ISO/TC 184/SC 4 Industrial Data Quality Committee

Be Curious!

Take it easy

Learning Objectives

- Dive in the new wg12-step repository and understand the structure
- How-to make editorial updates
- How-to make update to EXPRESS, Descriptions
- Install SUMA

Training material

https://committee.iso.org/sites/tc184sc4/home/quality-committee.html

- Git wg12-step repository https://sd.iso.org/bitbucket-pilot/projects/ISOTC184SC4/repos/wg12-step/browse
- Git STEP development training https://sd.iso.org/bitbucket-pilot/projects/ISOTC184SC4/repos/wg12-step/browse

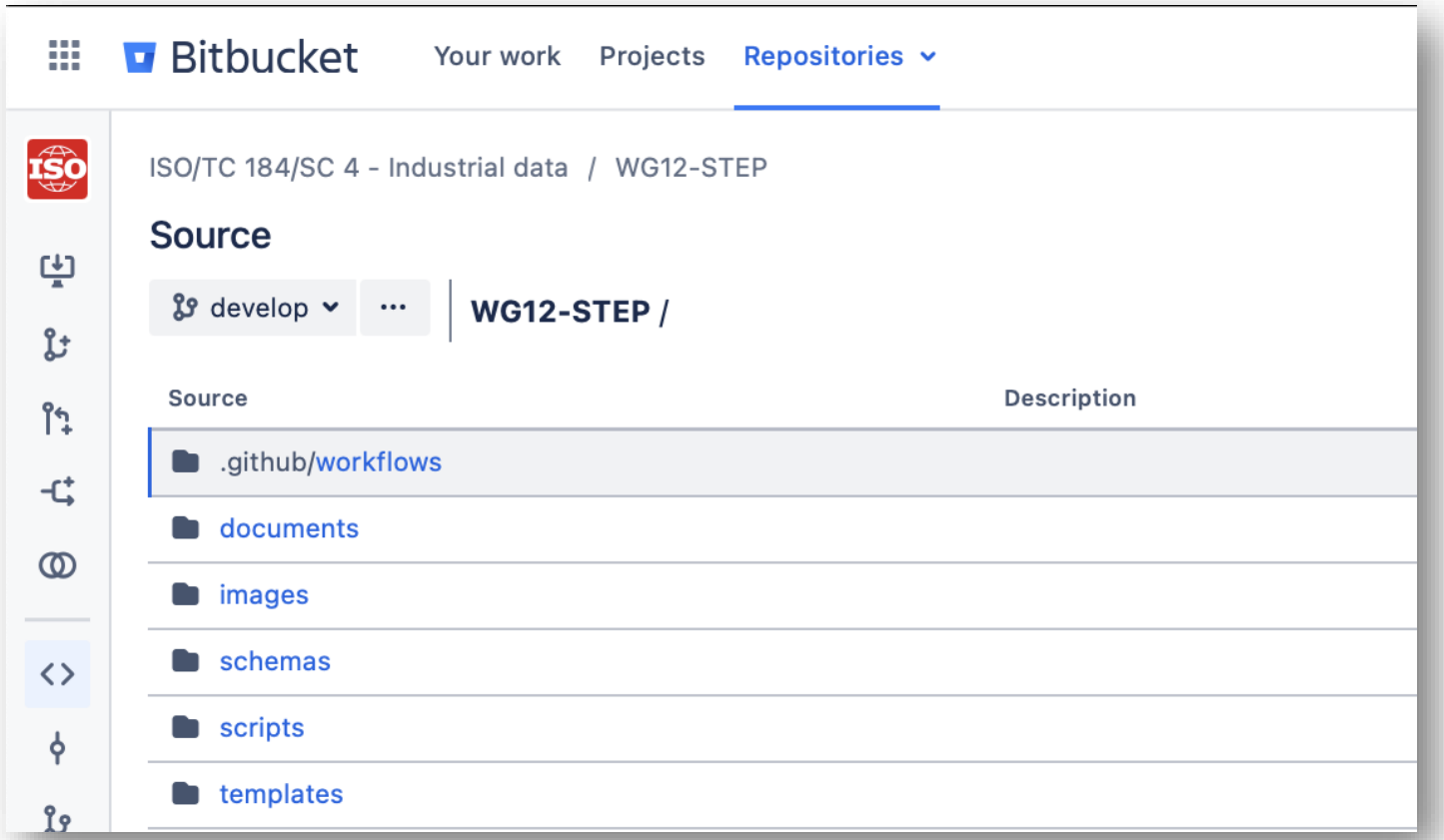
  An instantiation has been set up at https://stepdev.boost-lab.net/step_development_training/index.html

