



Introducing the Interoperability Test Bed

Interoperability Test Bed
European Commission, DIGIT

interoperable
europe

What is the Test Bed?

ITB

Interoperability
Test Bed

An online, intuitive and
self-service platform for
conformance testing of IT
systems against semantic and
technical specifications

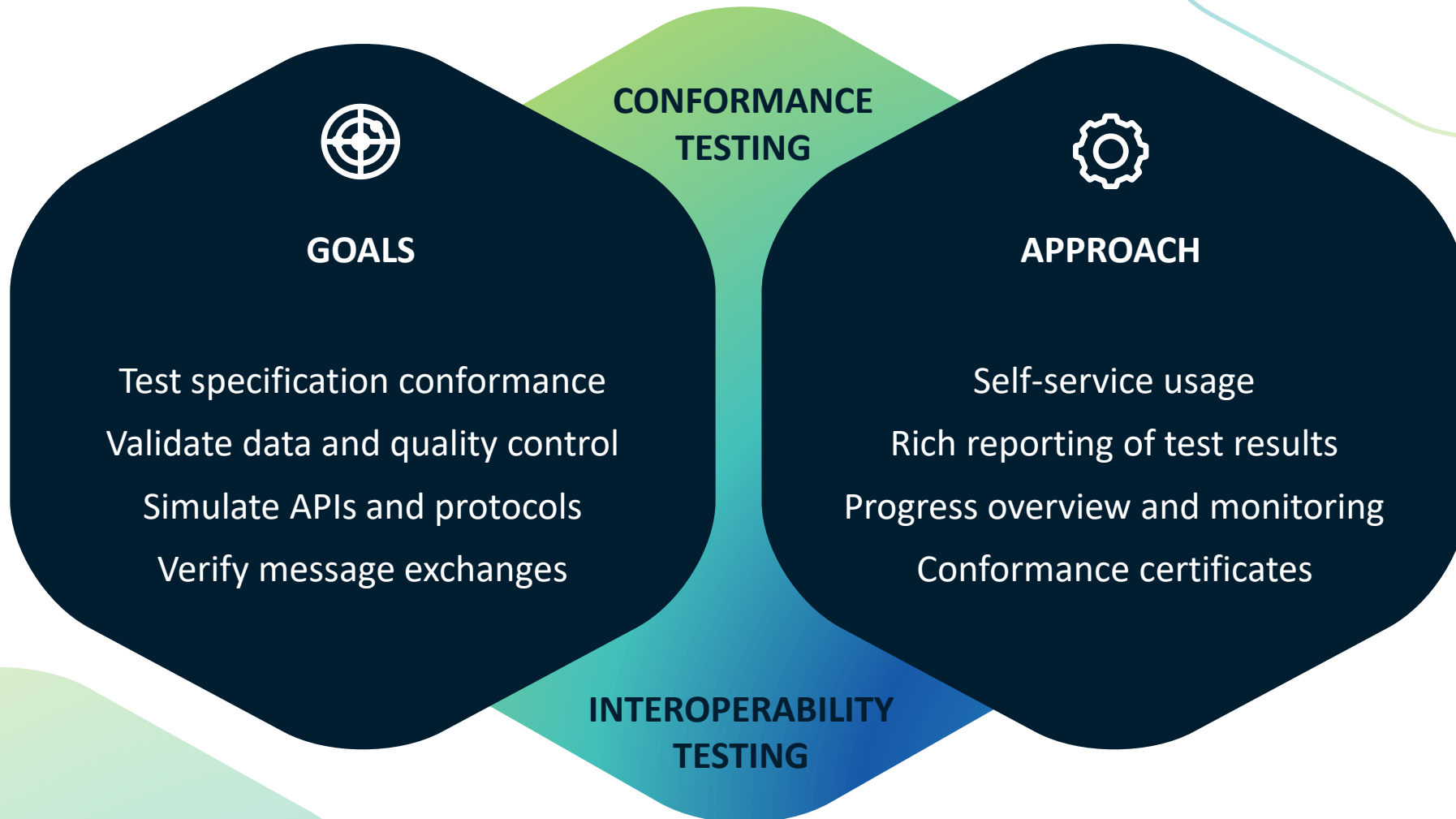


Powered by
DIGIT



Standards based
([GITB CWA](#))

What can it be used for?



