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Identification Cards — Guidelines — Reserved for ISO Future USE

Carte d'identification — Guidelines — Reserved for ISO Future USE *Réservé pour Usage ISO Futur*

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Introduction

This document contains guidelines for writing a standard including fields, which are reserved for future ISO use (RFU). The need for such guidelines became evident, as there are indications that there might be ambiguity in the interpretation of RFU fields and values as well as proprietary fields and values. The ambiguity may exist in the standards and in the test methods associated with them.

Identification Cards — Guidelines — Reserved for ISO Future USE

1 Scope

The scope of this guideline is to define an agreed set of fields to be used in standards and the way to associate test methods with them. The expected result of following the guidelines is a better definition of the meaning and interpretation and testing of certain field types used in standards.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

ISO Standard Action

an action required by ISO to be performed. ISO Standard Action should exclusively depend on ISO Functional Values. It should not depend on ISO Proprietary Values, ISO RFU Values or ISO Restricted Values in any field, in any data frame at any time.

2.2

Proprietary non-ISO Action

a proprietary action, not defined by ISO, is to be performed which has no effect on any ISO Standard Action.

2.4

ISO Default RFU Action

a default action required by ISO to be performed when an RFU Value is received

2.5

ISO Fixed Value

a value fixed by ISO for ISO Fixed Field

2.6

ISO Functional Value(s)

a value or values with associated ISO Standard Action

2.7

ISO Proprietary Value(s)

a value or values without associated ISO Standard Action and with non-ISO Proprietary Action

2.8

ISO RFU Value(s)

a value or values with associated ISO Default RFU Action

2.9

ISO Restricted Value(s)

a value or values that are not currently being covered by a definition and have no documented action associated with them.

NOTE Having value or values without a documented associated action may compromise possible compliance with Common Criteria.

2.10

ISO Default RFU Value

a default value associated with an RFU Field.

2.11

Field

a field is a sequence of one or more bits

2.12

Fixed Field

a field allowed to contain only one ISO Fixed Value

2.13

Functional Field

a field allowed to contain ISO Functional Value, ISO Proprietary Value and ISO RFU Value

2.14

RFU Field

a field totally reserved by ISO for future ISO definitions

2.15

Proprietary Field

a field allowed to contain only ISO Proprietary Values

2.16

Data Frame

field or fields sent by a sender in one transmission block to a receiver

3 Symbols (and abbreviated terms)

RFU Reserved by ISO for future use by ISO for ISO needs

4 Introduction to field types

In a system comprised of a sender and a receiver of information, data frames may be transmitted. The data blocks are a concatenation of fields each carrying a specific meaning and each comprised by one or more concatenated bits. This document describes the following:

- The categories of values that can be associated with each field type.
- The Actions ISO should or should not associate with certain field types and certain value category.
- The recommended testing procedure of the sent data frame and the actions performed by the receiver, taking into account that a data block may contain fields of several types with their associated values also of several categories and which fields or values should or should not affect an ISO Action.

5 Fixed Field

A fixed field is a field that can contain only the ISO Fixed Value associated with it in the standard. When introducing a fixed field in a standard, the ISO Fixed Value associated with it should be documented. An ISO

Standard Action should also be associated with it explaining the meaning of the field and how it should be used.

Unless an error is detected or a severe need for modification arises, ISO should not change the size and contents of this field through the lifetime of the standard. In case future flexibility is anticipated by ISO, an RFU field should be used instead.

5.1 Sender of a fixed field

5.1.1 Operation

A sender of data frame containing a fixed field should always set the fixed field to the ISO Fixed Value associated with it.

5.1.2 Tests procedure

A fixed field should be monitored constantly during the entire test procedure and in case any fixed field in any data frame at any time does not contain the ISO fixed value associated with it, the test should be marked as FAIL and the sender declared as non-compliant to the ISO standard.

5.2 Receiver of a fixed field

5.2.1 Operation

A receiver of a data frame containing a documented fixed field can assume that the fixed field contains the ISO Fixed Value. It can also be assumed with fairly high degree of confidence that ISO will not modify a fixed field as the field could have been defined as an RFU Field in case a need for future possibly modification was anticipated.

In case there is no ISO Standard Action associated with a Fixed Field, it is a bit less difficult to change its meaning or ISO Fixed Value in the future. It is advised, although not required, that a receiver take this observation into account.