- Next online sessions schedule on ISO/TC 184/SC 4 website https://committee.iso.org/sites/tc184sc4/home/forums/quality-forum/step-development-training.html

wg12-step

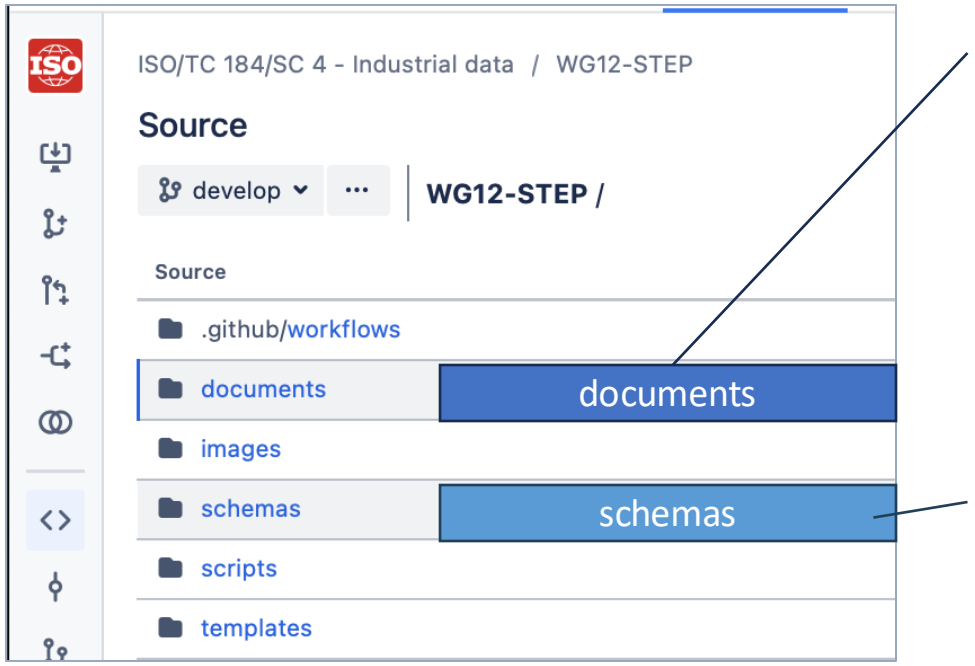
Dive in

- https://sd.iso.org/bitbucket-pilot/projects/ISOTC184SC4/repos/wg12-step/browse



Structure

Dive in



Editorial work

AsciiDoc
AsciiMath
Yaml

documents

This folder is composed of one folder for each documents and inside it contains images and sections folders, as well as other files.

Technical work

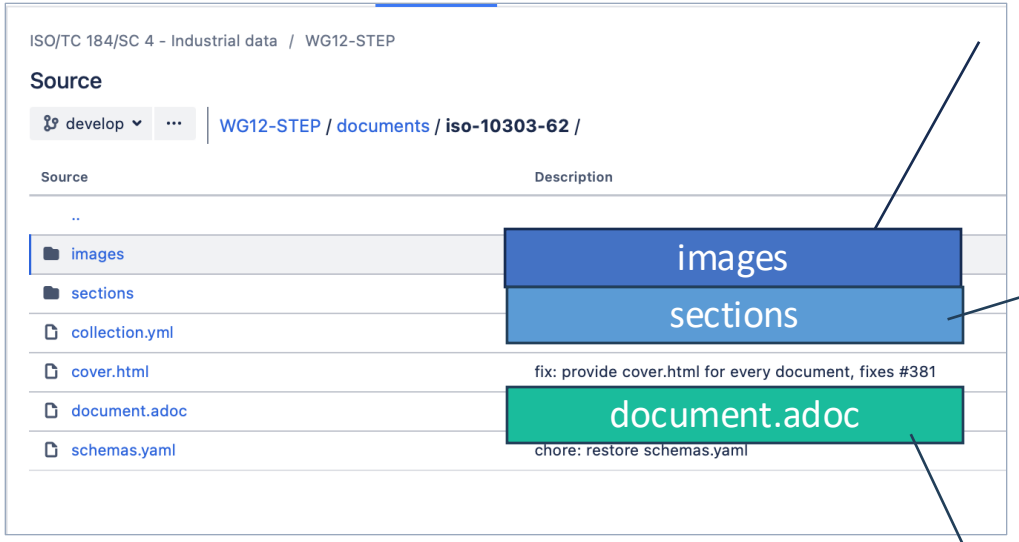
AsciiDoc
AsciiMath
Annotated EXPRESS
Yaml

schemas

This folder is composed of modules and resources folders. Inside it contains a folder for each document that contains the EXPRESS schema(s), as well as the EXPRESS-G graphics and the .yaml file containing the source for the Change history Annex.