Key services



VALIDATORS

Used for data validation
Anonymous and stateless
Multiple input channels
Various reporting outputs
Configuration-driven



CONFORMANCE TEST BED

Used for conformance testing
Account-based access
Scenario-based test cases
Rich monitoring and reporting
Extensible capabilities

Flexible usage models



USE AS A DIGIT SERVICE

Use as services

Shared cloud-based instances
Hosted and operated by DIGIT
User-managed configuration
Distinct setup per project

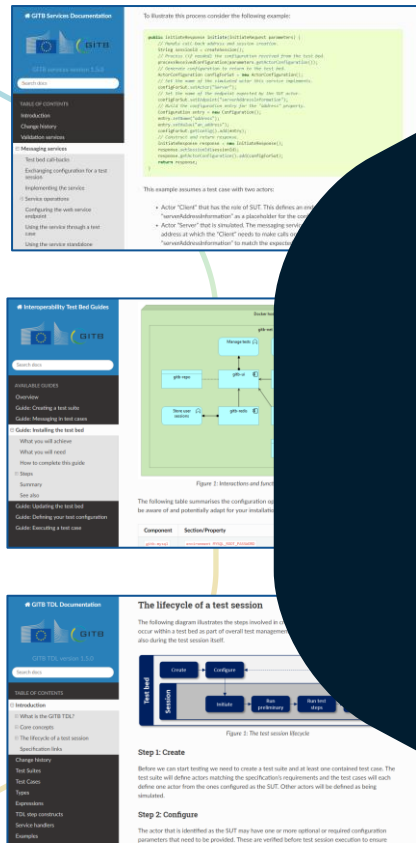


INSTALL ON-PREMISE

Use as components

Public Docker images
Hosted and operated by users
Allows internal integrations
Allows access restrictions

User support



RICH DOCUMENTATION

User and developer guides

Documentation

Step-by-step tutorials

News and releases notes



DEVELOPMENT SUPPORT

Backlog prioritised on feedback

Direct support channel

Regular releases

Nightly builds

The background features a complex, symmetrical pattern of fine, overlapping lines and particles in shades of green and blue. These elements form a central, somewhat circular shape that tapers outwards, resembling a stylized flower or a network of connections. The overall effect is a sense of dynamic movement and interconnectedness.

Validators

Validator syntax support

ITB

RDF validator

Validate **RDF** data
with [SHACL shapes](#)

ITB

XML validator

Validate **XML** data
with [XSDs](#) and
[Schematron](#)

ITB

CSV validator

Validate **CSV** data
with [Table Schema](#)

ITB

JSON validator

Validate **JSON** data
with [JSON Schema](#)



