INTERNATIONAL STANDARD ISO 10303-46:1994
TECHNICAL CORRIGENDUM 1

Published 1999-07-15

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Industrial automation systems and integration — Product data representation and exchange —

Part 46:
Integrated generic resources: Visual presentation

TECHNICAL CORRIGENDUM 1

Systèmes d'automatisation industrielle et intégration — Représentation et échange de données de produits —

Partie 46: Ressources génériques intégrées: Présentation visuelle

RECTIFICATIF TECHNIQUE 1

Technical Corrigendum 1 to International Standard ISO 10303-46:1994 was prepared by Technical Committee ISO/TC 184, *Industrial automation systems and integration*, Subcommittee SC 4, *Industrial data*.

Introduction

This document corrects ISO 10303-46:1994, Product data representation and exchange — Part 46: Integrated generic resources: Visual presentation. The corrected document supersedes ISO 10303-46:1994.

The purpose of the modifications to the text of ISO 10303-46:1994 is to correct errors in the EXPRESS definitions likely to cause a compilation problem, to correct errors in Informal propositions and Formal propositions, to replace the annex for the computer-interpretable EXPRESS with a URL reference, and to replace the object identifier for the document and the schemas.

ICS 25.040.40 **Ref. No. ISO 10303-46:1994/Cor.1:1999(E)**

Printed in Switzerland

Modifications to the text of ISO 10303-46:1994

Clause 4, p. 5

The EXPRESS specification for the **presentation_organization_schema** *did not include a reference to required data type. The first required data type is an entity data type, the* **annotation_occurrence** *for the Formal propositions in* **area_dependent_annotation_representation** *and* **view_dependent_annotation_representation**. *The second required data type is an entity data type, the symbol_representation for the Formal propositions in* **symbol_representation_rule**. *The third required data type is an entity data type, the* **symbol_representation_relationship** *for the Formal propositions in* **symbol_representation_rule**. *The fourth required data type is an entity data type, the* **styled_item** *for the Formal propositions in* **camera_model** *and* **light_source**. *The fifth required data type is an entity data type, the* **founded_item**. *It is required to be referenced since it is now a supertype of* **view_volume**. *Add the following to the EXPRESS specification between the 'SCHEMA presentation_organization_schema;' and the 'REFERENCE FROM presentation_resource_schema':*

```
REFERENCE FROM presentation_definition_schema
    (annotation_occurrence,
     symbol_representation,
     symbol_representation_relationship);

REFERENCE FROM presentation_appearance_schema
    (styled_item);
```


Delete the following EXPRESS specification:

```
REFERENCE FROM representation_schema
    (item_defined_transformation,
     item_in_context,
     mapped_item,
     representation,
     representation_item,
     representation_map,
     representation_relationship,
     representation_relationship_with_transformation);
```

Replace with the following EXPRESS specification:

```
REFERENCE FROM representation_schema
    (founded_item,
     item_defined_transformation,
     item_in_context,
     mapped_item,
     representation,
     representation_item,
     representation_map,
```

```
    representation_relationship,
    representation_relationship_with_transformation);
```

With the addition of the **annotation_occurrence**, **symbol_representation**, **symbol_representation_relationship** *and* **styled_item** *to the* **presentation_organization_schema**, *NOTE 1 changed. Delete NOTE 1 and replace with the following:*

NOTE 1 The schemas referenced above can be found in the following parts of ISO 10303:

Presentation_definition_schema	Clause 5 of this part of ISO 10303
Presentation_appearance_schema	Clause 6 of this part of ISO 10303
Presentation_resource_schema	Clause 7 of this part of ISO 10303
Geometry_schema	ISO 10303-42
Representation_schema	ISO 10303-43
Measure_schema	ISO 10303-41
Support_resource_schema	ISO 10303-41

Clause 4.3.45, p. 13

The Informal proposition of **layered_item** *contradicts to the intended use of* **presentation_layer_assignment**. *The type of* **representation_item***s assigned to a layer shall not be restricted. Remove Informal proposition IP1.*

Clause 4.5.5, p. 26

The EXPRESS specification of **view_volume** *is revised to make it a subtype of* **founded_item** *in order to provide a representation context for the* **projection_point** *and* **planar_box** *attributes. Remove the EXPRESS specification and replace with the following:*

EXPRESS specification:

```
*)
ENTITY view_volume
  SUBTYPE OF (founded_item);
  projection_type            : central_or_parallel;
  projection_point           : cartesian_point;
  view_plane_distance        : length_measure;
  front_plane_distance       : length_measure;
  front_plane_clipping       : BOOLEAN;
  back_plane_distance        : length_measure;
  back_plane_clipping        : BOOLEAN;
  view_volume_sides_clipping : BOOLEAN;
  view_window                : planar_box;
END_ENTITY;
(*
```

Add the following note at the end of the entity description:

NOTE Since **view_volume** is not a subtype of **geometric_representation_item** the instances of **cartesian_point** which is the **projection_point** attribute and **planar_box** which is the **view_window** attribute are not associated in the usual way with the **geometric_representation_context** of each **representation** using a **camera_model_d3** containing this **view_volume**. The **geometric_representation_context** is associated via the **founded_item** supertype.