Folder ‘documents’

Dive in



images

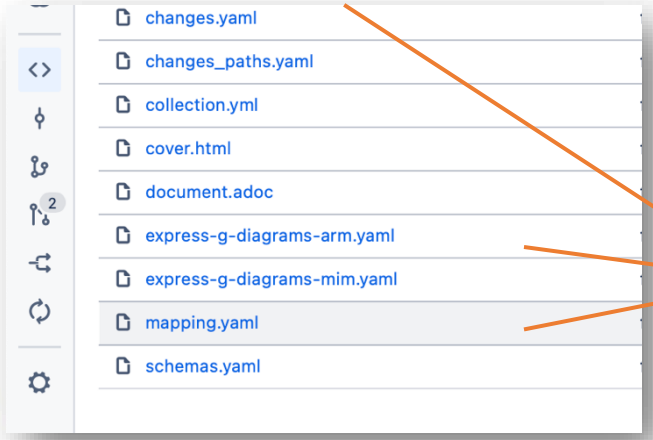
This folder contains Figure’s graphics.

sections

This folder contains the source for editorial content (Foreword, Introduction, Scope …..Bibliography)

document.adoc

It contains the metadata and list what should be included in the document.

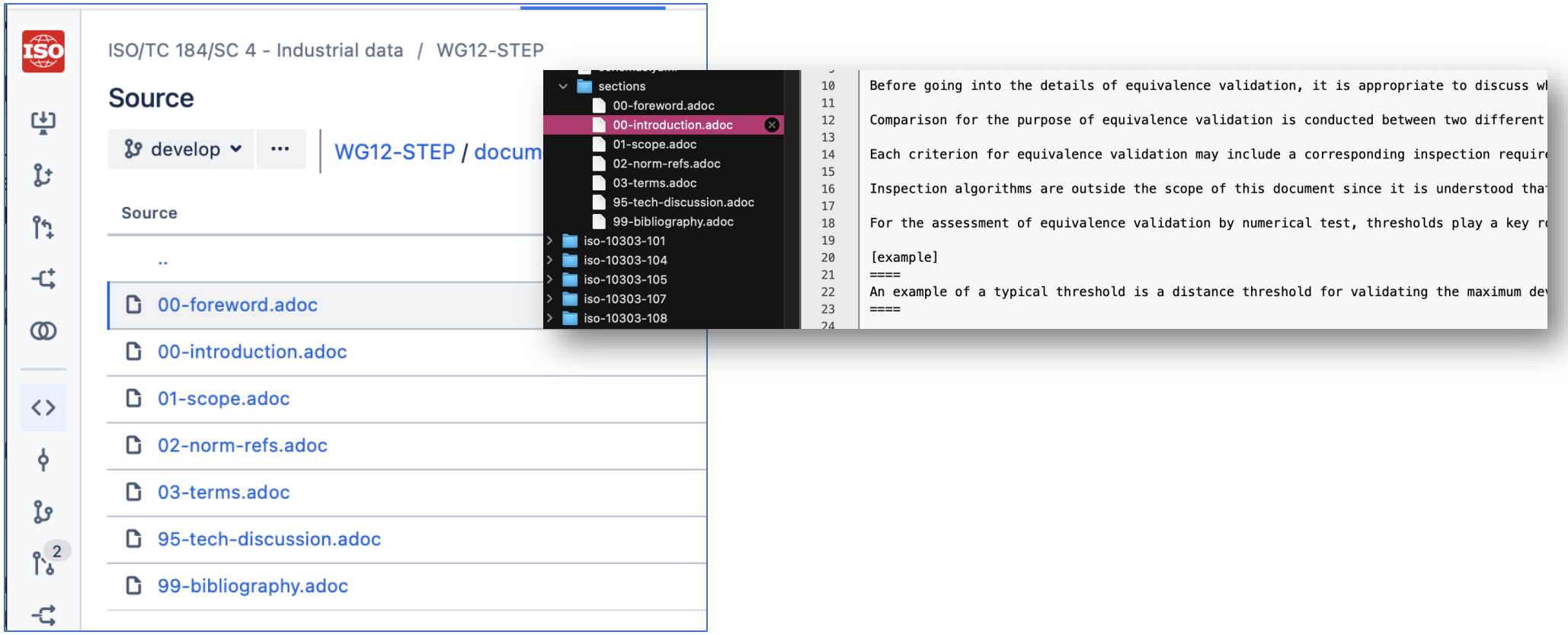


module

Please note that the content differs for a module. It also contains the change annex source file, EXPRESS-G and mapping specification.