Available as DIGIT services

See the [RDF](#), [XML](#), [CSV](#), [JSON](#) guides



Available on Docker Hub

See the [RDF](#), [XML](#), [CSV](#), [JSON](#) images

Validator setup as DIGIT service

STEP 1

Define configuration



Validator configuration

Validation rules

Customisations

STEP 2

Share configuration



Configuration
by Test Bed team

STEP 3

Use validator APIs



Web interface
for users

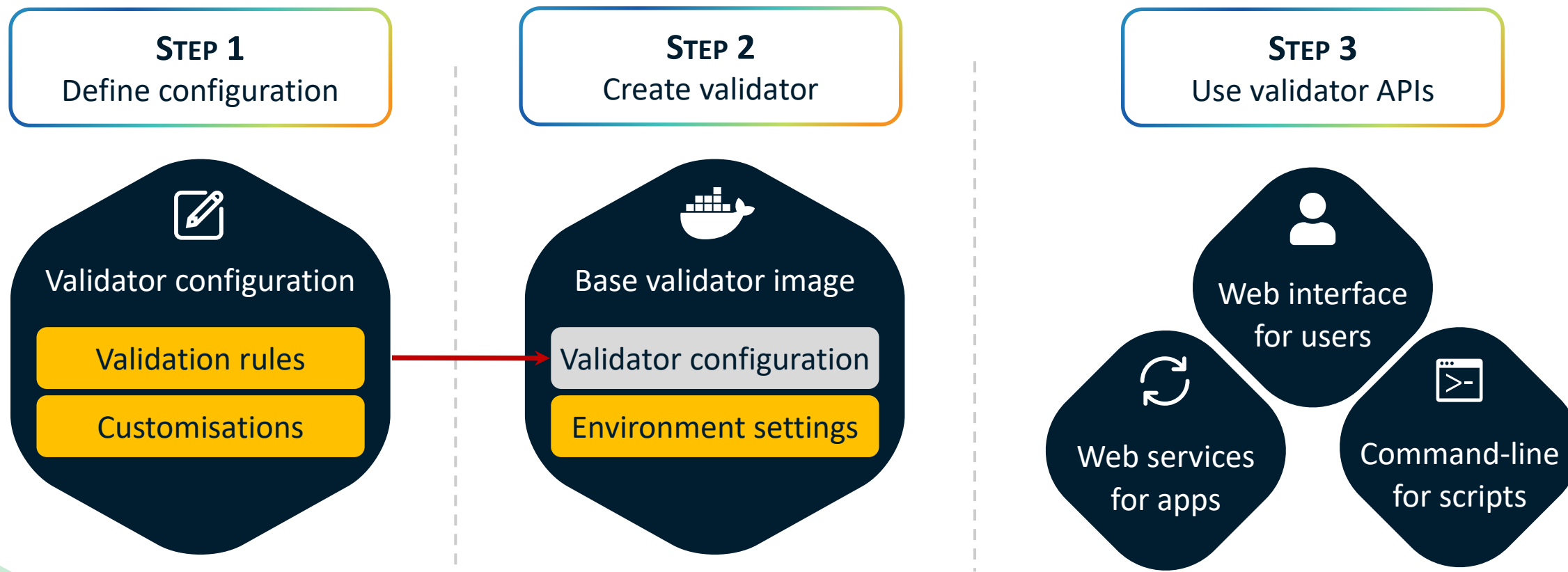


Web services
for apps



Command-line
for scripts

Validator setup on-premise





Validator demo

Validation of an electronic invoice
using the [eInvoicing validator](#)

The background features a complex, abstract pattern of particle trails. These trails are composed of numerous small, glowing points that form larger, organic shapes. The colors range from a deep, dark blue to a vibrant green, with some areas appearing to have a slight orange or yellow tint. The overall effect is reminiscent of a network visualization or a data flow diagram, with the trails converging and diverging in a symmetrical, butterfly-like pattern. The central text 'Conformance Test Bed' is rendered in a clean, white, sans-serif font, positioned horizontally across the middle of the image.

Conformance Test Bed

Conformance testing capabilities



VALIDATION

XSD

Schematron

XPath

JSON Schema

Table Schema

GraphQL

SHACL

RegExp

ASiC

...



MESSAGING

HTTP

HTTPS

eDelivery

SOAP

REST

UN/FLUX

AS2

AS4

TCP

UDP

...



