

8.7.13 ANNEX AND REFERENCES

Description	Reference link	Attached document
EUSURVEY OSS project on joinup.eu	https://joinup.ec.europa.eu/software/ipm/home	
What is EUSURVEY on Europa	http://ec.europa.eu/yourvoice/ipm/	
EUSURVEY service	http://ec.europa.eu/yourvoice/ipm/forms/html/index.html	
Joinup.eu	http://joinup.ec.europa.eu/	

8.8 INTEROPERABILITY TEST BED (ITB) (2016.25)

8.8.1 IDENTIFICATION OF THE ACTION

Type of Activity	Common Services
Service in charge	DIGIT B6
Associated Services	

8.8.2 EXECUTIVE SUMMARY

The ISA/ISA² programmes and other EU initiatives fund the development of several IT solutions. Before connecting new components to these systems (e.g. new partners to a communication network or new clients to a service), extensive testing is necessary, to avoid compromising an already operational system. Usually these tests require connecting the system to an instance of the service or the communication partner; consequently there is a need for a *reference implementation* of this service that is separate from the production instance. In a situation where the compatibility of different systems relies on conformance to a standard or specification, this conformance can also be assured through testing – either simply by connecting to the reference implementation (which is assumed to implement the specification correctly) or, more reliably, through the execution of detailed test cases to separately test each clause of the specification, or both.

The "Interoperability test bed" action was conceived under the ISA programme to provide an environment where reference implementations of different systems/services could be hosted – studies conducted during previous phases showed that a dedicated test bed software can support this by providing a user interface, a standardised way to execute tests and access test results, and some test automation. In addition, the use of a test bed also enables formal conformance testing against a specification.

The scope of the action has therefore been enlarged to encompass both hosting of reference implementations and provision of a test bed. Under the ISA programme some case studies / pilots were executed to demonstrate this with the help of a test bed software that was developed in the context of the CEN GITB workshop⁹⁵.

Under the ISA² programme, this would be extended into an operational service. In addition, the action will work on the sharing and reuse of test assets (through a dedicated Test Registry and Repository on Joinup, and a community of test bed owners and testers).

In view of the existing notion of Interoperability Agreements in the European Interoperability Framework (EIF), and the long-term perspective for the European Interoperability Reference Architecture (EIRA) to put forward interoperability specifications for all building blocks, testing the conformance of systems to such Interoperability Agreements and Interoperability Specifications will become crucial.

8.8.3 OBJECTIVES

ITB's (Interoperable Test Bed) primary objective is to provide a platform for hosting reference implementations of cross-border services, coupled to a test bed that provides a user interface as well as some degree of automation.

This platform would enable Member States' public administrations and their potential vendors to test existing systems or products against a neutral, reliable and responsive test environment of reference.

The long-term vision is for ITB to become a test centre that deploys reference implementations on demand, cooperating with other test centres. Previous studies have shown that using a test bed conforming to the GITB specifications supports this cooperation well, both for the exchange of test artefacts and for the joint execution of tests.

8.8.4 SCOPE

With the hosting of reference implementations, ITB addresses both interoperability and conformance testing. Systems connecting to it demonstrate their interoperability with the test bed and with each other as well as with other systems of different type connected to the test bed. At the same time they deliver proof of their conformance to underlying standards (IOP agreements). The test bed that exposes these services can execute additional tests for more detailed conformance statements.

In addition to the testing service, the action will also facilitate the maintenance and operation of the test registry and repository (TRR) on Joinup, which was conceived by the GITB workshop and realised on the Joinup platform under the ISA programme.

8.8.5 PROBLEM STATEMENT

A considerable number of building blocks for cross-border services have been developed in publicly (EU and MS) funded projects. The connection of new components to a distributed, system requires thorough testing of these components, to avoid compromising the productive system. The absence of

⁹⁵ <http://www.cen.eu/news/workshops/Pages/WS-2015-008.aspx>, accessed on 31/08/2015

test facilities can impede technical implementation and adoption of solutions by Member States. By providing organizational and technical resources, ITB was conceived to provide reference systems for tests and development.