Folder ‘sections’

Dive in

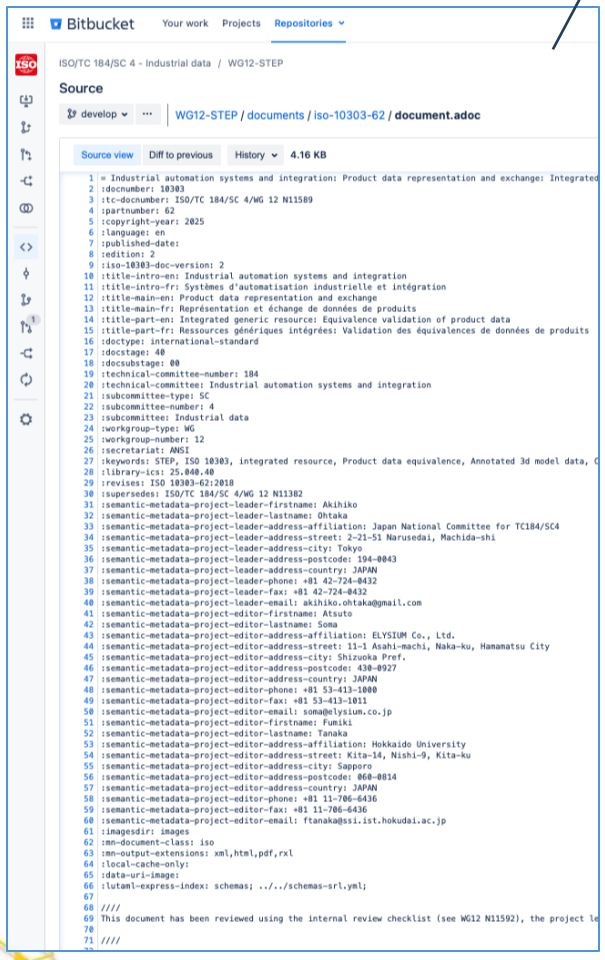


document.adoc, the starting point

How-To

metadata

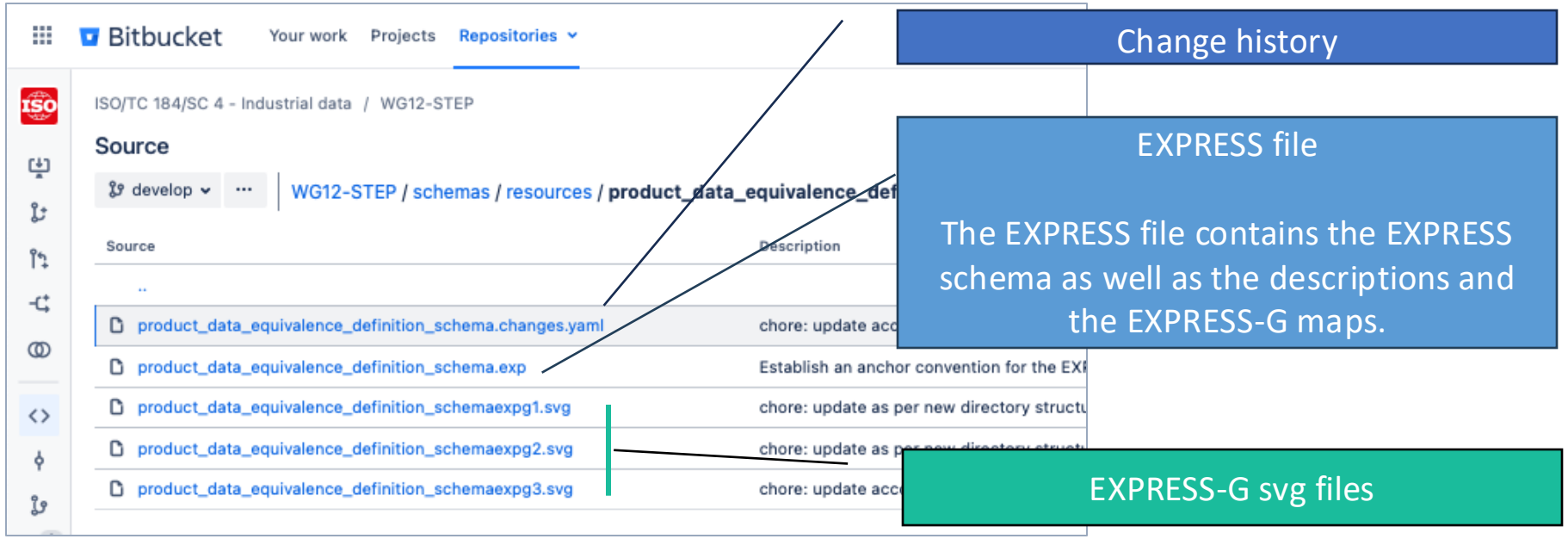
Files to include




```
include::sections/00-foreword.adoc[]

include::sections/00-introduction.adoc[]

include::sections/01-scope.adoc[]

include::sections/02-norm-refs.adoc[]

include::sections/03-terms.adoc[]

include::../../templates/resources/schemas.adoc[]

include::../../templates/resources/resource_annex_short_names.adoc[]

include::../../templates/resources/resource_annex_identifier.adoc[]

include::../../templates/resources/resource_annex_listings.adoc[]

include::../../templates/resources/resource_annex_diagrams.adoc[]

include::sections/95-tech-discussion.adoc[]

include::sections/99-bibliography.adoc[]
```

