

# Eurofiling 2018

## Blockchain for financial transparency



**Claryon**

**Based on work performed for SMART 2016/0488**



**EUROPEAN COMMISSION**

Directorate-General for Financial Stability, Financial Services and Capital Markets Union

# Agenda

- Project context
- Functionality
- Demonstration (simulated)
- Further references

# Project context

May 2016 – European Parliament resolution on virtual currencies

Pilot project proposed by MEP Jacob von Weizsäcker on distributed ledger technology

- Starting of work planned for 2017
- To test and to build up knowledge + to build use-case
- Target audience: national and European authorities
- Target topic: finance, financial services, FinTech
- To be executed by the European Commission

Two project to be realised

- European Financial Transparency Gateway (EFTG) – DG FISMA
- DLT observatory – DG CNECT

Spring 2017 – Start of design of the idea and preparation of technical work

Summer 2017 – Administration to start the EFTG project

Autumn 2017 – Start of technical work on the EFTG project

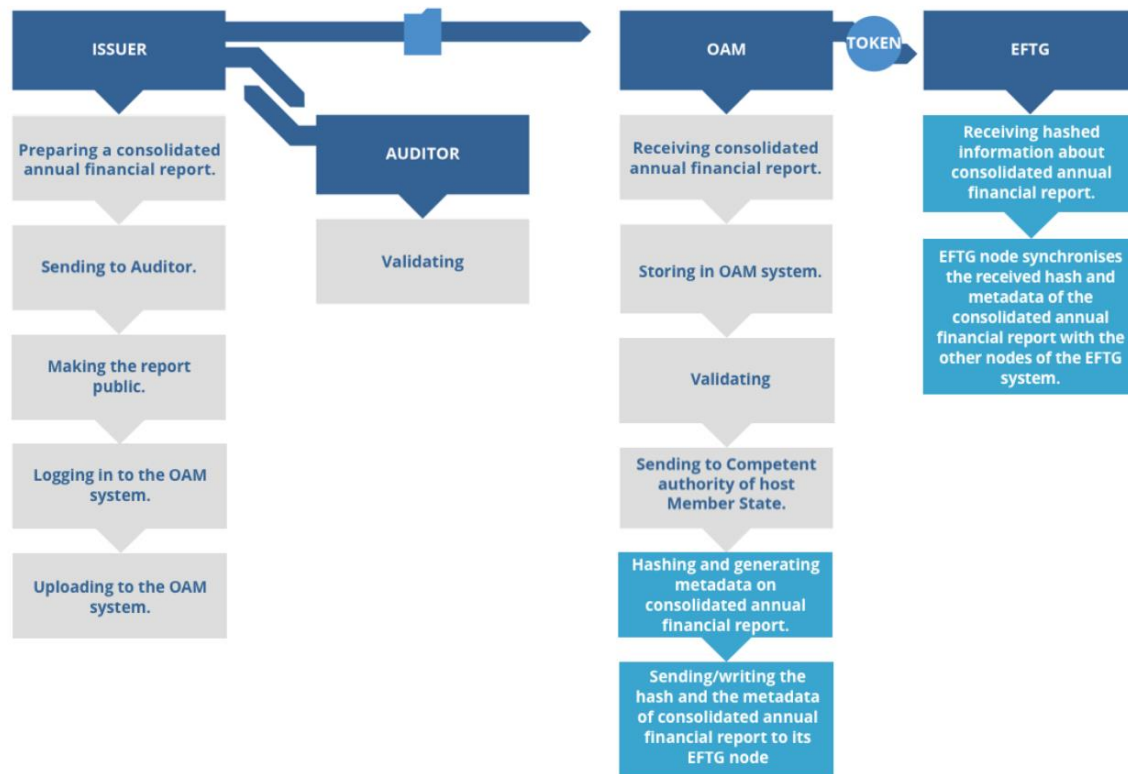
Jan 2018 – Closing of Phase 1 of the EFTG project

# Functionality

## Use cases and business processes

Focus on submission of yearly, half-yearly, and ad-hoc reports.

