins 300g		20 Unit(s)	3.20 €		64.00 €
Huile d'olive à l'ancienne		100 Liter(s)	19.80 €		1,980.00 €

Tax	Base	Amount
TVA 0% livraisons intracommunautaires (vente)	2,076.76 €	0.00 €

Net total	2,076.76 €
Tax Total	0.00 €
Total	2,076.76 €
Residual	1,453.76 €

<b>Notes</b>	Free shipping (amount > 300 €)
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<b>Payment</b>	Invoice to pay by wire transfer to the following bank account: IBAN : FR20 1242 1242 1242 1242 124 - BIC : FIDCFR21XXX - Bank: Banque Fiducial
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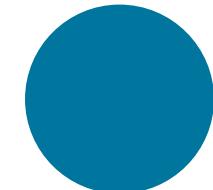
```
<?xml version='1.0' encoding='UTF-8'?>
<rsm:CrossIndustryInvoice xmlns:qdt="urn:un:unece:uncefact:data:standard:urn:un:unece:uncefact:standard:ReusableAggregateBusinessInformationE xmlns:udt="urn:un:unece:uncefact:data:standard:UnqualifiedDataType:100"
<rsm:ExchangedDocumentContext>
  <ram:GuidelineSpecifiedDocumentContextParameter>
    <ram:ID>urn:factur-x.eu:1p0:minimum</ram:ID>
  </ram:GuidelineSpecifiedDocumentContextParameter>
</rsm:ExchangedDocumentContext>
<rsm:ExchangedDocument>
  <ram:ID>FA-2017-0008</ram:ID>
  <ram>TypeCode>380</ram>TypeCode>
  <ram:IssueDateTime>
    <udt:DateTimeString format="102">20171103</udt:DateTimeString>
  </ram:IssueDateTime>
</rsm:ExchangedDocument>
<rsm:SupplyChainTradeTransaction>
  <ram:ApplicableHeaderTradeAgreement>
    <ram:SellerTradeParty>
      <ram:Name>Au bon moulin</ram:Name>
      <ram:SpecifiedLegalOrganization>
        <ram:ID schemeID="0002">9999999800010</ram:ID>
      </ram:SpecifiedLegalOrganization>
      <ram:PostalTradeAddress>
        <ram:CountryID>FR</ram:CountryID>
      </ram:PostalTradeAddress>
      <ram:SpecifiedTaxRegistration>
        <ram:ID schemeID="VA">FR1199999998</ram:ID>
      </ram:SpecifiedTaxRegistration>
    </ram:SellerTradeParty>
    <ram:BuyerTradeParty>
      <ram:Name>Me gusta olive</ram:Name>
      <ram:PostalTradeAddress>
        <ram:CountryID>ES</ram:CountryID>
      </ram:PostalTradeAddress>
      <ram:SpecifiedTaxRegistration>
        <ram:ID schemeID="VA">ESA12345674</ram:ID>
      </ram:SpecifiedTaxRegistration>
    </ram:BuyerTradeParty>
  </ram:ApplicableHeaderTradeAgreement>
</rsm:SupplyChainTradeTransaction>
```

# The Problem - high level

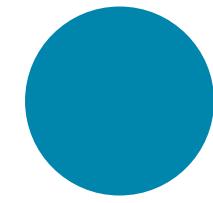
Companies waste too much time doing invoicing and accounting.

## **Small businesses and large companies alike need to deal with invoicing and accounting.**

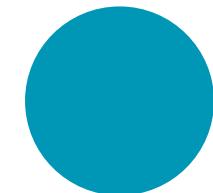
Doing proper bookkeeping can take a lot of time because every single receipt needs to be filed manually, even if it is received via Email or PDF. With the increasing number of subscription services the number of monthly receipts only increases.



20 years after the internet revolution companies still exchange all invoices in **unstructured** PDF format.



An unstructured PDF is similar to a piece of paper. It doesn't contain structured (machine-readable) data. All information (like amount and tax details) is **lost**.



Typing the details of every single receipt is time-consuming and **expensive** and the content can be faked due to the lack of digital signing.