PROCESSING

ASiC

ZIP

SBD

Timestamps

Signatures

Digests

Templates

UUIDs

Tokens

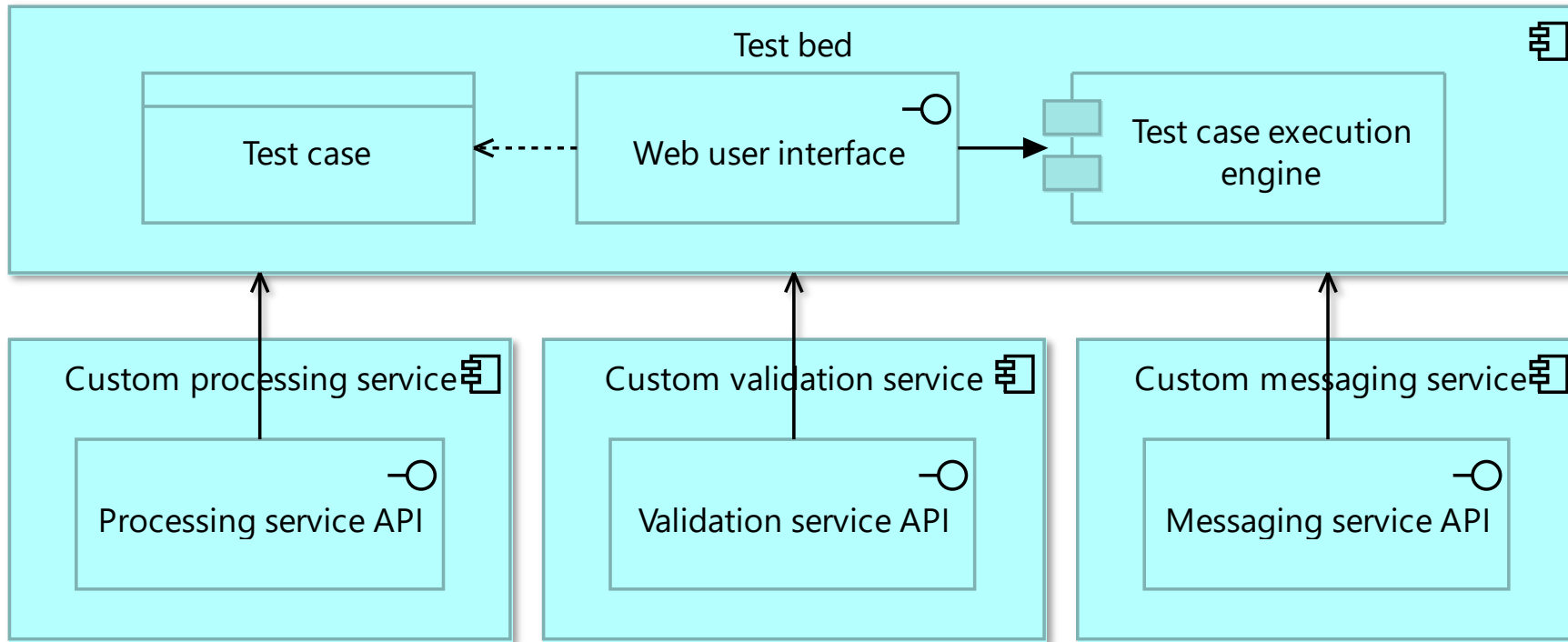
Webhooks

RegExp

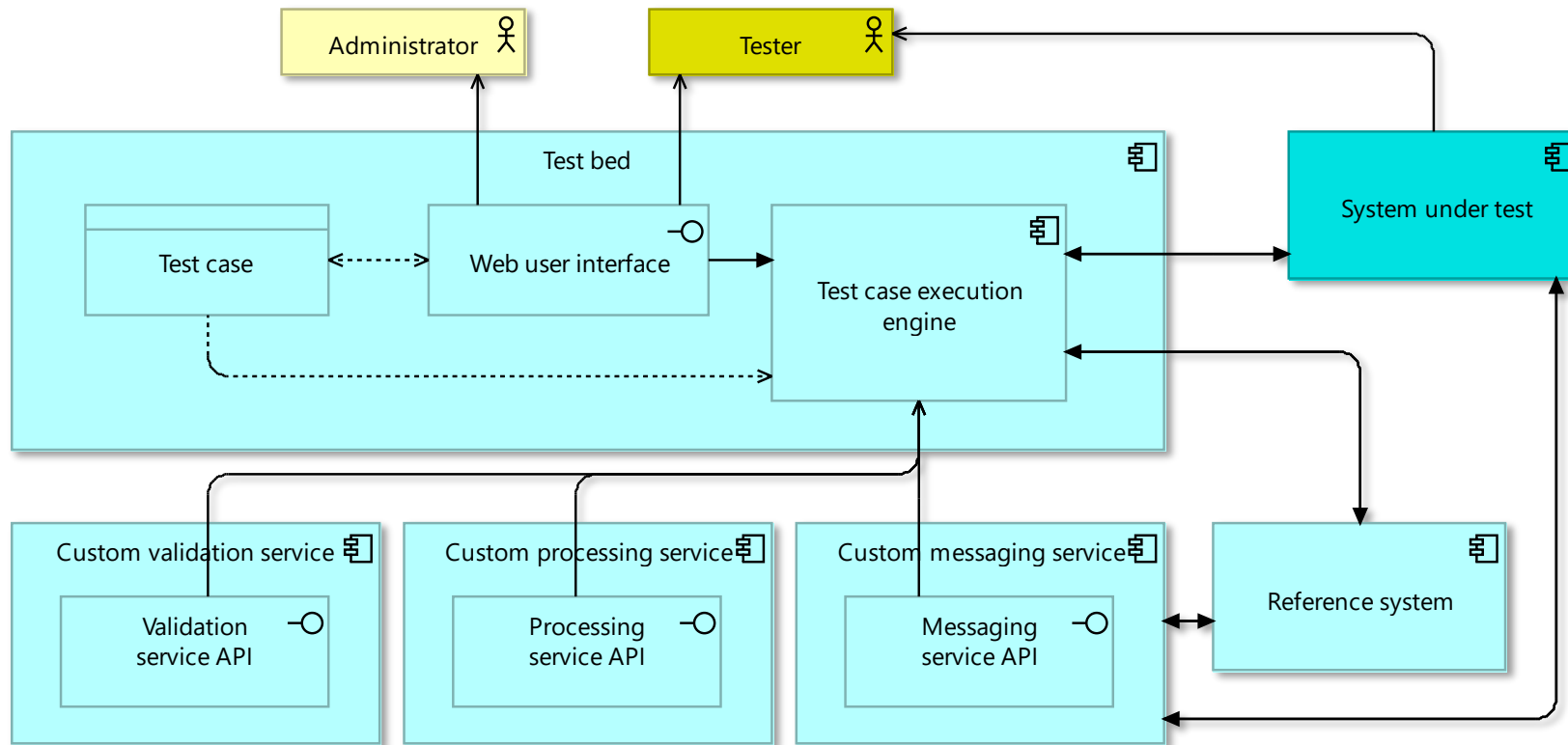
XPath

...