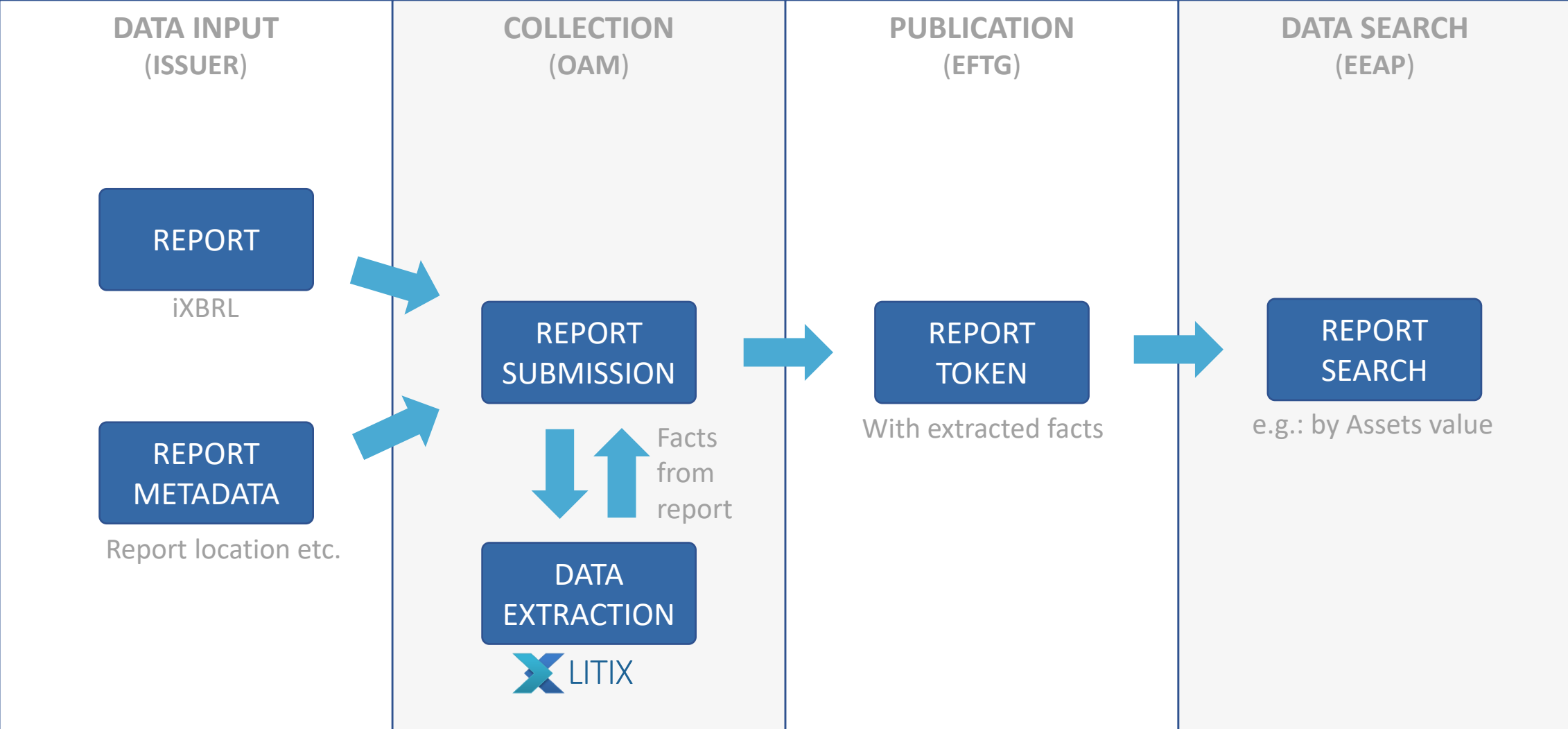
Figure 1: A selected scenario (case) of publishing an annual financial report



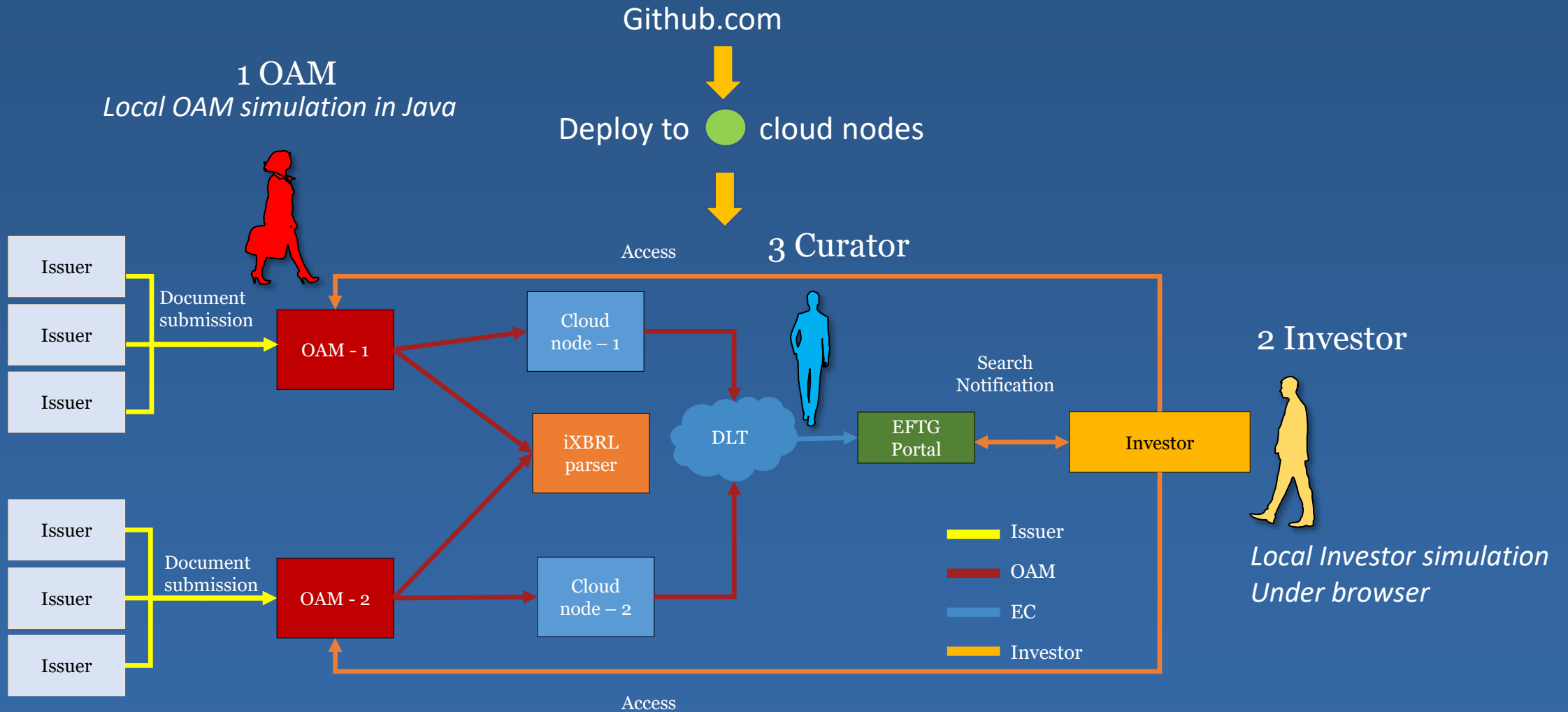
Step	Actor	Action
<b>Assumptions</b>	Issuer	Issuer has not sent its report before (first-time reporting) and is obliged to register in the OAM system.
<b>Step 1</b>	Issuer	Issuer is preparing a consolidated financial statement under the Transparency Directive (according to ESEF).
<b>Step 2</b>	Issuer	Issuer is sending the consolidated annual financial report to Auditor.
<b>Step 3</b>	Auditor	Auditor is auditing the consolidated annual financial report.
<b>Step 4</b>	Issuer	Issuer is making public the consolidated annual financial report (e.g. on its website).
<b>Step 5</b>	Issuer	Issuer logs into the OAM system to upload consolidated annual financial report.
<b>Step 6</b>	Issuer	Issuer is uploading the consolidated annual financial report to the OAM system.
<b>Step 7</b>	OAM	OAM is receiving the consolidated annual financial report in the OAM system.
<b>Step 8</b>	OAM	OAM is storing the consolidated annual financial report in the OAM system.
<b>Step 9</b>	OAM	OAM is validating the consolidated annual financial report in the OAM system.
<b>Step 10</b>	OAM	OAM is sending the consolidated annual financial report to Competent Authority of host Member State.
<b>Step 11</b>	OAM	OAM is hashing and generating metadata on the consolidated annual financial report.
<b>Step 12</b>	OAM	OAM is sending/writing the hash and the metadata of the consolidated annual financial report to its EFTG node.
<b>Step 13</b>	EFTG	EFTG node is receiving the hash and the metadata of the consolidated annual financial report.
<b>Step 14</b>	EFTG	EFTG node synchronises the received hash and metadata of the consolidated annual financial report with the other nodes of the EFTG system.
<b>Result</b>	EFTG	The hash and the metadata of the consolidated annual financial report is available at every node of the EFTG system and the consolidated annual financial report is accessible to all users.