# The Solution

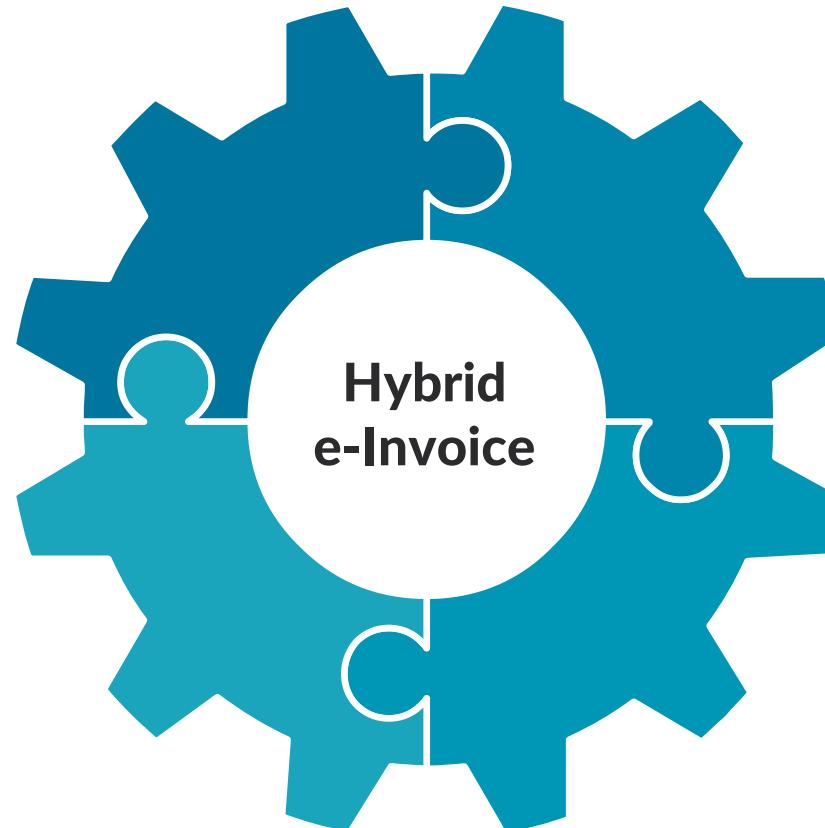
Let's bring invoicing into the 21<sup>st</sup> century.

## Add structured data to invoices

Our platform and libraries will allow companies to issue invoices that have structured data along with a printable representation.

## Use structured data in invoices

If your suppliers already issue structured invoices, you can import them into your accounting in seconds.



## Automatically process incoming invoices

No more manual invoicing. Our solution will extract the relevant data even without user intervention.

## Security

Digitally sign invoices you issue to have a strong paper trail and legal assurance.

# History of e-Invoicing Standards

First version of OASIS standard is published. Includes invoice representation.[4]

Sept 2004

Mar 2007

United Nations Centre for Trade Facilitation launches Cross Industry Invoice Schema (CII)[3]

European eInvoicing standard is decided. Standardisation committee starts drafting a new semantic standard.[5]

Apr 2014

Jun 2014

First version of German e-invoicing standard is published (ZUGFeRD 1.0)

**One Global Standard for e-Invoicing**  
English translation of the combined German-French ZUGFeRD 2.0 + Factur-X standard is launched. UBL support planned.[1,2]