Clause 4.5.9, p. 31

The EXPRESS specification of **light_source** *contained logical errors in the WHERE rule. WR1 requires a role name qualified by attribute name 'ITEM' for argument 2 of built-in function USEDIN. Delete the current WR1 and replace WR1 with the following:*

```
WR1: SIZEOF(USEDIN(SELF,'PRESENTATION_APPEARANCE_SCHEMA.'+
          'STYLED_ITEM.ITEM')) = 0;
```

Clause 4.5.14, p. 35

The description of the Formal propositions does not give a correct explanation of WR2. Remove the description of WR2 and replace with the following:

WR2: The target of the mapping shall be a **planar_box**.

Clause 4.9.1, p. 39

The EXPRESS specification for the FUNCTION **acyclic_presentation_representation_relationship** *contained logical errors in the function body. The assignment to variable 'x' requires a 'SET' and not a 'BAG'. Remove the EXPRESS specification and replace with the following:*

EXPRESS specification:

```
*)
FUNCTION acyclic_presentation_representation_relationship
  ( relation : presentation_representation_relationship;
    children : SET OF presentation_representation ) : BOOLEAN;

  LOCAL
    x : SET OF presentation_representation_relationship;
    local_children : SET OF presentation_representation;
  END_LOCAL;

  REPEAT i:=1 TO HIINDEX(children);
    IF relation\representation_relationship.rep_1 :=: children[i] THEN
       RETURN(FALSE);
    END_IF;
  END_REPEAT;

  x := bag_to_set (USEDIN ( relation\representation_relationship.rep_1,
                  'REPRESENTATION_SCHEMA.'+
                  'REPRESENTATION_RELATIONSHIP.REP_2'));
```

```
  local_children := children + relation\representation_relationship.rep_1;

  IF SIZEOF (x) > 0 THEN
    REPEAT i:=1 TO HIINDEX (x);
       IF NOT acyclic_presentation_representation_relationship
              (x[i] , local_children) THEN
         RETURN (FALSE);
       END_IF;
    END_REPEAT;
  END_IF;

  RETURN (TRUE);

END_FUNCTION;
(*
```

Clause 5, p. 40

The EXPRESS specification for the **presentation_definition_schema** *did not include a reference to a required data type. The required reference is a function, the* **bag_to_set** *for the EXPRESS specifications changed in* **acyclic_presentation_representation_relationship**, **acyclic_symbol_representation_relationship** *and* **field_in_table**. *Delete the following EXPRESS specification:*


```
REFERENCE FROM support_resource_schema
    (label,
     text);
```

Replace with the following EXPRESS specification:

```
REFERENCE FROM support_resource_schema
    (label,
     text,
     bag_to_set);
```

Clause 5.4.13, p. 53

The EXPRESS specification of **table_record_representation** *contained logical errors in the WHERE rule. WR1 requires 'REPRESENTATION_SCHEMA.REPRESENTATION_MAP' as argument 2 of built-in function USEDIN and not 'REPRESENTATION_SCHEMA.MAPPED_ITEM.MAPPING_SOURCE.MAPPED_REPRESENTATION'. Delete the current WR1 and replace WR1 with the following:*

```
WR1: (SIZEOF(USEDIN(SELF, 'REPRESENTATION_SCHEMA.'+
                           'REPRESENTATION_RELATIONSHIP.REP_2')) > 0)
                      OR
       (SIZEOF( QUERY( map_item <* USEDIN(SELF, 'REPRESENTATION_SCHEMA.'+
                                               'REPRESENTATION_MAP.'+
```

```
                                                'MAPPED_REPRESENTATION') |
        'PRESENTATION_DEFINITION_SCHEMA.TABLE_REPRESENTATION' IN
        TYPEOF (using_representations (map_item)) )) > 0);
```