# Functionality

## Advanced search – design

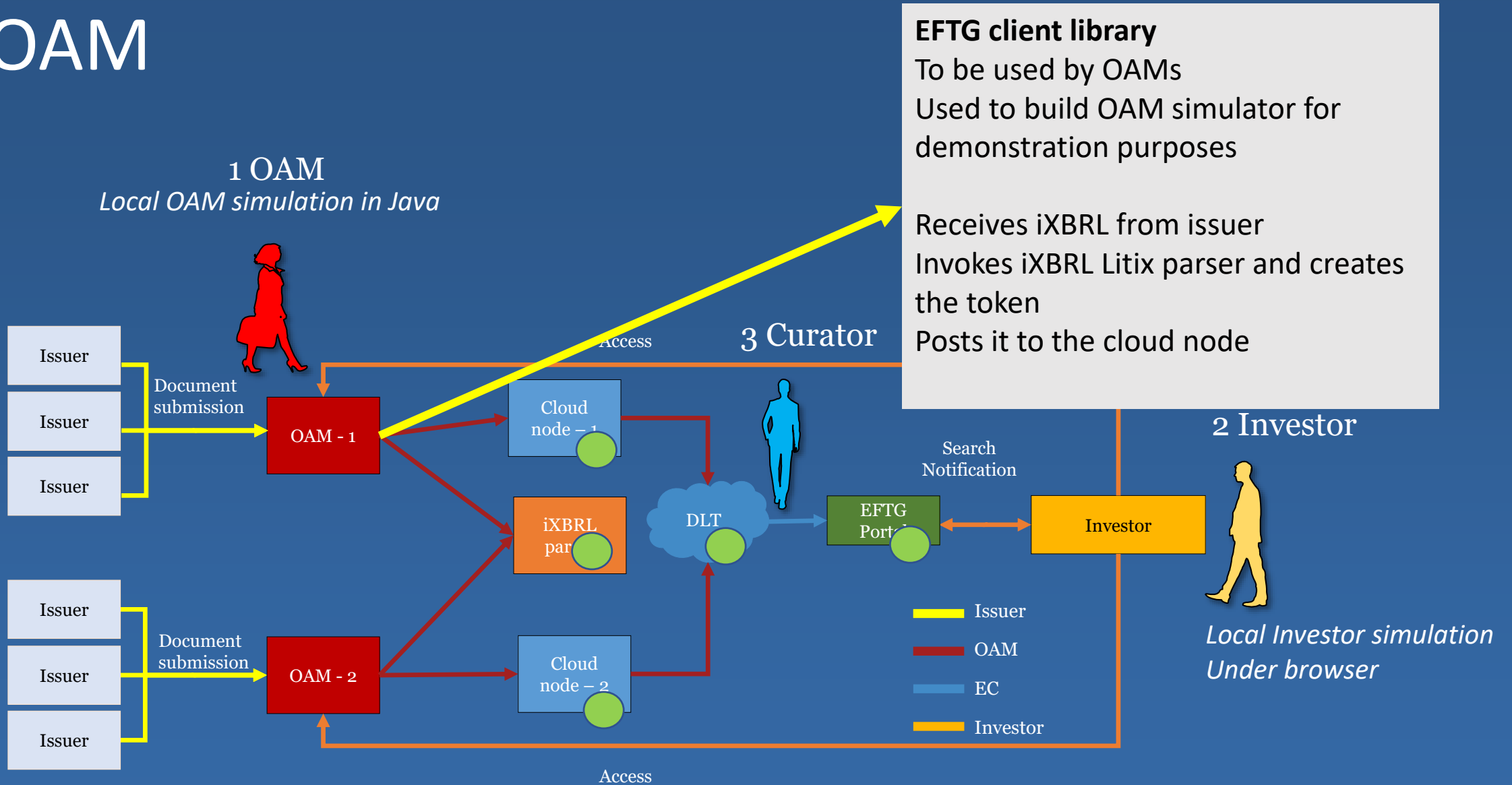


# Three perspectives: OAM, investor, curator



XBRL files from <https://www.esma.europa.eu/field-test-esef>

# OAM



XBRL files from <https://www.esma.europa.eu/field-test-esef>

# OAM perspective: EFTG client simulation

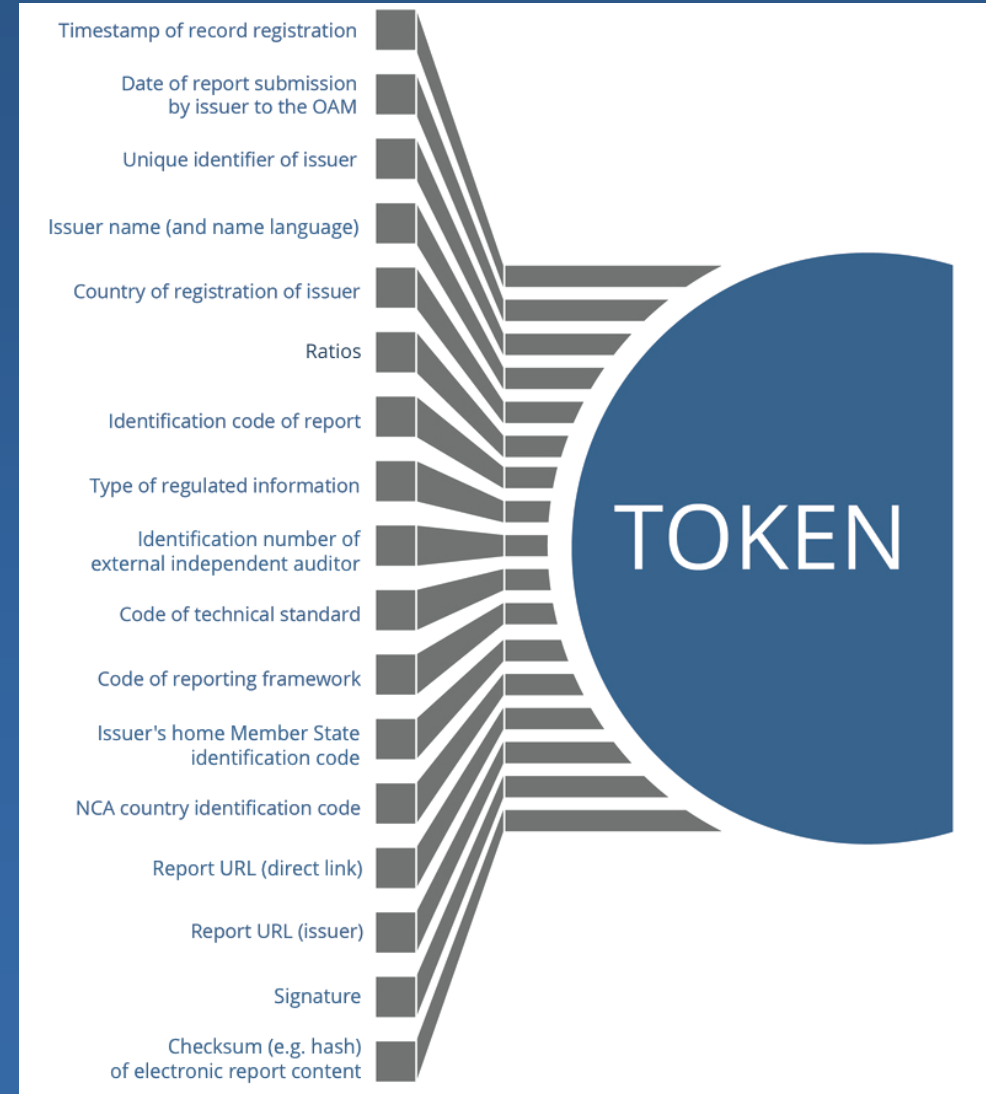


EFTG Client

Send data | Send file | Configuration

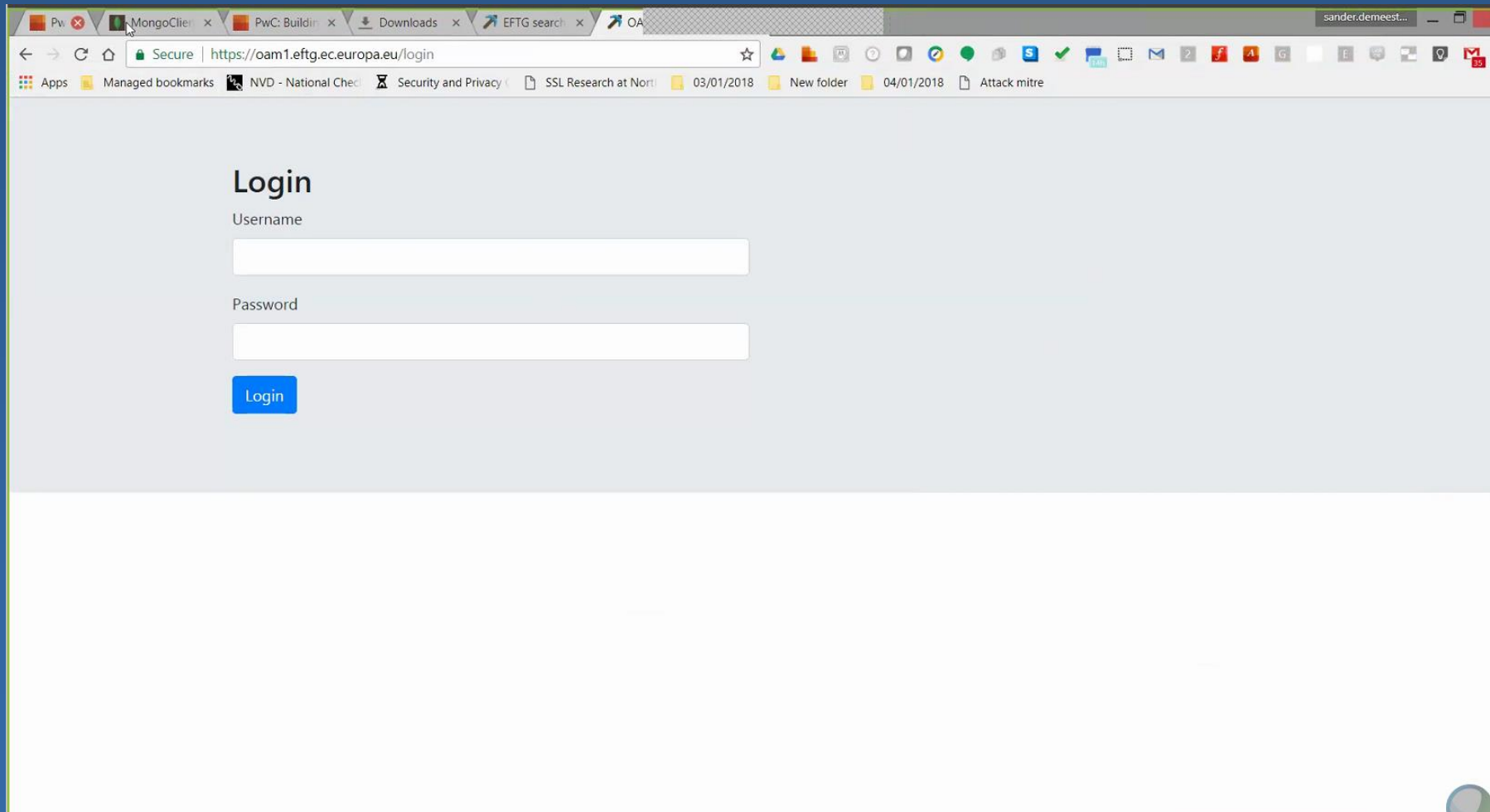
checkSum	random3
codeOfReporting	codeOfReporting
countryOfRegistration	BE
externalAuditor	test
identificationCode	60
issuerHome State	BE
issuerName	issuerName
language	FR
LEI	12345678901234567891
NCAcountryIdentification	BE
regulatedInformationURL_direct	regulatedInformationURL_direct
regulatedInformationURL_issuer	regulatedInformationURL_issuer
signature	signature
technicalStandard	technicalStandard
typeOfRegulation	11