Folder ‘schemas’

Dive in



Discovering Annotated EXPRESS

Dive in

The first part of the .exp file remains the schema

```
(*
ISO 10303 TC184/SC4/WG12 N11626

EXPRESS Source:
ISO 10303-62 ed1 Equivalence validation of product data - Annotated 3c

The following permission notice and disclaimer shall be included in al
and derivations of the Schema:

Copyright ISO 2014  All rights reserved
Permission is hereby granted, free of charge in perpetuity, to any per
to use, copy, modify, merge and distribute free of charge, copies of t
implementing, installing and using software based on the Schema, and t
subject to the following conditions:

THE SCHEMA IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS
INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNES
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY C
DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR
ARISING FROM, OUT OF OR IN CONNECTION WITH THE SCHEMA OR THE
USE OR OTHER DEALINGS IN THE SCHEMA.

In addition, any modified copy of the Schema shall include the follow:

THIS SCHEMA HAS BEEN MODIFIED FROM THE SCHEMA DEFINED IN
ISO 10303-62 ed1 Equivalence validation of product data - Annotated mo
AND SHOULD NOT BE INTERPRETED AS COMPLYING WITH THAT STANDARD
*)

SCHEMA annotated_3d_model_equivalence_inspection_result_schema '{iso s

  REFERENCE FROM annotated_3d_model_equivalence_criteria_schema
    (representative_value_type);

  REFERENCE FROM product_data_equivalence_inspection_result_schema
    (criterion_report_item_with_number_of_instances,
     criterion_report_item_with_value,
     data_equivalence_inspection_result,
     data_equivalence_inspection_result_representation,
     data_equivalence_inspection_criterion_report_item,
     data_equivalence_inspection_instance_report_item);
```

The second part of the .exp file is the equivalent of the descriptions.xml file.

It also contains the EXPRESS-G maps.

```
END_SCHEMA; -- annotated_3d_model_equivalence_inspection_result_schema

(*"annotated_3d_model_equivalence_inspection_result_schema.__published_in"
ISO 10303-62:2025 ED2
*)

(*"annotated_3d_model_equivalence_inspection_result_schema.__identifier"
ISO/TC 184/SC 4/WG 12 N11626
*)

(*"annotated_3d_model_equivalence_inspection_result_schema.__status"
DIS
*)

(*"annotated_3d_model_equivalence_inspection_result_schema.__title"
equivalence_validation_of_product_data
*)


(*"annotated_3d_model_equivalence_inspection_result_schema"
// Note schema EXPRESS are in ..\resources\resource_name name_of_schema.xml

*)
(*"annotated_3d_model_equivalence_inspection_result_schema.__fund_cons"

This schema provides a representation of the inspection results of annotated 3

As this schema deals with the inspection result of the equivalence of annotate

[NOTE]
--
Geometric data newly created for representing inspection results, such as poin
--
```

```
// EXPRESS-G

*)
(*"annotated_3d_model_equivalence_inspect
[[annotated_3d_model_equivalence_inspecti
[.svgmap]
====
image::annotated_3d_model_equivalence_ins

* <<express:annotated_3d_model_equivalenc
* <<express:annotated_3d_model_equivalenc
* <<express:shape_data_quality_criteria_s
* <<express:product_data_equivalence_insp
====

*)
(*"annotated_3d_model_equivalence_inspect
[[annotated_3d_model_equivalence_inspecti
[.svgmap]
====
image::annotated_3d_model_equivalence_ins

* <<express:annotated_3d_model_equivalenc
* <<annotated_3d_model_equivalence_inspec
* <<express:product_data_equivalence_insp
```


Winner
2007 & 2021
Lawrence **D.** Eicher Leadership Award

Learning

How-To

AsciiDoc

- Section ‘Learn’ of STEP Development training website

Annotated EXPRESS

- Section ‘Learn’ of STEP Development training website, SUMA validation function and easyEXPRESS extension for Visual Studio Code

