eTIR international system
Status of progress

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

<table>
<thead>
<tr>
<th>Messages</th>
<th>Number of tests</th>
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<tbody>
<tr>
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<td>11</td>
<td>I11/I12</td>
<td>15</td>
<td>E5/E6</td>
<td>13</td>
</tr>
<tr>
<td>I3/I4</td>
<td>8</td>
<td>I13/I14</td>
<td>11</td>
<td>E7/E8</td>
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<tr>
<td>I5/I6</td>
<td>13</td>
<td>I15/I16</td>
<td>TBD</td>
<td>E9/E10</td>
<td>12</td>
</tr>
<tr>
<td>I7/I8</td>
<td>14</td>
<td>E1/E2</td>
<td>13</td>
<td></td>
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<td>I9/I10</td>
<td>13</td>
<td>E3/E4</td>
<td>18</td>
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**Achievements**

Development of an automated non-regression testing system
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

In Progress
Raising issues with v4.2 of the eTIR specifications
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.
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**.
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
Continuous Integration (CI) pipeline
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 proportion 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!

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UNECE
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