July 2018

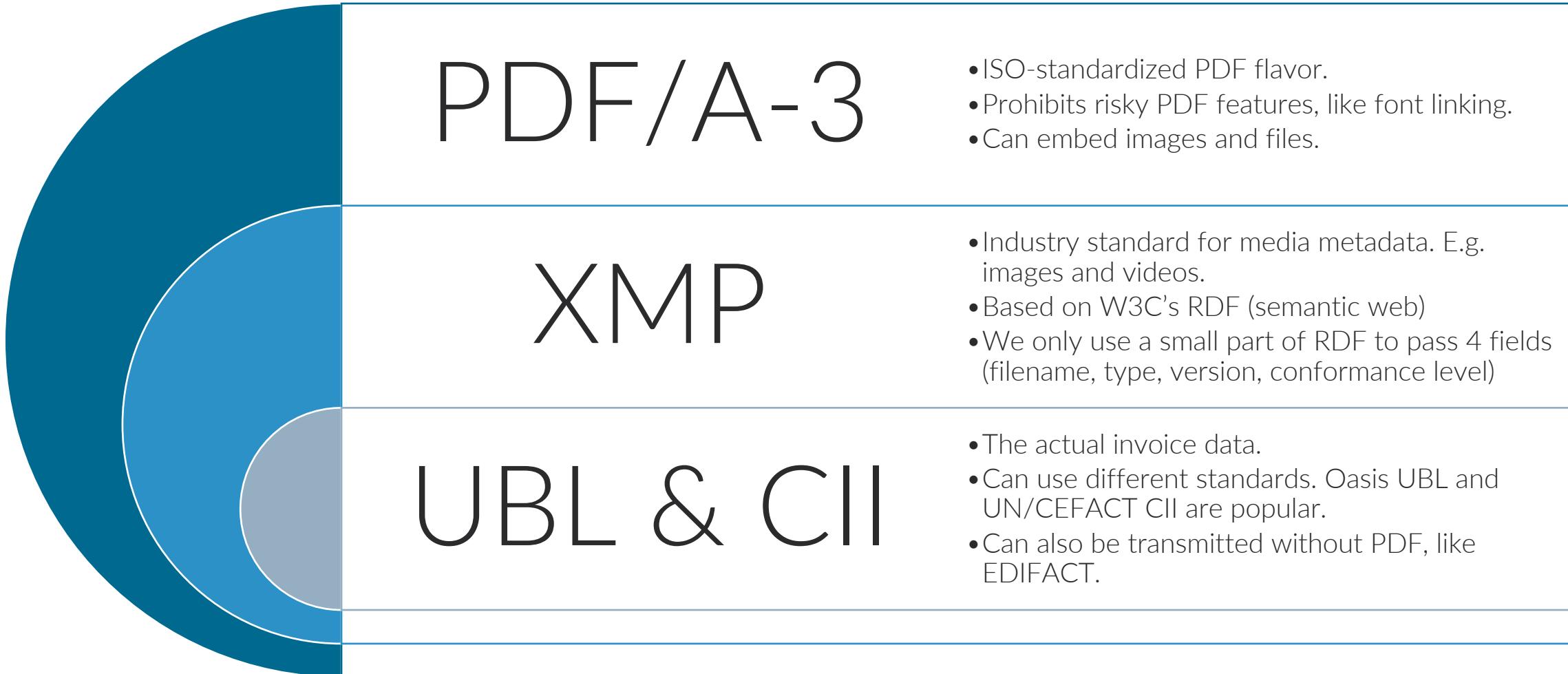
Oct 2017

EN 16931 standard is published. Combines CII and UBL.

