TIPS message validations

**JOINT TIPS-WG AND TIPS-CG WORKSHOP**

**14 DECEMBER 2023**
TIPS A2A Connectivity

A2A Interactions

- **Flat data files**: When there is no ISO 20022 standard message available or when the usage of XML technology is not advisable for technical reasons flat data files may be used.

- **Store-and-Forward**: The file-based store-and-forward network service is used by TIPS only to send outbound reports.

- **Real Time Transfer Service**: Data exchange for settlement purpose requires that all the interested actors are available at the same time. If the message cannot be delivered, no retry mechanism is foreseen.

- **Single Messages**: A2A Interactions with TIPS are based on XML ISO 20022 standards as described in the EPC SEPA Inst Scheme.
TIPS message flow – involved actors/components

- **TIPS Actor Level**
  - **A2A Message**

- **Network Infrastructure Level**
  - **Authentication check**

- **Service Level**
  - **Authorisation check**

- **Application Level**
  - **Authorisation check**
Upon successful delivery of an A2A message from the Network Service Provider (NSP), ESMIG performs:

- Digital signature verification
- Schema and additional technical validations on the business message.

If an error is detected during ESMIG validation, an error message is returned to the sender:

- admi.007 for schema validation errors
- a specific business message (e.g. camt.025, pacs.002, etc) with generic code ‘MS01’ for Additional Technical Validation errors

If no error is detected at this stage, the message is delivered to the application.
The **XSD** (XML Schema Definition) defines the formal structure of the elements in an XML document.

It allows the hierarchy of fields, the datatype and the multiplicity of required tags to be specified.

Unfortunately, the XSD does not allow to express some complex rules or cross field validations stemming from TIPS requirements, such as most of the SEPA Usage Rules or other constraints at business level.
Due to the aforementioned impossibility of expressing complex constraints at XSD level, **Additional Technical Validation** checks were implemented at application level, in line with the EPC/NPC suggested implementation described in the IGs and XSD packages.

Looking at the TIPS SDDs, the **Additional Technical Validation** checks are described in:

- **TIPS UDFS - Chapter 3**: for each message and business case, the *TIPS Usage column* describes the **Additional Technical Validation** checks implemented for each field, if any;

- **ESMIG UDFS - Section 1.5.3**: the subset of **Additional Technical Validation** referring to cross field validations is reported;

- **MyStandards Usage Guidelines (UGs)**: for each message, there is a note describing the **Additional Technical Validation** checks implemented for each field, if any.
TIPS UDFS
Chapter 3 and sub-chapters

ESMIG UDFS
Section 1.5.3 - table 4 and table 5
### MyStandards Usage Guidelines

#### TIPS Usage Guidelines

**Postal Address**

- **Annotation**
  - TIPS-Use: If 'Address Line' is used, then 'Postal Address' sub-elements other than 'Country' are forbidden. A combination of 'Address Line' and 'Country' is allowed; it is recommended when either the Debtor Agent or Creditor Agent is a non-EEA SEPA PSP. If 'Address Line' is not used, then at least 'Town Name' and 'Country' must be used.

**TIPS Notes**

- Information that locates and identifies a specific address, as defined by postal services.

<table>
<thead>
<tr>
<th>Name</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>FI To FI Customer Credit Transfer V08 (pacs.008.001.08)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Header</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Credit Transfer Transaction Information</td>
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<tr>
<td>Payment Identification</td>
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<td>1</td>
</tr>
<tr>
<td>Interbank Settlement Amount</td>
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</tr>
<tr>
<td>Acceptance Date Time</td>
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<td>1</td>
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<tr>
<td>ChargeBearer</td>
<td>1</td>
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</tr>
<tr>
<td>Ultimate Debtor</td>
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<td>1</td>
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<td>1</td>
</tr>
<tr>
<td>Name</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Postal Address</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
To test A2A messages in TIPS, complementary modes can be used:

- **MyStandards Readiness Portal** allows to perform the schema validation check *only*.

- **TIPS counterparty simulator** allows testing of (i) schema validation, (ii) Additional Technical Validations, (iii) Business Rules and (iv) the complete End-to-End message flow by simulating the Beneficiary PSP actor. Using special BICs as Creditor Agent (i.e. ‘ACCPITRRXXX’ and ‘REJEITRRXXX’, respectively), TIPS will consistently accept or reject the given IP transaction.

- An **external test environment** (e.g. CERT) allows testing of (i) schema validation, (ii) Additional Technical Validations, (iii) Business Rules and (iv) the complete End-to-End message flow *with real actors*. 
**MyStandards Readiness Portal** (RP) provides the possibility to test the compliance of customer sample messages with the specifications provided in the Usage Guidelines.

The tool offers direct links to the documentation in MyStandards, including access to sample messages attached to each Usage Guideline.

Users can monitor their own progress and results using the tool.
The User can enter the missing element directly in the browser and test it again.

Once retested with the correct element, the sample appears valid.
Due to its nature and the way the RP was implemented by SWIFT, the RP allows performing **schema validation checks only**, i.e. a comparison of the uploaded XML message against the XSD defined in the TIPS Usage Guidelines.

Its use is relevant in *the timeframe when the SDD documents are published but the software is not yet available in an external test environment for testing purposes.*

**Additional Technical validations, Business Rules and the complete A2A End-to-End message flow can be only tested using the TIPS Simulator and/or an external test environment.**
Due to the limited number of ISO reason codes and to the fact that the EPC and NPC specifications do not define a code to be used to return a failure of a check on an Usage Rule, only the ISO code **MS01** is used to report the failure of an Additional Technical Validation via business messages (e.g. pacs.002).

Considering that there may be several Additional Technical Validations on a message, how to identify which one caused the rejection?

Possible ways:

1) In **ESMIG UDFS** Section 1.5.3, check if the rejected xml message is in line with all the described cross-field validations (table 4 for euro messages, table 5 for non-euro messages) → if this is not the case for at least one, then this may be the reason for the rejection;

2) In **TIPS UDFS** section relating to the rejected xml message type (e.g. 3.3.2.1.3 for pacs.008), check if the rejected xml message is in line with all validations described in the **TIPS Usage column** → if this is not the case for at least one, then this may be the reason for the rejection;

3) In **MyStandards UGs** of rejected xml message type (e.g. pacs.008), check if the rejected xml message is in line with all validations described in the **annotations TIPS – Notes, block TIPS-Use** → if this is not the case for at least one, then this may be the reason for the rejection.
Since ESMIG UDFS includes a subset of checks also contained in both TIPS UDFS and MyStandards UGs and being the content of TIPS UDFS completely in line with that of MyStandards, then:

- checks 2 and 3 can be considered as alternatives to each other;
- check 1 is fully satisfied by check 2 or check 3.

If, after completion of this procedure, the reason for the rejection is still unclear, the TIPS Service Desk may be asked to perform a more thorough investigation.

The root cause for rejection is in fact stored in TIPS, although it cannot be communicated externally due to the above-mentioned limitation of allowed ISO error codes.
Possible future improvements

Possible improvements that could be considered for implementation at 4CB level:

• by means of a new TIPS Change Request, it would be possible to create, for each message, a dedicated section describing the set of Additional Technical Validations performed by TIPS, in case the current SDD structure is considered unsatisfactory.

• Organisation of ad hoc workshops to provide clarification on releases of particular relevance (e.g. when a set of new validation rules is added).
Thank you for the attention!