Clause 5.4.14, p. 54

The EXPRESS specification of **table_record_field_representation** *contained logical errors in the WHERE rule. WR1 requires 'REPRESENTATION_SCHEMA.REPRESENTATION_MAP' as argument 2 of built-in function USEDIN and not 'REPRESENTATION_SCHEMA.MAPPED_ITEM.MAPPING_ SOURCE.MAPPED_REPRESENTATION'. Delete the current WR1 and replace WR1 with the following:*

```
WR1: (SIZEOF(USEDIN(SELF, 'REPRESENTATION_SCHEMA.' +
                           'REPRESENTATION_RELATIONSHIP.REP_2')) > 0)
                      OR
       (SIZEOF( QUERY( map_item <* USEDIN(SELF, 'REPRESENTATION_SCHEMA.'+
                                                'REPRESENTATION_MAP.'+
                                                'MAPPED_REPRESENTATION') |
                                           'PRESENTATION_DEFINITION_SCHEMA.' +
                                           'TABLE_RECORD_REPRESENTATION' IN
        TYPEOF (using_representations (map_item)) )) > 0);
```

Clause 5.6.2, p. 72

The EXPRESS specification for the FUNCTION **acyclic_symbol_representation_relationship** *contained logical errors in the function body. The assignment to variable 'x' requires a 'SET' and not a 'BAG'. Remove the EXPRESS specification and replace with the following:*

EXPRESS specification:

```
*)
FUNCTION acyclic_symbol_representation_relationship
  (relation : symbol_representation_relationship;
   children : SET OF symbol_representation ) : BOOLEAN;
  LOCAL
    x : SET OF symbol_representation_relationship;
    local_children : SET OF symbol_representation;
  END_LOCAL;

  REPEAT i:=1 TO HIINDEX(children);
    IF relation\representation_relationship.rep_1 :=: children[i] THEN
      RETURN(FALSE);
    END_IF;
  END_REPEAT;

  x := bag_to_set (USEDIN ( relation\representation_relationship.rep_1,
                'REPRESENTATION_SCHEMA.'+
                'REPRESENTATION_RELATIONSHIP.'+ 'REP_2'));
```

```
  local_children := children + relation\representation_relationship.rep_1;

  IF SIZEOF (x) > 0 THEN
    REPEAT i:=1 TO HIINDEX (x);
      IF NOT acyclic_symbol_representation_relationship(x[i] ,
                                                local_children) THEN
        RETURN (FALSE);
      END_IF;
    END_REPEAT;
  END_IF;

  RETURN (TRUE);

END_FUNCTION;
(*
```

Clause 5.6.3, p. 73

The EXPRESS specification for the FUNCTION **field_in_table** *contained spelling and logical errors. The expression in the first QUERY requires a string 'PRESENTATION_DEFINITION_SCHEMA. TABLE_RECORD_REPRESENTATION' and not a string 'PRESENTATION_DEFINITIONS_ SCHEMA.TABLE_RECORD_REPRESENTATION'. The declaration of variable 'symbol_rep_rel_set' requires a 'SET' and not a 'SET[1:?]'. The declaration of variable mapped_item_set' requires a 'SET' and not a 'SET[1:?]'. The declaration of variable 'table_record_rep_set' requires a 'SET' and not a 'SET[1:?]'.The assignment to variable 'symbol_rep_rel_set' requires a 'SET' and not a 'BAG'. The built-in function USEDIN in the second QUERY requires a role name qualified by an attribute name as argument 2. Remove the EXPRESS specification and replace with the following:*