We’ll review SUMA validate functions after SUMA installation

AsciiMath

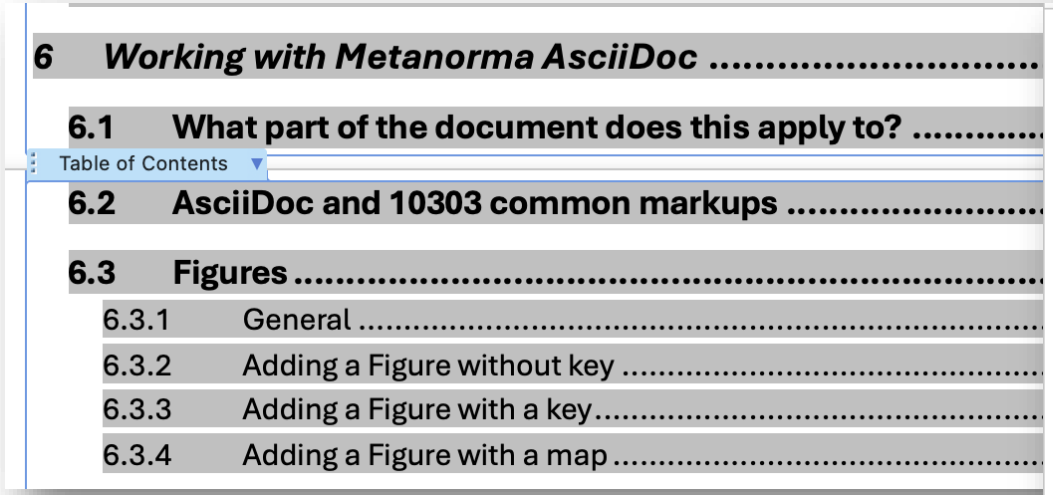
- Section ‘Learn’ of STEP Development training website and Plurimath.org