Custom capability extensions



Conformance testing overview



ADMINISTRATOR

- Configure tests
- Monitor progress
- Manage users

TESTER

- Manage organisation
- Execute tests
- Review results



Test Bed demo

Test execution, reporting and monitoring
for testers and administrators

FIND OUT MORE

[Information](#)

[Releases](#)

[News](#)

[Value proposition](#)

[Developer guides](#)

[Tutorials](#)

TRY IT YOURSELF

Go to <https://www.itb.ec.europa.eu/itb>
and click “Try out our demos”

CONTACT US

Send your questions
and feedback to
DIGIT-ITB@ec.europa.eu



interoperable europe

innovation ∞ govtech ∞ community

Stay in touch



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[Interoperable Europe - YouTube](https://www.youtube.com/InteroperableEurope)



[Interoperable Europe | LinkedIn](https://www.linkedin.com/company/interoperable-europe/)



DIGIT-INTEROPERABILITY@ec.europa.eu



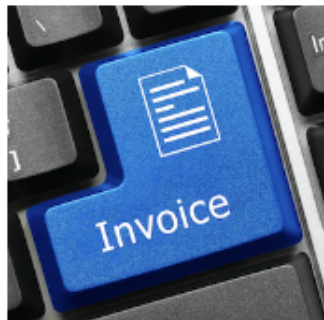
<https://joinup.ec.europa.eu/collection/interoperable-europe/interoperable-europe>



Annex A

Validator demo screenshots

Validator input



eInvoice Validator

This is a service offered by the European Commission's DIGIT as part of the [Digital Europe Programme](#), allowing you to validate electronic invoices against the requirements of the [European Standard on eInvoicing](#). This service is also available via [REST API](#) and [SOAP API](#), with complete eInvoicing conformance testing supported through the [eInvoicing Test Bed](#).

Questions and feedback on this service can be sent to EC-EINVOICING-SUPPORT@ec.europa.eu.

File to validate

File



Select file...

Validate as

Validate

This service is powered by the Interoperability Test Bed, a conformance testing service offered by the European Commission's DG DIGIT for projects involved in the delivery of cross-border public services. Find out more [here](#).

Validator result overview

Validation result

Overview

Date: 2021-06-10T09:07:30.701Z
File name: invoice.xml
Validation type: UBL Invoice XML
Result: FAILURE
Errors: 25
Warnings: 17
Messages: 0

[View annotated input](#) [Download XML report](#) [Download PDF report](#)

Details

✖ [BR-CO-10]-Sum of Invoice line net amount (BT-106) = Σ Invoice line net amount (BT-131).

Test: $(xs:decimal(cbc:LineExtensionAmount) = (round(sum(//cac:InvoiceLine/cac:CreditNoteLine)/xs:decimal(cbc:LineExtensionAmount)) * 10 * 10) div 100))$

✖ [BR-CO-13]-Invoice total amount without VAT (BT-109) = Σ Invoice line net amount (BT-131) - Sum of allowances on document level (BT-107) + Sum of charges on document level (BT-108).

Test: $((cbc:ChargeTotalAmount) \text{ and } (cbc:AllowanceTotalAmount) \text{ and } (xs:decimal(cbc:TaxExclusiveAmount) = round((xs:decimal(cbc:LineExtensionAmount) + xs:decimal(cbc:ChargeTotalAmount) - xs:decimal(cbc:AllowanceTotalAmount)) * 10 * 10) div 100)) \text{ or } (not(cbc:ChargeTotalAmount) \text{ and } (cbc:AllowanceTotalAmount) \text{ and } (xs:decimal(cbc:TaxExclusiveAmount) = round((xs:decimal(cbc:LineExtensionAmount) - xs:decimal(cbc:AllowanceTotalAmount)) * 10 * 10) div 100)) \text{ or } ((cbc:ChargeTotalAmount) \text{ and } not(cbc:AllowanceTotalAmount) \text{ and } (xs:decimal(cbc:TaxExclusiveAmount) = round((xs:decimal(cbc:LineExtensionAmount) + xs:decimal(cbc:ChargeTotalAmount)) * 10 * 10) div 100)) \text{ or } (not(cbc:ChargeTotalAmount) \text{ and } not(cbc:AllowanceTotalAmount) \text{ and } (xs:decimal(cbc:TaxExclusiveAmount) = xs:decimal(cbc:LineExtensionAmount))))$

Validator result details

Validation

Overview

Date:

File name:

Validation type:

Result:

Errors:

Warnings:

Messages:

View annotated

Details

✘ [BR-CO-10] Test: (xs:decimal(cbc.ChargeTotalAmount) and (cbc.AllowanceTotalAmount) and (xs:decimal(cbc.TaxExclusiveAmount) = round((xs:decimal(cbc.LineExtensionAmount) + xs:decimal(cbc.ChargeTotalAmount) - xs:decimal(cbc.AllowanceTotalAmount)) * 10 * 10) div 100)) or (not(cbc.ChargeTotalAmount) and (cbc.AllowanceTotalAmount) and (xs:decimal(cbc.TaxExclusiveAmount) = round((xs:decimal(cbc.LineExtensionAmount) - xs:decimal(cbc.AllowanceTotalAmount)) * 10 * 10) div 100)) or ((cbc.ChargeTotalAmount) and not(cbc.AllowanceTotalAmount) and (xs:decimal(cbc.TaxExclusiveAmount) = round((xs:decimal(cbc.LineExtensionAmount) + xs:decimal(cbc.ChargeTotalAmount)) * 10 * 10) div 100)) or (not(cbc.ChargeTotalAmount) and not(cbc.AllowanceTotalAmount) and (xs:decimal(cbc.TaxExclusiveAmount) = xs:decimal(cbc.LineExtensionAmount))))

XML content

Close

```
157 <cbc:TaxableAmount currencyID="DKK">2750.00</cbc:TaxableAmount>
158 <cbc:TaxAmount currencyID="DKK">330.00</cbc:TaxAmount>
159 <cac:TaxCategory>
160 ✘ [BR-CL-17]-Invoice tax categories MUST be coded using UNCL5305 code list
    <cbc:ID schemeID="UNCL5305">AA</cbc:ID>
161 <cbc:Percent>12</cbc:Percent>
162 <cac:TaxScheme>
163 <cbc:ID>VAT</cbc:ID>
164 </cac:TaxScheme>
165 </cac:TaxCategory>
166 </cac:TaxSubtotal>
167 </cac:TaxTotal>
168 ✘ [BR-CO-10]-Sum of Invoice line net amount (BT-106) = Σ Invoice line net amount (BT-131).
169 ✘ [BR-CO-13]-Invoice total amount without VAT (BT-109) = Σ Invoice line net amount (BT-131) - Sum of allowances on
    document level (BT-107) + Sum of charges on document level (BT-108).
170 ✘ [BR-CO-16]-Amount due for payment (BT-115) = Invoice total amount with VAT (BT-112) -Paid amount (BT-113) +Rounding
    amount (BT-114).
171 <cac:LegalMonetaryTotal>
    <cbc:LineExtensionAmount currencyID="DKK">415000.00</cbc:LineExtensionAmount>
    <cbc:TaxExclusiveAmount currencyID="DKK">4250.00</cbc:TaxExclusiveAmount>
```



Annex B

Test Bed demo screenshots

Welcome page



Welcome to the Interoperability Test Bed

The Interoperability Test Bed is a platform for self-service conformance testing against semantic and technical specifications.

Click to log in

Assigned a new role by an administrator? [Confirm your new role.](#)

New to the Test Bed? [Register in a public community](#) or [try out our demos.](#)

To connect to the Test Bed you need to first authenticate using your EU Login account. If you are new to EU Login follow [this tutorial](#) to get started.

Privacy note: By connecting you consent to the use of cookies to manage your session. Please refer to our [legal notice](#) for more information.

Migration note: If you have been using a functional account to log in click [here](#) to migrate it to EU Login. Step-by-step instructions are available in [this guide](#).



[User guide](#) | [Legal notice](#) | [Find out more](#) | 1.22.0

Home page

Home

Home

Home

MY TESTS

- My conformance statements
- My test sessions
- My organisation

« Collapse menu

European Commission

Welcome to the Interoperability Test Bed

To get started with available tests click on the **My conformance statements** from the menu.

From that point you will be able to register a **system** to test for and define for it one or more **conformance statements**. To launch a test select a conformance statement and execute one or more of its defined **tests**.

Click [here](#) for information on the Test Bed. Questions and feedback can be provided to DIGIT-ITB@ec.europa.eu.

GITB

[User guide](#) | [Contact support](#) | [Legal notice](#) | [Find out more](#) | 1.22.0

List of conformance statements (specifications to test for)

The screenshot displays the 'My conformance statements' page. At the top, there is a blue header with the text 'My conformance statements' and the European Union flag. Below the header, a breadcrumb trail reads 'Home > My organisation > Demo system > Conformance statements'. The main content area is titled 'Conformance statements' and features a search bar with the text 'Search statements...' and a 'Demo system' filter. There are two buttons: 'Show statements...' and 'Download report'. The table below lists two conformance statements:

Statement Name	Timestamp	Progress	Completion Rate
Core Public Service Vocabulary Application Profile (CPSV-AP)	27-03-2024 17:27:52	0 ✓ 1 ✗ 0 ⚡	100.0%
Electronic invoicing	27-03-2024 17:33:22	0 ✓ 1 ✗ 0 ⚡	100.0%

The footer contains the GITB logo and navigation links: 'User guide | Contact support | Legal notice | Find out more | 1.22.0'.