Send



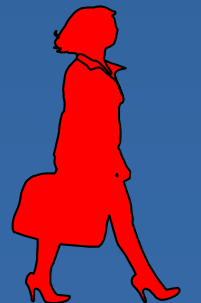


# OAM access cloud node



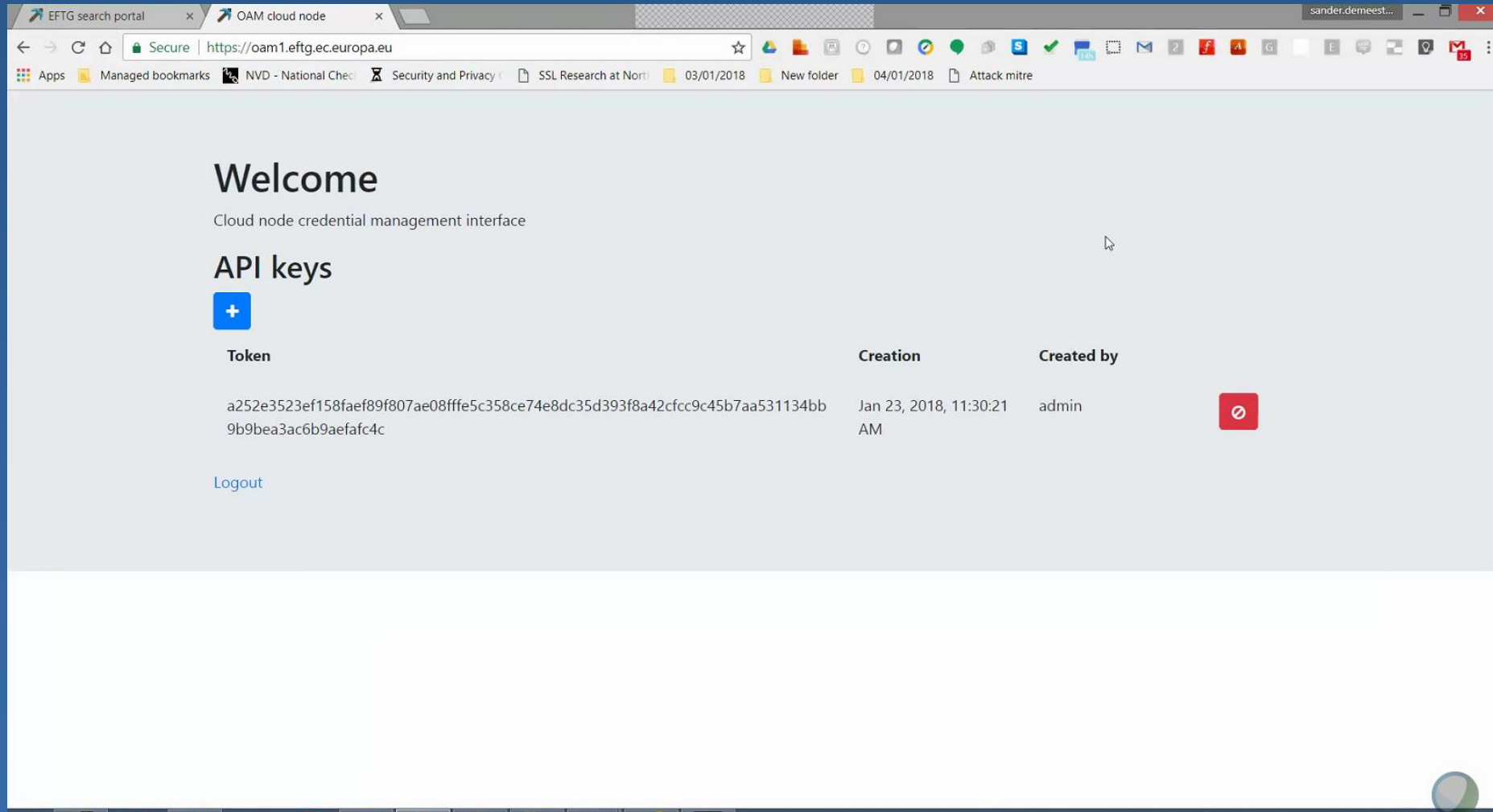
The screenshot shows a web browser window with the address bar displaying `https://oam1.eftg.ec.europa.eu/login`. The page content includes:

- Browser tabs: Pw, MongoCli, PwC: Buildir, Downloads, EFTG search, OA.
- Address bar: `Secure | https://oam1.eftg.ec.europa.eu/login`
- Page title: **Login**
- Form fields:
  - Username:
  - Password:
- Submit button: **Login**



# OAM has logged in

OAM can then obtain API keys required for submission onto the DLT



The screenshot shows a web browser window with the URL <https://oam1.eftg.ec.europa.eu>. The page title is "Welcome" and the subtitle is "Cloud node credential management interface". Below the welcome message, there is a section titled "API keys" with a blue plus icon. A table displays one API key entry:

Token	Creation	Created by
a252e3523ef158faef89f807ae08fffe5c358ce74e8dc35d393f8a42cfc9c45b7aa531134bb9b9bea3ac6b9aefafc4c	Jan 23, 2018, 11:30:21 AM	admin

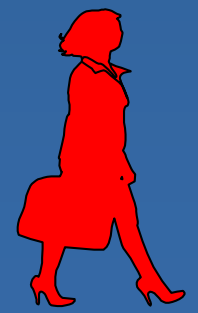
At the bottom left of the page, there is a "Logout" link. A red silhouette of a woman walking with a bag is visible in the bottom right corner of the slide.

# OAM config file

## To specify the API key

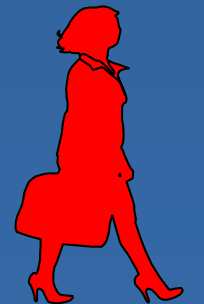
```
1 litixURL1=ec2-52-212-125-126.eu-west-1.compute.amazonaws.com:8080
2 litixURL2=ec2-52-212-125-126.eu-west-1.compute.amazonaws.com:8181
3 litixAPIToken=7wPKgs9u6cr2WwxqZ232E
4 APIToken=a252e3523ef158faef89f807ae08fffe5c358ce74e8dc35d393f8a42cfc9c45b7aa531134bb9b9bea3ac6b9aefafc4c
5 OAMIdentifier=OAM1
6 cloudnodeURL=oam1.eftg.ec.europa.eu
```

```
<terminated> Main [Java Application] C:\Program Files\Java\jre1.8.0_91\bin\javaw.exe (25 Jan 2018, 19:29:48)
1cf2ee0607c8f24570f11a3950590f8ea0d1fbfe
{"status": "ok"}
```



