eTIR international system
Status of progress

TIR Secretariat – GE.1 31st, 10-11 March 2020

Outline

- Achievements
  - Implementation of all Internal/External messages
  - Development of an automated non-regression testing system
- In Progress
  - Raising issues with v4.2 of the eTIR specifications
  - Review of the eTIR Database
  - Non-repudiation system
- Focus on our development practices
  - Continuous Integration (CI) pipeline
  - Static code analysis
  - Our Knowledge Management System (KMS)
- Next priorities
  - Upgrade the implementation of the I/E messages to v4.3
  - Continue writing the documentation for the Customs Authorities

Achievements
Implementation of all Internal/External messages

- **All messages** of the eTIR Specifications v4.1 are implemented

- Notifications are still **under tests** to cover all scenarios
  - E7/E8: notification from eTIR to the Guarantee Chain
  - I15/I16: notification from eTIR to the Customs Authorities

- Ad-hoc **manual** tests are performed

- **Automated** unit and non-regression tests to be done

Development of an automated non-regression testing system

- Series of tests verifying **typical and edge use cases** automatically on a periodic basis

- **141** tests so far. Will **improve** the test suite by including:
  - Pertinent ad-hoc tests
  - Tests verifying that detected problems are corrected

Messages	Number of tests	Messages	Number of tests	Messages	Numbers of tests
I1/I2	11	I11/I12	15	E5/E6	13
I3/I4	8	I13/I14	11	E7/E8	**TBD**
I5/I6	13	I15/I16	**TBD**	E9/E10	12
I7/I8	14	E1/E2	13		
I9/I10	13	E3/E4	18		

Raising issues with v4.2 of the eTIR specifications

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- While implementing the eTIR international system, some **inconsistencies** were found and several **questions** arose (20 so far)
- Each instance is logged and reviewed by the IT Team
  - 4 of them are already resolved
  - 3 of them are yet to be reviewed
- Most of them have **to be reviewed by the GE.1 for guidance**. There are basically two families of issues:
  - Cardinality issues
  - Other issues like:
    - Customs Offices master data to be delegated to ITDB
    - Message Reference Number and Functional Reference

Review of the eTIR database

- The database was originally designed in 2016. It had to be **reviewed** to check for errors and ways to optimize it

- The IT Team met 8 times (> 12h) to review entirely its structure

- **159 issues (10 P1, 119 P2 and 30 P3)** in several families:
  - Rename columns and tables to make more sense/bring more **consistency**/avoid reserved DataBase Management Systems (DBMS) keywords
  - Modify the data types of columns to make more sense/perform **optimizations**
  - Add constraints (not null, conditional checks) to reinforce the **integrity** of the database and model some of the business rules
  - Remove/Create tables and columns when the current state of the database does not match the **eTIR Specifications**
  - Remove tables when the information is retrieved from the **ITDB** or when storing this information is not needed

- Other aspects (security, maintenance operations, versioning) will also have to be reviewed

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- **Non-repudiation** is achieved in the context of the eTIR international system through the use of **digital signatures** signing all messages received and sent

- The Non-repudiation system of the eTIR international system will allow **proving the origin of messages** (who was the sender), in case of claims

- Started to lay down the foundations of this system by **logging all messages** received and sent (header and body of the SOAP message, including the digital signature)

- Next step will be to leverage the information contained in the logs with an **Interface for Administrators**

Focus on our development practices
Continuous Integration (CI) pipeline

- The objective is **automate** as many tasks as possible to gain in **productivity** while performing most of the Software Development good practices

- Based on: Atlassian Bamboo, SonarQube and Microsoft Teams

- 70% of our goals attained so far:
  1. Build triggered on code push
  2. Unit and Integration tests executed
  3. (missing) Automatic deployment of the eTIR international system on a test environment
  4. Non regression tests executed
  5. Static code analysis performed
  6. Posting build failures on MS Teams

Focus on our development practices
Static code analysis

- The objective is to continuously ensure a **high quality** of the source code

- Using SonarQube to set quality gates on several aspects:
  - **Security** by detecting potential vulnerabilities
  - **Reliability** by detecting potential bugs
  - **Maintainability** by detecting code that can be improved
  - **Coverage** by checking which proprortion of source code is tested
  - **Code duplication** by detecting similar code which could be factorized

- Static code analysis **does not detect all problems** but is a powerful ally in striving to get the best source code possible

Focus on our development practices
Our Knowledge Management System (KMS)

- The objective is to secure **institutional memory**, **quick training** for newcomers and ensure **backstopping** among the IT team members

- Based on the Atlassian suite plus other tools:
  - **Confluence** to produce and store our internal documentation
  - **JIRA** to manage the project and our work breakdown structure
  - **Bamboo** to manage the Continuous Integration (CI) pipeline
  - **Bitbucket** to manage source code (using Git)
  - **Microsoft Teams** for communication between the team members (including videoconference and remote assistance)

Next priorities

- Upgrade the implementation of the I/E messages to v4.3
  - Apply the changes brought by **v4.2**
  - Apply the **amendments approved** in v4.3
  - Create new tests (and adapt the current ones) in the **non regression tests suite**
- Continue writing the documentation for the Customs Authorities
  - The **format** (PDF) and **tools** (AsciiDoc) have been selected
  - **Several documents** shall be produced (by messages)
  - The same content will also be integrated in the **eTIR technical specifications**
  - Outputs from GEFEG.FX will be studied to determine the most effective ones to **convey information** for IT professionals

Thank you!

Sébastien Galtier
For the IT Team of the TIR Secretariat

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