8.8.6 EXPECTED BENEFICIARIES AND ANTICIPATED BENEFITS

Beneficiaries	Anticipated benefits
Member States' Public Administrations	European national authorities and agencies tend to shy away from international data communication with embedded and integrated information systems for public services because the implications are too complex and the fidelity of the various systems under other nations' responsibility cannot be judged properly. ITB provides the means to test and verify the requirements and to do this repeatedly without threatening fragile and safety-critical production systems. Testing can be greatly simplified and cost savings achieved because Member States can test one-to-one against the test-bed as opposed to far more complex and time-consuming one-to-many tests.
Citizens	Citizens may have difficulties in trusting the security of their personal data in their own country's public communication systems. Once communication is extended either across borders or across application domains doubts may become even larger. A truly neutral, resourceful and trusted test-bed service may alleviate such concerns. The test-bed will also be able to progress the introduction of new cross-border, cross-domain applications which may benefit citizens.
Industry	ITB will give vendors (in particular SMEs) early access to requirements and standards relevant for the implementation of new cross-border and cross-domain communication. In addition, it provides an opportunity to test and eventually certify products against the requirements.

8.8.7 RELATED EU ACTIONS / POLICIES

Action / Policy	Description of relation, inputs / outputs
Communication on "A Digital Single Market Strategy for Europe", COM(2015)192	The DSM is all about digital services provision in Europe. It is evident that to ensure the interoperability, operational quality and performance of those services, thorough testing is needed. the ITB is a good provider of this.

LSPs and CEF DSIs, ISA actions that maintain LSP products	The ITB action should be capable to test software solutions built to support cross border exchange of information, e.g. by the "Large Scale Pilots". Some of the products of these projects have or will soon be taken over by the CEF programme; some will be further developed under the ISA ² programme. In both cases the ITB action can offer testing services to them.
ISA Action 2.14 – Assessment of Trans-European networks supporting EU policies	The TES action includes potential users of test services.
ISA Action 1.17 – Reusable INSPIRE Reference Platform ARE3NA	The ARE3NA action includes testing activities, which should be aligned with the ITB.
GITB	ITB has contributed to the CEN GITB workshop and has evaluated the specifications arising from that workshop. The Proof-of concept-software has been used for the implementation of pilots. Under the ISA ² programme ITB will continue to explore the suitability of the GITB POC for offering its testing services, though other solutions will also be taken into consideration.

8.8.8 REUSE OF SOLUTIONS DEVELOPED BY ISA, ISA² OR OTHER EU / NATIONAL INITIATIVES

Under the ISA programme, the ITB action has used the proof-of-concept software from the CEN GITB workshop to set up a first pilot/demo. Under the ISA² programme, this proof-of-concept software is a candidate for the deployment of the test bed (though other options will be examined).

Regardless of the choice of a particular test bed software, the test registry and repository (TRR) that was created on Joinup (also under the ISA programme) will continue to store different types of test artefacts, with the aim to make them reusable across different test centres and potentially even across test bed implementations.

The software that embodies a reference implementation (of some specification or service) is typically an Open Source software distributed on Joinup (as was demoed with the CIPA e-delivery software)

8.8.9 EXPECTED RE-USABLE OUTPUTS (solutions and instruments)

Output name	Operational test bed service
Description	The test bed and some reference implementations of specifications/services will be deployed in the DIGIT data centre and/or in other computing centres (e.g. test centres in the Member States).

	Testing services will be made available to service owners and users (public administrations and other stakeholders) - subject to conditions that will be laid down based on a preliminary examination conducted under the ISA programme.
Reference	<i>Not yet available</i>
Target release date / Status	Q2 2016, depending on the availability of cloud services in the DIGIT data centre or alternative hosting facilities in Member States.

Output name	Test Registry and Repository (TRR)
Description	The Test Registry and Repository was created, based on specifications coming from the CEN GITB project, and integrated into Joinup under the ISA programme. It is a repository that can hold various types of assets related to testing, e.g. test beds, test cases, assertions, validation schemas etc. Under the ISA ² programme it will have to maintained, promoted and new test artefacts added to it.
Reference	
Target release date / Status	First version released October 2015, to be continuously maintained

Output name	Various test cases
Description	All test cases developed in the context of the action, with their related test artefacts (e.g. assertions, validation schemas etc.) will be made available for ruse in the test registry and repository (TRR) on Joinup
Reference	
Target release date / Status	To be continuously released as of Q1 2017

8.8.10 ORGANISATIONAL APPROACH

8.8.10.1 Expected stakeholders and their representatives

Stakeholders	Representatives
European Commission Services	Project Managers

Member States' public administrations	ISA Coordination Group
CEN GITB Workshop and potential successors	Project officer in DG GROW, CEN secretariat
DIGIT data centre and other potential hosting providers (Test centres in Member States)	Cloud hosting services
Test centres in Member states	Various contact persons, facilitated through the ISA Coordination group
Service owners, e.g. ISA action owners or CEF DSI owners, funded projects	Project officers

8.8.10.2 Communication plan

Already under the ISA programme, contacts have been established with a number of system owners that might want to test their products/services. These contacts will be maintained and extended mainly through the respective project officers in the Commission. Demos and presentations to these and other potential users are foreseen.