# OAM iXBRL parsing & report submission

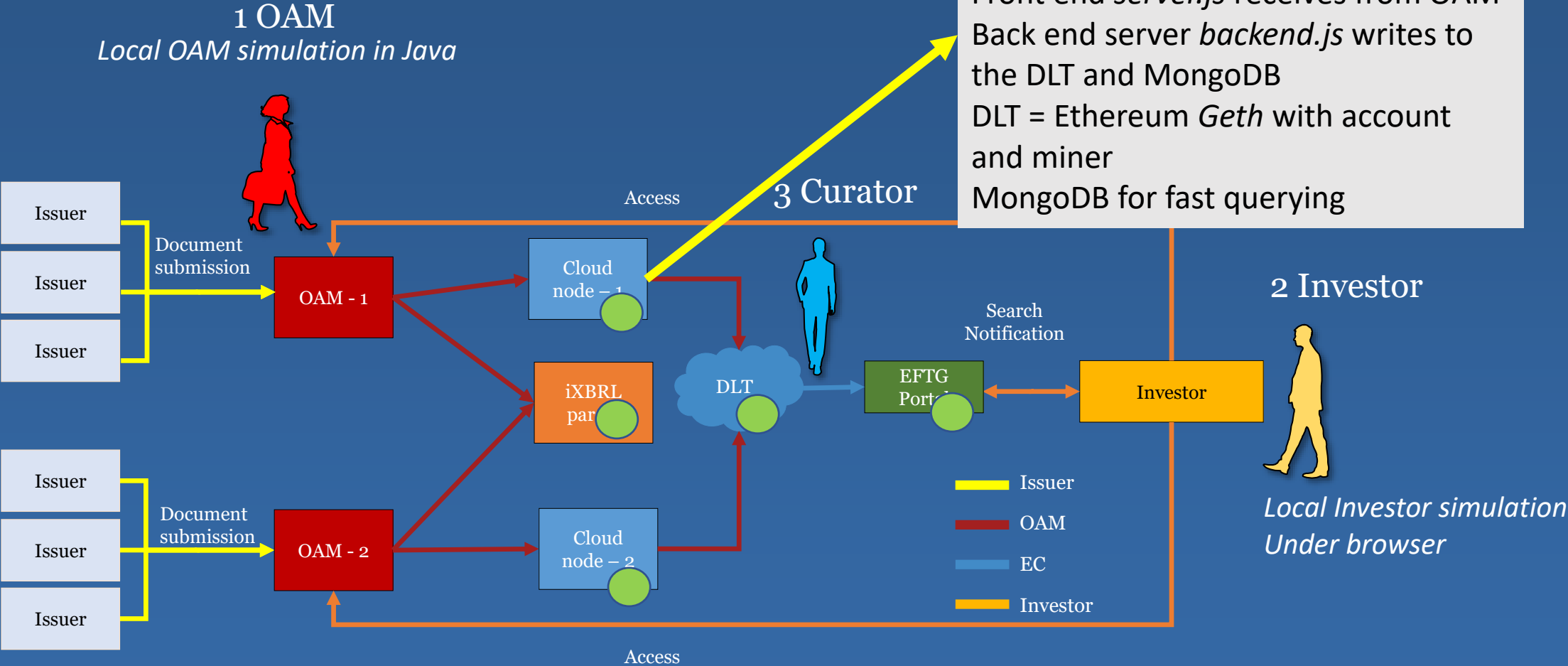
```
eclipse-workspace | Main.java - Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help
Package Explorer | Main.java | Response.java | Main.java | ConfigurationInterface.java | Client.java | Configuration.java | config.properties
EFTG-ClientLibrary [EFTG-ClientLibrary mast
> src
JRE System Library [JavaSE-1.8]
Maven Dependencies
bin
images
target
pom.xml
README.md
23 Client EFTGClient = new Client();
24 String pathToXBRLFile = "C:\\Users\\demeests\\Documents\\Projects\\2017\\EEAP\\code\\helaba_2016.zip";
25
26 try {
27
28     EFTGClient.setConfiguration(new Configuration("resources//config.properties"));
29     EFTGClient.setXBRManager(new XBRLManager());
30
31 }catch(Exception e) {
32     e.printStackTrace();
33     return;
34 }
35
36 try {
37     EFTGClient.parseXBRL(pathToXBRLFile);
38 }catch(Exception e) {
39     e.printStackTrace();
40 }
41
42 try {
43     EFTGClient.submitDocument(new Date(), //recordRegistration
44                             new Date(), // submissionTime
45                             "12345678901234567891", // LEI
46                             "Company 4", // issuerName
47                             "FR", // language
48                             "BE", // countryOfRegistration
49                             "Financial status report for company 4", // identificationCode
50                             "11", // typeOfRegulation
51                             "PwC", // externalAuditor
52                             "technicalStandard", // technicalStandard
53                             "codeOfReporting", // codeOfReporting
54                             "BE", // issuerHomeState
55                             "BE", // NCACountryIdentification
56                             "https://ec.europa.eu/info/departments/financial-stability-financial-services-and-capital-markets-union_en",
57                             "https://ec.europa.eu/info/departments/financial-stability-financial-services-and-capital-markets-union_en",
58                             "random3", // checksum
59                             "signature"); // signature
60
61 }catch(Exception e) {
62     e.printStackTrace();
63 }
64
65
```