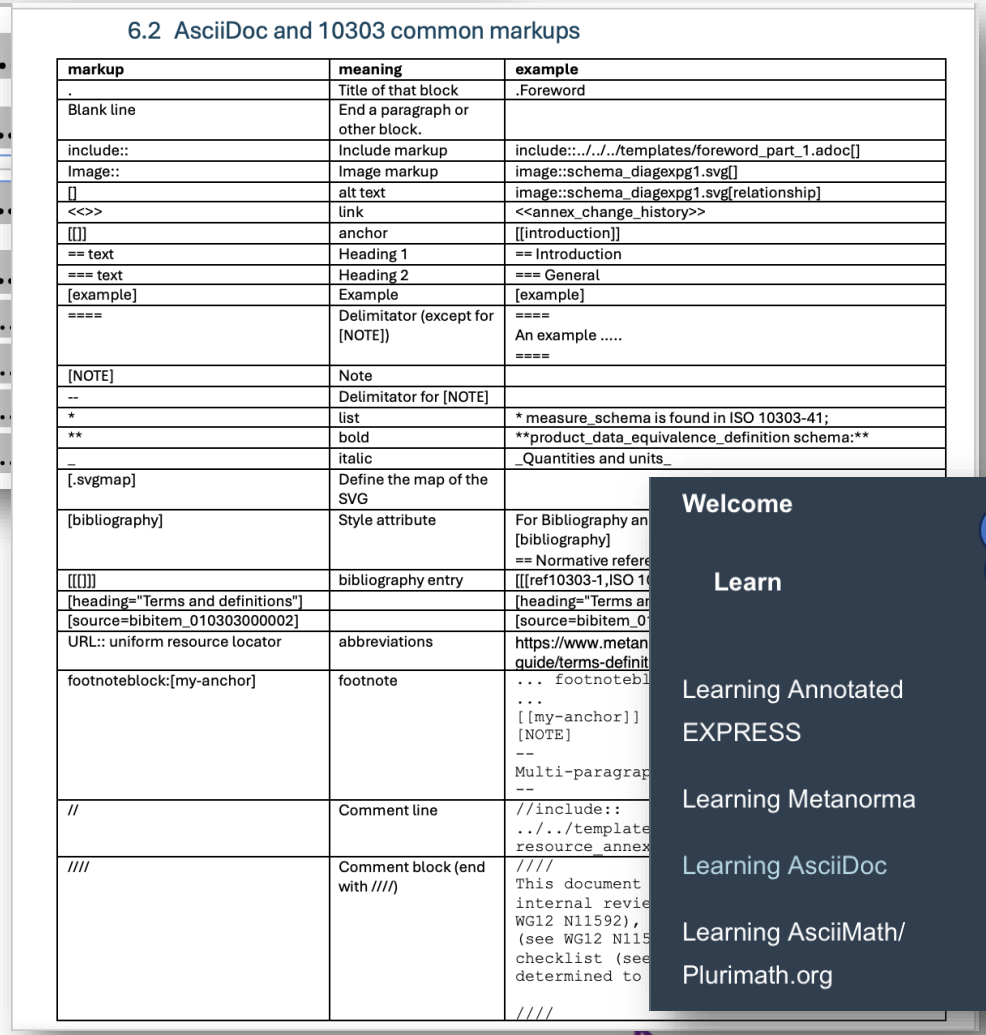
Yaml

- Section ‘Learn’ of STEP Development training website and Yaml extension for Visual Studio Code

Working with Metanorma AsciiDoc

How-To





6.2 AsciiDoc and 10303 common markups

markup	meaning	example
.	Title of that block	.Foreword
Blank line	End a paragraph or other block.	
include::	Include markup	include::../../../templates/foreword_part_1.adoc[]
Image::	Image markup	image::schema_diagexpg1.svg[]
[]	alt text	image::schema_diagexpg1.svg[relationship]
<<>>	link	<<annex_change_history>>
[[]]	anchor	[[introduction]]
== text	Heading 1	== Introduction
=== text	Heading 2	=== General
[example]	Example	[example]
====	Delimitator (except for [NOTE])	==== An example ..... ====
[NOTE]	Note	
--	Delimitator for [NOTE]	
*	list	* measure_schema is found in ISO 10303-41;
**	bold	**product_data_equivalence_definition schema:**
_	italic	_Quantities and units_
[.svgmap]	Define the map of the SVG	
[bibliography]	Style attribute	For Bibliography an [bibliography] == Normative refere
[[[]]]	bibliography entry	[[[ref10303-1,ISO 1
[heading="Terms and definitions"]		[heading="Terms ar
[source=bibitem_010303000002]		[source=bibitem_0
URL:: uniform resource locator	abbreviations	https://www.metan guide/terms-definit
footnoteblock:[my-anchor]	footnote	... footnotebl ... [[my-anchor]] [NOTE] -- Multi-paragrap --
//	Comment line	//include:: ../../template resource_annex
////	Comment block (end with ////)	//// This document internal revie WG12 N11592), (see WG12 N115 checklist (see determined to ////

Welcome

Learn

Learning Annotated EXPRESS

Learning Metanorma

Learning AsciiDoc

Learning AsciiMath/ Plurimath.org

Focus on next slide

Working with Annotated EXPRESS

How-To

markup	meaning	example
(*"{SCHEMA_TAG}"$value*)		(*"action_schema" The subject of the *action_schema* these actions, and the status of these actions. [example] ==== Reasons for action include evolving user requirements, manufacturing problems and difficulties that arise when a product is in use. ==== *)
(*"{SCHEMA_TAG}"_in"$value*)	schema edition	(*"action_schema.__published_in" ISO 10303-41:2025 ED8 *)
(*"{SCHEMA_TAG}"$value*)	Schema N number	(*"action_schema.__identifier" ISO/TC 184/SC 4/WG 12 N10693 *)
(*"{SCHEMA_TAG}"$value*)	Schema Supersedes	(*"action_schema.__supersedes" ISO/TC 184/SC 4/WG 12 N10230 *)
(*"{SCHEMA_TAG}"$value*)	schema status	(*"action_schema.__status" IS *)
(*"{SCHEMA_TAG}.__title"$value*)	schema folder name	(*"action_schema.__title" fundamentals_of_product_description_and_support *)
(*"{SCHEMA_TAG}.__fund_cons"$value*)	Schema Fundamental concepts and assumptions	(*"action_schema.__fund_cons" Action information can be attached to any aspect of product data. *)
(*"{SCHEMA_TAG}.__expressg"$value*)	Schema EXPRESS-G diagrams. Enter a many as needed. See Adding a Figure without key	(*"action_schema.__expressg" [[action_schema_expg1]] [.svgmap] ==== image::action_schemaexpg1.svg[] * <<express:basic_attribute_schema>>; 1 * <<express:action_schema>>; 2 * <<express:support_resource_schema>>; 3 ==== *)
	Entity description	(*"action_schema.supported_item" The **supported_item** allows for the designation of an <<express:action_schema.action_directive,action_directive>>, an <<express:action_schema.action,action>>, or an <<express:action_schema.action_method,action_method>>. *)
$value*)	attribute description	(*"action_schema.action.name" the <<express:support_resource_schema.label,label>> by which the **action** is known. *)
ue*)	WR description	(*"action_schema.action_request_solution.wr:WR2" Each **action_request_solution** shall be the <<express:basic_attribute_schema.name_attribute.named_item,named_item>> in at most one <<express:basic_attribute_schema.name_attribute,name_attribute>>. *)
(*"{SCHEMA_TAG}.entity__note"$value*)	Note in the entity description	(*"action_schema.supported_item.__note" This specifies the use of an <<express:action_schema.action_resource,action_resource>>. *)
<<express:schemaName.entity,render text>>	Link with item to display	<<express:action_schema.action_directive,action_directive>>
//	Comment	// Note schema EXPRESS are in ..\resources\resource_name name_of_schema.xmi