Conformance statement details

The screenshot displays a web application interface for managing conformance statements. At the top, there is a blue header with the text "My conformance statements" and a breadcrumb trail: "Home > My organisation > Demo system > Conformance statements > Core Public Service Vocabulary Application Profile (CPSV-AP)".

The main content area is titled "Conformance statement details" and includes the following information:

- Organisation:** Demo organisation
- System:** Demo system
- Core Public Service Vocabulary Application Profile (CPSV-AP):** CPSV-AP offers a common data model for describing public services offered by public administrations. The CPSV-AP standardises the semantics of personal milestones, including having a child, beginning education, looking for a new job, as well as professional changes such as starting or financing a company, hiring an employee.
- Status:** FAILURE
- Last update:** 27-03-2024 17:27:52
- Test results:** 0 ✓ 1 ✗ 0 ⏸
- Progress bar:** 100.0% (red)

Below this information, there are buttons for "Download report", "View system", and "Back".

The interface also features a "Conformance tests" section with a search bar and a "Show tests..." button. The search results show:

- COS-HARVESTER-1:** Test suite that simulates the collection of public service metadata from National endpoints (FI and EE) and their exposure as CPSV-AP. It includes a play button and a close button.
- COS-HARVESTER-1 test case 1:** A multi-step test case with a timestamp of 27-03-2024 17:27:52, search, info, play, and close buttons.

The footer of the page includes the GITB logo and a navigation bar with links for "User guide", "Contact support", "Legal notice", "Find out more", and "1.22.0".

Test session (before starting)

The screenshot displays the 'My conformance statements' web interface. At the top, there is a blue header with the text 'My conformance statements'. Below this is a breadcrumb trail: 'Home > My organisation > Demo system > Conformance statements > Core Public Service Vocabulary Application Profile (CPSV-AP)'. The main content area is titled 'Test execution' and contains a table with the following details:

Test case	Description	Status
COS-HARVESTER-1 test case 1	Illustrate message exchange and validation taking place in the aggregation of public service metadata.	Info Settings

Below the table, a session is identified by the ID 'b6629bbe-3dec-4ebe-91d1-a130757b6ab7'. To the right of the session ID are buttons for 'Download report' and 'View log'. The central part of the interface features a sequence diagram with the following participants and messages:

- EU Portal (SUT)**: Initiates the process by sending a 'Send request' to the Harvester.
- Harvester**: Forwards the request to the FSC (FI) with the message 'Send request to FI' and receives a 'Receive response from FI' back.
- Harvester**: Forwards the request to the MKM (EE) with the message 'Send request to EE' and receives a 'Receive response from EE' back.
- Harvester**: Finally sends a 'Receive response' back to the EU Portal (SUT).
- Test Engine**: Performs internal processing steps: 'Transform FI data', 'Transform EE data', 'Aggregate data', and 'Validate aggregated data'.

The footer of the interface includes the GITB logo on the left and a navigation bar with links for 'User guide', 'Contact support', 'Legal notice', 'Find out more', and '1.22.0' on the right.

Test session (during execution)

The screenshot displays a web application interface for managing conformance statements. The main content area is titled "Test execution" and shows details for a specific test case and session.

Test case details:

Test case	Description	Status
COS-HARVESTER-1 test case 1	Illustrate message exchange and validation taking place in the aggregation of public service metadata.	Info icon, Settings icon

Session details:

Session: b6629bbe-3dec-4ebe-91d1-a130757b6ab7

Buttons: Download report, View log

Sequence Diagram:

The diagram shows the interaction between five participants: EU Portal (SUT), Harvester, FSC (FI), MKM (EE), and Test Engine.

- EU Portal (SUT) sends a "Send request" to Harvester.
- Harvester sends "Send request to FI" to FSC (FI).
- FSC (FI) sends "Receive response from FI" back to Harvester.
- Harvester sends "Send request to EE" to MKM (EE).
- MKM (EE) sends "Receive response from EE" back to Harvester.
- Harvester sends "Receive response" back to EU Portal (SUT).

Test Engine Activities:

- Transform FI data (Green gear icon)
- Transform EE data (Green gear icon)
- Aggregate data (Blue gear icon)
- Validate aggregated data (Grey gear icon)

Each activity in the Test Engine section has a document icon with a green checkmark, indicating successful completion.