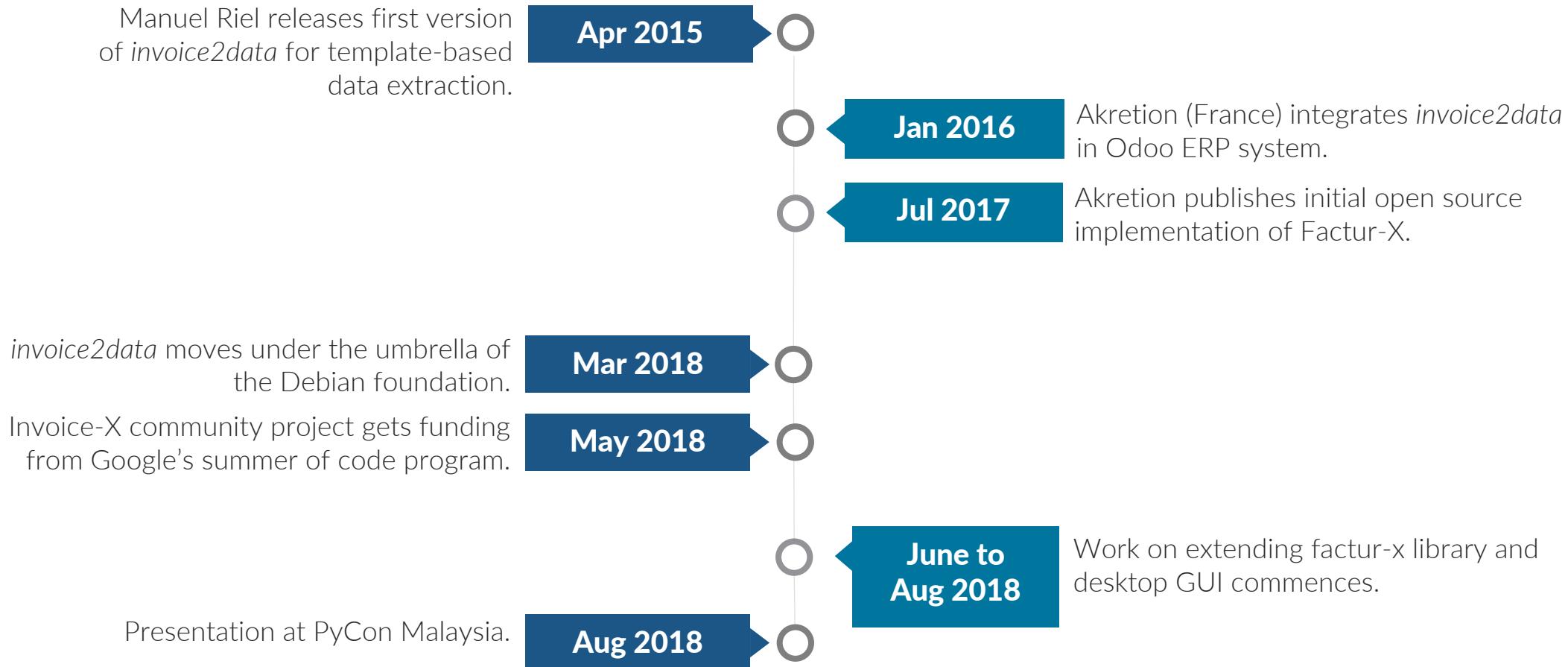
- 1: <http://fnfe-mpe.org/factur-x/>
- 2: <https://akretion.com/fr/blog/odoo-first-erp-to-generate-factur-x-invoices>
- 3: [http://www.unece.org/fileadmin/DAM/uncefact/data/draft/CrossIndustryInvoice\\_1p0prc.xsd](http://www.unece.org/fileadmin/DAM/uncefact/data/draft/CrossIndustryInvoice_1p0prc.xsd)
- 4: <http://docs.oasis-open.org/ubl/cd-UBL-1.0/>
- 5: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32014L0055>

# Technology layers

PDF/A as container format to keep XML, described by XMP.



# Project Progress to Date



**DEMO**

# invoice2data

Support for legacy invoices. Extract structured data from PDF or OCR invoices. Already supports 100+ invoice providers.

```
$ pip install invoice2data  
$ invoice2data --output-format json AmazonWebServices.pdf  
$ open invoices-output.json
```

```
In: from invoice2data import extract_data  
In: result = extract_data('AmazonWebServices.pdf')  
In: result['date']
```

# factur-x-ng

Create and edit XML metadata embedded in PDF file. Supports all major standards. (currently in testing index)

```
$ pip install PyPDF2 lxml pyyaml pycountry  
$ pip install --index-url https://test.pypi.org/simple/ factur-x-ng
```

```
In: from facturx import FacturX  
In: inv = FacturX('Facture_UE_BASIC.pdf')  
In: inv['buyer_name']  
In: inv.to_dict()  
  
In: inv.is_valid()
```

# factur-x-ng (cont.)

Combine invoice2data with factur-x and embed metadata.

```
In: from facturx import FacturX
In: from invoice2data import extract_data
In: res = extract_data('AmazonWebServices.pdf')
In: inv = FacturX('AmazonWebServices.pdf', flavor='factur-x')
In: inv['buyer_name'] = 'iViveLabs Ltd.'
In: inv['seller_name'] = 'Amazon'
In: inv['amount_total'] = res['amount']
In: inv['invoice_number'] = res['invoice_number']
In: inv['date'] = res['date']
In: inv.is_valid()

In: inv['currency'] = 'EVR'
In: inv.is_valid()

In: inv.write_pdf('AWS-with-XML.pdf')
```

# We need YOU

Planned features and how you can help

- Improve website (via github)
- Improve docstrings
- Extend supported fields.
- Using, testing, working on issues. (all skill levels)
- Use in ERP systems.
- Use in Accounting (batch import)
- Digitally sign PDF files to avoid tampering.



**Q&A**

# THANK YOU

## For Your Attention

[www.invoice-x.org](http://www.invoice-x.org) | [github.com/invoice-x](https://github.com/invoice-x)  
[hello@invoice-x.com](mailto:hello@invoice-x.com)



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