EXPRESS specification:

```
*)
FUNCTION field_in_table (field : table_record_field_representation;
                         table : annotation_table_occurrence): BOOLEAN;
  LOCAL
    table_rep : table_representation;
    symbol_rep_rel_set : SET OF symbol_representation_relationship;
    mapped_item_set : SET OF mapped_item;
    table_record_rep_set : SET OF table_record_representation := [];
  END_LOCAL;

  table_rep := table\styled_item.item\mapped_item.mapping_source.
    mapped_representation;
  mapped_item_set := QUERY(item <* table_rep.items |
                       ('REPRESENTATION_SCHEMA.MAPPED_ITEM' IN
                        TYPEOF(item))
                                AND
```

```
                       ('PRESENTATION_DEFINITION_SCHEMA.'+
                        'TABLE_RECORD_REPRESENTATION' IN
                         TYPEOF(item\mapped_item.mapping_source.
                                    mapped_representation ))
                     );
REPEAT i := 1 TO HIINDEX(mapped_item_set);
    table_record_rep_set := table_record_rep_set +
           mapped_item_set[i].mapping_source.mapped_representation;
  END_REPEAT;

  symbol_rep_rel_set := bag_to_set (USEDIN(table_rep,
                               'REPRESENTATION_SCHEMA.'+
                               'REPRESENTATION_RELATIONSHIP.REP_1'));

  REPEAT i := 1 TO HIINDEX(symbol_rep_rel_set);
     table_record_rep_set := table_record_rep_set +
              symbol_rep_rel_set[i]\representation_relationship.rep_2;
  END_REPEAT;

  IF SIZEOF(QUERY( table_record_rep <* table_record_rep_set |
        (SIZEOF(QUERY( rep_rel <* USEDIN(table_record_rep,
                            'REPRESENTATION_SCHEMA.'+
                            'REPRESENTATION_RELATIONSHIP.REP_1') |
                       ('PRESENTATION_DEFINITION_SCHEMA.' +
                       'SYMBOL_REPRESENTATION_RELATIONSHIP' IN
                       TYPEOF(rep_rel))
                       AND
                       (rep_rel.rep_2 :=: field)
                       )) > 0)
                       OR
              (SIZEOF(QUERY(item <* table_record_rep.items |
                        ('REPRESENTATION_SCHEMA.MAPPED_ITEM' IN
                         TYPEOF(item))
                                 AND
                        (field :=: item\mapped_item.mapping_source.
                                    mapped_representation )
                         )) > 0)
             )) = 0 THEN
    RETURN(FALSE);
  END_IF;

  RETURN(TRUE);

END_FUNCTION;
(*
```

Clause 6, p. 74

The EXPRESS specification for the **presentation_appearance_schema** *did not include a reference to required data type. The first required data type is an entity data type, the group for the amended SELECT type* **style_context_select**. *The second required reference is a function, the* **bag_to_set** *for the EXPRESS specifications changed in* **acyclic_occlusion_precedence**. *Add the following EXPRESS specification before the 'REFERENCE FROM MEASURE_SCHEMA':*

```
REFERENCE FROM group_schema
    (group);
```

Delete the following EXPRESS specification:

```
REFERENCE FROM support_resource_schema
    (label);
```

Replace with the following EXPRESS specification:

```
REFERENCE FROM support_resource_schema
    (label,
     bag_to_set);
```


Clause 6.3.1, p. 80

The possibility to control the presentation style by a layer is a fundamental concept of ISO 10303-46. However the EXPRESS specification for the type **style_context_select** *did not include the necessary entities. Remove the EXPRESS specification and replace with the following:*

EXPRESS specification:

```
*)
TYPE style_context_select = SELECT
  (group,
   presentation_layer_assignment,
   representation,
   representation_item,
   presentation_set);
END_TYPE;
(*
```

Clause 6.3.43, p. 96

The restriction of invisibility to **presentation_representation** *does not satisfy the requirement to define a complete model as invisible. Include the entity representation instead of* **presentation_representation** *in the SELECT type* **invisible_item**. *Remove the EXPRESS specification and replace with the following:*

EXPRESS specification:

```
*)
TYPE invisible_item = SELECT
  (styled_item,
   presentation_layer_assignment,
   representation);
END_TYPE;
(*
```

Clause 6.13.1, p. 130

The EXPRESS specification for the FUNCTION **acyclic_occlusion_precedence** *contained logical errors in the function body. The assignment to variable 'x' requires a 'SET' and not a 'BAG'. Remove the EXPRESS specification and replace with the following:*

EXPRESS specification:

```
*)
FUNCTION acyclic_occlusion_precedence
   ( relation : occlusion_precedence;
     set_of_lower : SET OF hiding_or_blanking_select ) : BOOLEAN;
   LOCAL
      x : SET OF occlusion_precedence;
      local_set_of_lower : SET OF hiding_or_blanking_select;
   END_LOCAL;
   REPEAT i:=1 TO HIINDEX(set_of_lower);
      IF relation.higher_precedence :=: set_of_lower[i] THEN
         RETURN(FALSE);
      END_IF;
   END_REPEAT;
   x := bag_to_set (USEDIN ( relation.higher_precedence,
                    'PRESENTATION_APPEARANCE_SCHEMA.'+
            'OCCLUSION_PRECEDENCE.LOWER_PRECEDENCE'));
   local_set_of_lower := set_of_lower + relation.higher_precedence;
   IF SIZEOF (x) > 0 THEN
      REPEAT i:=1 TO HIINDEX (x);
         If NOT acyclic_occlusion_precedence(x[i] ,
                                                    local_set_of_lower) THEN
            RETURN (FALSE);
         END_IF;
      END_REPEAT;
   END_IF;
   RETURN (TRUE);
END_FUNCTION;
(*
```