Footer:



GITB | User guide | Contact support | Legal notice | Find out more | 1.22.0

Validation error details

Step report

Result	Time
FAILURE	2024-04-09 08:58

xml  

sch  

Details 2 errors

- ✖ [BII2-T10-R051]-Sum of line amounts MUST equal the invoice line net amounts
- ✖ [BII2-T10-R052]-An invoice total without VAT MUST equal the sum of line amounts plus the sum of charges on document level minus the sum of allowances on document level

Close Download report

xml

```
162 <cbc:TaxAmount currencyID="DKK">330.00</cbc:TaxAmount>
163 <cac:TaxCategory>
164 <cbc:ID schemeID="UNCL5305">AA</cbc:ID>
165 <cbc:Percent>12</cbc:Percent>
166 <cac:TaxScheme>
167 <cbc:ID>VAT</cbc:ID>
168 </cac:TaxScheme>
169 </cac:TaxCategory>
170 </cac:TaxSubtotal>
171 </cac:TaxTotal>
172 ✖ [BII2-T10-R051]-Sum of line amounts MUST equal the invoice line net amounts
173 ✖ [BII2-T10-R052]-An invoice total without VAT MUST equal the sum of line amounts plus the sum of
charges on document level minus the sum of allowances on document level
174 <cbc:LegalMonetaryTotal>
175 <cbc:LineExtensionAmount currencyID="DKK">41500.00</cbc:LineExtensionAmount>
176 <cbc:TaxExclusiveAmount currencyID="DKK">4250.00</cbc:TaxExclusiveAmount>
177 <cbc:TaxInclusiveAmount currencyID="DKK">4956.00</cbc:TaxInclusiveAmount>
178 <cbc:ChargeTotalAmount currencyID="DKK">100.00</cbc:ChargeTotalAmount>
179 <cbc:PayableRoundingAmount currencyID="DKK">1.00</cbc:PayableRoundingAmount>
180 <cbc:PayableAmount currencyID="DKK">4956.00</cbc:PayableAmount>
181 </cac:LegalMonetaryTotal>
182 <cbc:InvoiceLine>
183 <cbc:ID>1</cbc:ID>
184 <cbc:InvoicedQuantity unitCode="C62" unitCodeListID="UNFCFRec20">1000</cbc:InvoicedQuantity>
```

Close Copy to clipboard

Overview of executed tests

The screenshot displays the 'My test sessions' interface. At the top, there is a blue header with the text 'My test sessions' and a breadcrumb 'Home > My test sessions'. Below the header, there are navigation icons on the left and a 'Filters' section on the right with 'Refresh' and 'Clear filters' buttons. The main area contains a table with columns for 'Specification group', 'Specification', 'Actor', 'Test suite', and 'Test case'. A search dropdown is open over the 'Specification' column, showing 'Search Items...' and options for 'CPSV-AP' and 'eInvoicing'. Below the table, there are buttons for 'Active test sessions', 'Completed test sessions', 'Terminate all', and 'Export CSV'. The 'Completed test sessions' section shows a table with columns: Specification, Actor, Test case, System, Start time, End time, and Result. Two rows are visible, both with a red 'X' in the Result column.

Specification	Actor	Test case	System	Start time	End time	Result
eInvoicing	Invoice Provider	TC1: Upload valid invoice	Demo system	09-04-2024 08:58:13	09-04-2024 08:58:39	✗
CPSV-AP	EU Portal	COS-HARVESTER-1 test case 1	Demo system	09-04-2024 08:55:23	09-04-2024 08:55:38	✗

Conformance dashboard (administrator)

The screenshot displays the 'Conformance dashboard' for an administrator. The interface includes a top navigation bar with the title 'Conformance dashboard' and a breadcrumb trail 'Home > Conformance dashboard'. A sidebar on the left contains navigation icons for home, dashboard, menu, users, groups, documents, settings, and a double arrow icon.

The main content area is titled 'Conformance statements' and features a filter section with dropdowns for 'Demo account community', 'Demo organisation', and 'Demo system', along with a search bar and buttons for 'Show statements...' and 'Download report'. A toggle for 'View per organisation' is also present.

The dashboard lists several conformance statements, each with a status indicator (0 green, 1 red, 0 grey) and a progress bar showing 100.0% completion. The statements are:

- Demo domain**
 - Core Public Service Vocabulary Application Profile (CPSV-AP)**: Status 0 green, 1 red, 0 grey. Progress 100.0%. Includes buttons for 'View statement', 'View system', 'View specification', and 'Download report'.
 - COS-HARVESTER-1**: Test suite that simulates the collection of public service metadata from National endpoints (FI and EE) and their exposure as CPSV-AP.
 - COS-HARVESTER-1 test case 1**: Status 'multi-step', timestamp 09-04-2024 08:55:38.
- Electronic invoicing**
 - Electronic invoice validation**: Test suite addressing basic tests in electronic invoicing using the UBL 2.1 specifications.
 - TC1: Upload valid invoice**: Status 'xml validation', timestamp 09-04-2024 08:58:39.

The footer contains the GITB logo and links for 'User guide', 'Contact support', 'Legal notice', 'Find out more', and version '1.22.0'.