# DLT cloud node

**FISMA Cloud node**  
 Runs the Ethereum smart contracts

Front end *server.js* receives from OAM  
 Back end server *backend.js* writes to the DLT and MongoDB  
 DLT = Ethereum *Geth* with account and miner  
 MongoDB for fast querying



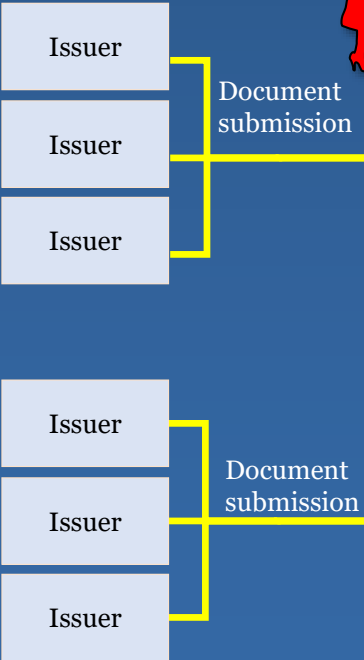
XBRL files from <https://www.esma.europa.eu/field-test-esef>



# Investor

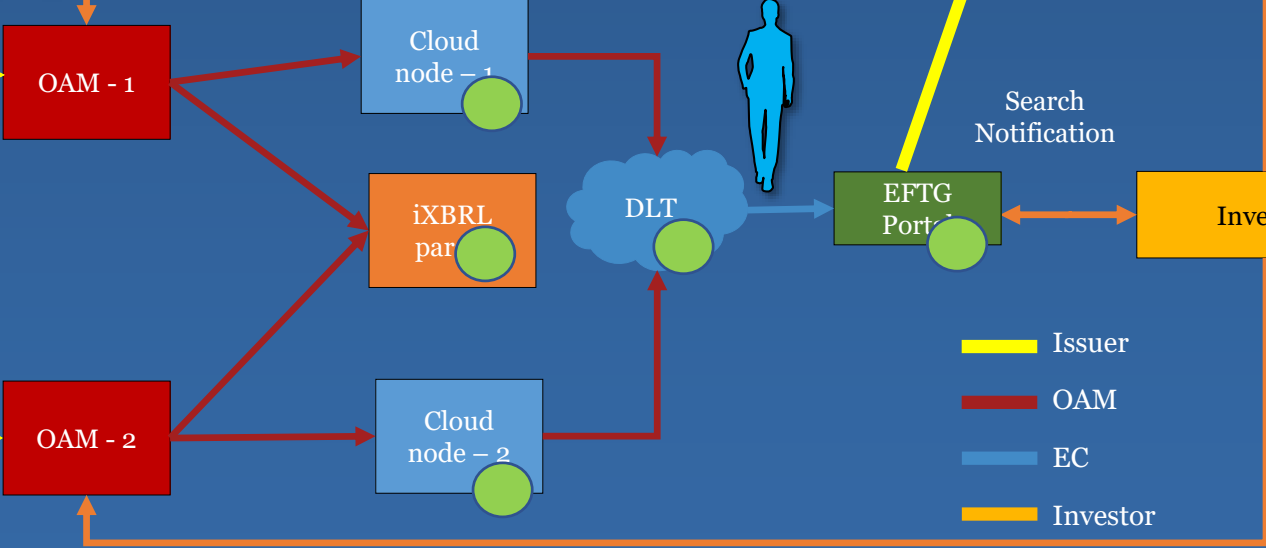
**EFTG Portal**  
Allows investors to query  
Browser-based query in MongoDB

**1 OAM**  
*Local OAM simulation in Java*



Access

**3 Curator**



**2 Investor**



*Local Investor simulation Under browser*

- Yellow line: Issuer
- Red line: OAM
- Blue line: EC
- Orange line: Investor

XBRL files from <https://www.esma.europa.eu/field-test-esef>

# Search

← → ↻ 🏠 <https://portal.eftg.ec.europa.eu/search> ⋮

⚙️ Most Visited 🌐 Getting Started 📄 DSM Cinderella 🌐 Cinderella/remotely 🌐 Marc Sel Local 📶 De Standaard : Cultuu...

EFTG search portal Overview Search

## Search reports

Report identifier

Issuer name

Issuer identifier (LEI)

Issuer country

Regulation Type

Debt ratio between

Leverage ratio between

Return on investment ratio between





# Overview of reports

Submission date	Report ID	Issuer name	
Jan 25, 2018, 8:47:00 PM	65	Company 3	<a href="#">Download</a>
Jan 25, 2018, 8:29:00 PM	64	Company 2	<a href="#">Download</a>
Jan 25, 2018, 5:57:00 PM	63	Company 1	<a href="#">Download</a>
Jan 25, 2018, 5:48:00 PM	63	Company 1	<a href="#">Download</a>

# Further references

- [http://europa.eu/rapid/press-release\\_MEMO-18-1406\\_en.htm](http://europa.eu/rapid/press-release_MEMO-18-1406_en.htm)
- [https://ec.europa.eu/info/departments/financial-stability-financial-services-and-capital-markets-union\\_en](https://ec.europa.eu/info/departments/financial-stability-financial-services-and-capital-markets-union_en)
- <https://www.pwc.be/blockchain>
- <http://www.marcsel.eu>