Welcome

Learn

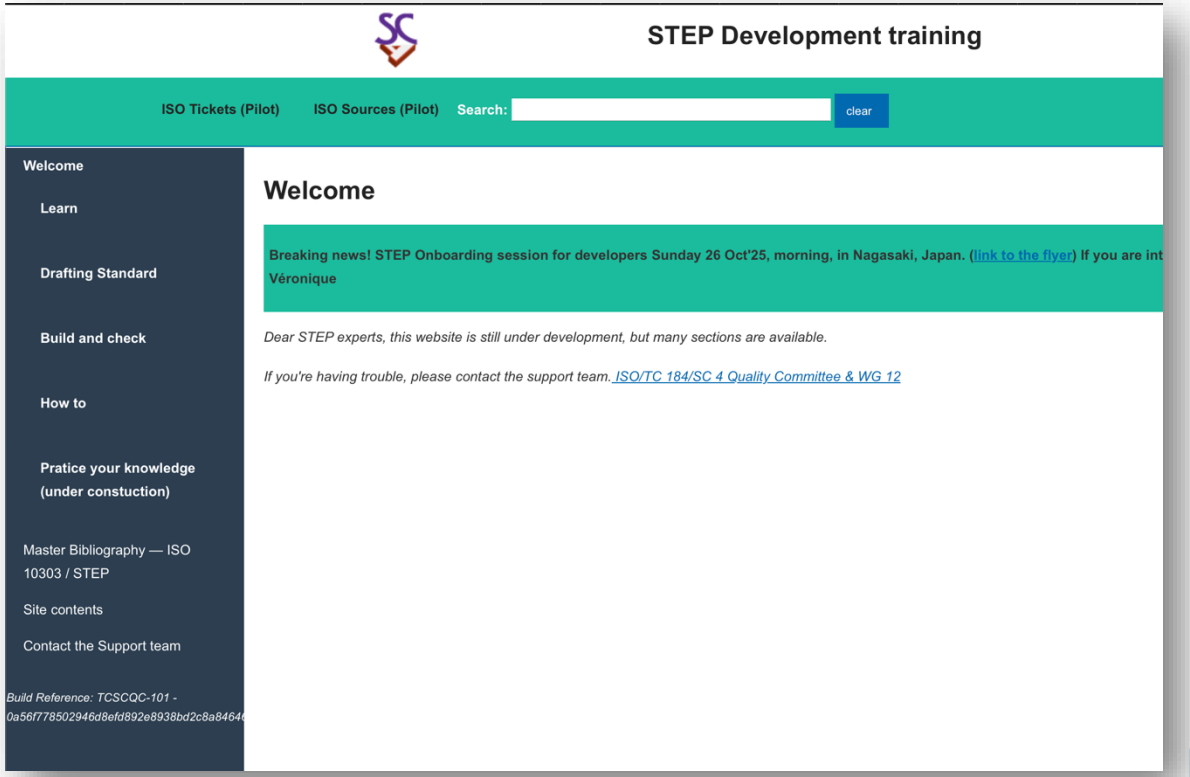
Learning Annotated EXPRESS

Focus on next slide

Focus on STEP Development training website

https://sd.iso.org/bitbucket-pilot/projects/ISOTC184SC4/repos/step_development_training/browse

https://stepdev.boost-lab.net/step_development_training/



Tips and tricks

How-To

Using easyEXPRESS extension in Visual Studio Code

Using Yaml extension in Visual Studio Code

Relaton queries

Avoid adding comments in the metadata section of document.adoc

SUMA validation

Needs SUMA installed. See next slide

Installing SUMA

Install SUMA

Makefile

The Makefile in the wg12-step repository allows you to build resource documents and SRL, supporting cross-platform, native installation, and SUMA Docker installations.

You want to	Cross-platform	SUMA Docker
build the part 47	make 10303-47	make 10303-47 docker
build the SRL	make srl	make srl docker
Update SUMA	make update	make update docker

ISO/TC 184/SC 4 Industrial Data

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