5.2.2 Tests procedure

No testing is required for a receiver of a Fixed Field as there is no action associated with it. Further, there is no independence test imposed for other fields as fixed fields are not expected to be changed in the future by ISO (as ISO did not designate any possible RFU values for it) and is not expected to contain any proprietary values other than the Fixed Value (as no other ISO Proprietary values were associated with it by ISO).

6 Functional Field

A functional field is a field that can contain the ISO Functional Values associated with it in the standard. When introducing a functional field in a standard, the ISO Functional Value(s) associated with it should be documented. An ISO Standard Action should also be associated with every ISO Functional Value.

In case the ISO Functional Value(s) do not occupy the whole range of possible values, ISO RFU Value(s) and/or ISO Proprietary Value(s) may be associated with the Functional Field.

In case ISO RFU Value(s) are associated with a Functional Field, an ISO Default RFU Action should also be documented describing the action a receiver of such ISO RFU Value(s) should do in order to preserve future ISO flexibility in assigning a possible ISO Standard Action with it.

In case ISO Proprietary Value(s) are associated with a Functional Field, no ISO action should be defined and the interpretation of the ISO Proprietary Value(s) is left entirely open for free proprietary use by anyone and Proprietary non-ISO Actions may be performed by the receiver. See discussion below on Proprietary Fields.

In case ISO Functional Value(s) together with ISO RFU Value(s) and ISO Proprietary Value(s) do not occupy the whole range of possible values, the remaining possible values are ISO Restricted Values. These values are not reserved for future use by ISO, otherwise ISO could define them as ISO RFU values. These values are not for proprietary use, otherwise ISO could define them as ISO Proprietary Values. Thus these values have no documented use, are not reserved by ISO for any future use and are should not be used by anyone for any proprietary purpose. It is advised to avoid leaving any value or value(s) without a documented action associated with.

In order to guarantee existing and future compatibility and interoperability, which is a long declared goal of ISO, all ISO Standard Actions should depend on ISO Functional Values only. ISO Standard Actions should not depend on ISO RFU values (as they are reserved for future use by ISO), should not depend on ISO Proprietary Values (as the interpretation of these is inherently proprietary and thus not identical between implementations) and should not depend on ISO Restricted Values as those have no documented definition and no documented action associated with them. Consequently, all values in a Functional Field which are not part of the ISO Functional Values for this field should be ignored. Furthermore, ISO RFU Values, ISO Proprietary Values and ISO Restricted Values in any field in the data frame should be ignored as well. Moreover, unless otherwise documented by ISO, the ISO Standard Actions should only depend on what ISO documented in Functional Values and nothing else.

6.1 Sender of a Functional Field

6.1.1 Operation

A sender of data frame containing a functional field should always set the functional field to one of the ISO Functional Values or ISO Proprietary Values associated with it.

6.1.2 Test procedure

A Functional field should be monitored constantly during the entire test procedure and in case any functional field in any data frame at any time does not contain an ISO Functional Value or an ISO Proprietary Value associated with it, the test should be marked as FAIL and the sender declared as non-compliant to the ISO standard.

6.2 Receiver of a Functional field

6.2.1 Operation

A receiver of a data frame containing a documented functional field should perform the ISO Standard Action associated with it when it contains an ISO Functional Value and can perform whatever Proprietary non-ISO Action when it contains an ISO Proprietary Value.

6.2.2 Tests procedure with functional values

In the test procedures, functional fields should be set to ISO Functional Values associated with them and the test should determine that the ISO Standard Action is correctly and successfully performed.

In case the ISO Standard Action is not performed as documented, the test should be marked as FAIL and the receiver should be declared as non-compliant to the ISO standard.

6.2.3 Tests procedure with RFU values

In the test procedures, functional fields should be set the ISO RFU Values associated with them and the test should determine that the ISO Default RFU Action is correctly and successfully performed.

In case the ISO Default RFU Action is not performed as documented, the test should be marked as FAIL and the receiver should be declared as non-compliant to the ISO standard.

6.2.4 Tests procedure with functional values to determine independence of RFU, proprietary and restricted values

In the test procedures, functional fields should be set to their ISO Functional Values and the test should determine that the ISO Standard Action is correctly and successfully performed when other fields are set to ISO RFU Values, ISO Proprietary Values and ISO Restricted Values.

In case the ISO Standard Action is not performed as documented, the test should be marked as FAIL and the receiver should be declared as non-compliant to the ISO standard.

NOTE See clause about complexity below.

7 RFU field

An RFU field is a field that can contain only the ISO Default RFU Value associated with it in the standard. When introducing an RFU field into a standard, the ISO RFU Default Value associated with it should be documented. There shall be no ISO action associated with it.

ISO reserves the freedom and liberty to change anything about an RFU field including the ISO Default RFU Value associated with it and redefine the field or any part of it to any other field type. Consequently, a receiver of a data frame should ignore it and assume nothing about its value or interpretation or functionality.

7.1 Sender of an RFU field

7.1.1 Operation

A sender of data frame containing an RFU field should always set the RFU field to the ISO Default RFU Value associated with it.

7.1.2 Tests procedure

An RFU field should be monitored constantly during the entire test procedure and in case any RFU field in any data frame at any time does not contain the ISO Default RFU Value associated with it, the test should be marked as FAIL and the sender declared as non-compliant to the ISO standard.

7.2 Receiver of an RFU field

7.2.1 Operation

A receiver of a data frame containing a documented RFU field can assume nothing about the RFU field(s) including nothing about the value they might contain. The content of an RFU field should be completely ignored by a receiver. Further, a receiver should not modify any of the ISO Standard Actions not Proprietary non-ISO Actions based on anything any RFU field might contain in any data frame at any time.

7.2.2 Tests procedure with functional values

In the test procedures, other functional fields should be set to ISO Functional Values associated with them and the test should determine that the ISO Standard Action is correctly and successfully performed. All possible values should be assigned to the RFU Field during the test.

In case the ISO Standard Action is not performed as documented, the test should be marked as FAIL and the receiver should be declared as non-compliant to the ISO standard.

NOTE See clause about complexity below.

8 Proprietary Field

A Proprietary Field may contain any value. ISO should not assign any value or an action with a Proprietary Field. The contents of Proprietary Fields should be ignored by a receiver in respect with ISO Standard Actions and ISO Default RFU Actions.

Extreme care should be carried by ISO when changing Proprietary Fields (and ISO Proprietary Values) to other field types or associating ISO Standard Actions with them as they were declared free for proprietary, potentially even contradicting, use between products. It is greatly preferred to avoid Proprietary Fields (and ISO Proprietary Values) as much as possible. No testing shall be carried out on Proprietary Fields regarding functionally associated with them except for what is needed to ensure that the content of Proprietary Field(s) is ignored as far as independence of documented ISO Standard Action and ISO Default RFU Actions is concerned.

NOTE See testing of functional fields above.

9 Discussion on Complexity of testing

As testing all possibilities of Allowed ISO Actions associated with Allowed ISO Functional Values in all Functional Fields for all RFU Values and ISO Restricted Values for other Functional Fields, RFU Fields and Proprietary Fields might be exhaustive and lengthy, it is allowed to test less than all possible combinations.

However, the coverage figure should be depicted in the test results and should never be less than 25% (but minimum of 100). In case coverage is less than 100%, at least 25% of the tested combinations should be random.

There are two types of coverage levels. The test report should mark, for each test, which level is applicable, with encouragement given to test to level two.

9.1 Coverage assuming independence of fields - Level one

The possible values in each RFU, Proprietary and Restricted are summed up when calculating the total number of possible cases. This Independent Coverage Base is accurate in case the fields are assumed to be independent of each other.

The individual count of tested RFU, Proprietary and Restricted values is summed up when counting the total number of Tested Independent Cases.

The Independent Coverage figure under the assumptions of independence of the fields is calculated by dividing the Tested Independent Cases into the Independent Coverage Base)

9.2 Coverage assuming fields are dependent - Level two

The possible values in each Functional, RFU, Proprietary and Restricted fields are multiplied when calculating the total number of possible cases. This Dependant Coverage Base is accurate in case the fields are suspected to be dependent on each other and is the best base for worst case testing.

The individual count of tested RFU, Proprietary and Restricted values is multiplied when counting the total number of Tested Dependent Cases.

The Dependent Coverage figure under the assumptions of Dependency of the fields is calculated by dividing the Tested Dependent Cases into the Dependent Coverage Base)

10 Discussion on practicality

Legitimately, there can be cases where the definition of certain fields is changing between, say, Fixed Fields, Functional Fields or RFU Fields as a function of certain bit combinations in the frame as documented by ISO in the standard.

In such cases, follow the spirit of the above rules, applying them wisely in accordance with the conditionally applicable type of a field and associated, possibly conditional, actions.

In special cases, ISO may recommend not to test certain fields or certain values. It should be avoided as much as possible.