The contact with several open source test bed software providers (including GITB) will be maintained through participation in their events and web meetings and through reviews of software and specifications.

Setting up the Terms of Reference for hosting is foreseen to be conducted still under the ISA programme, but might extend into ISA². At the same time, contacts with test centres in the Member States (established through the ISA coordination group) will be maintained and extended, through targeted phone calls, web meetings and potentially face-to-face meetings. These test centres could in the long run either become hosting providers (of the ISA² test bed or of a separate independent instance) or become partners in a network of test centres that develop and run tests together and share test artefacts.

8.8.10.3 Governance approach

The action will be managed by DIGIT with the support of an external contractor. Whenever major deliverables are to be published, the validation of the MS representatives will be sought.

While the test bed will physically be run in a data centre (likely at DIGIT), the deployment of new reference implementations, the development of test cases and other artefacts, the management of user demands for testing facilities (both from owners of specifications and services and from owners of

systems claiming conformance to these specifications and from users of the service) will remain in the hands of the ITB action.

A rough frame for this has already been established in deliverables produced under the ISA programme (e.g. hosting requirements, eligibility criteria for users of testing services – see documents referenced in section 8.8.13) and will be further refined.

8.8.11 TECHNICAL APPROACH

The approach that was originally proposed would consist of the establishment of a Framework contract under which particular requirements to provide a test bed for a specific system would be covered by the corresponding specific contracts.

Under the ISA programme, testing requirements of existing systems have been analysed, showing that there is a need for hosting facilities to run test systems on demand, but that it would also be beneficial to provide additional functionalities through a test bed (see figure below). The intention is to provide such hosting, preferably as a cloud service, with the proof-of-concept software from the CEN GITB WS as a first candidate for the implementation of the test bed.

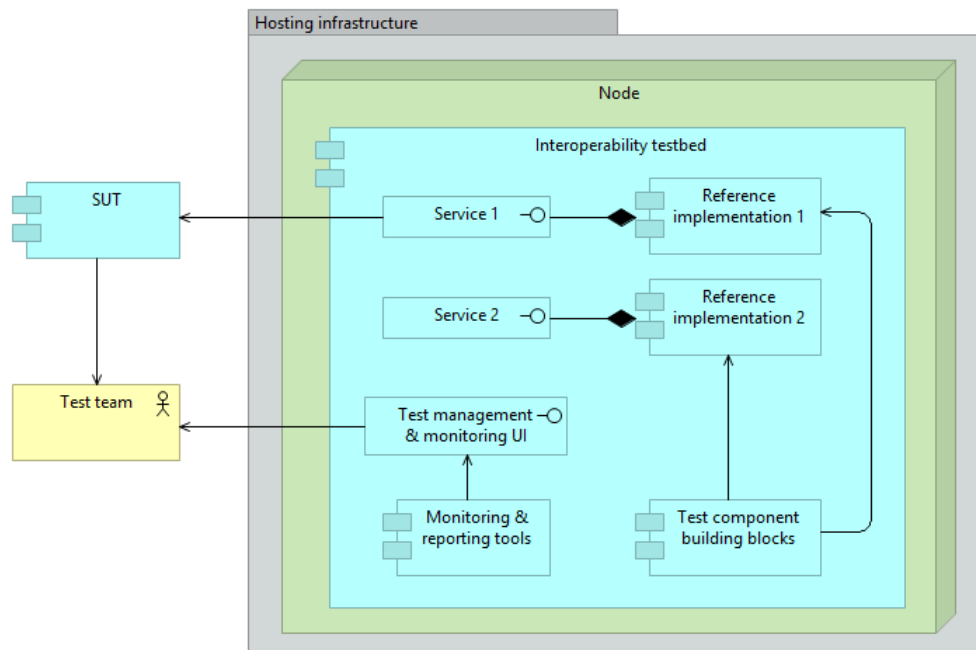


Figure Testing using a test bed

Over time, new reference implementations will be added to provide additional test services, and test cases developed for the automation of simple interconnection tests as well as conformance tests against standards and specification.

8.8.12 COSTS AND MILESTONES

8.8.12.1 Breakdown of anticipated costs and related milestones

Phase: Inception Execution Operational	Description of milestones reached or to be reached	Anticipated Allocations (KEUR)	Budget line ISA ² / others (specify)	Start date (QX/YYYY)	End date (QX/YYYY)
Execution (continuing from ISA programme)	<ul style="list-style-type: none"> Establish hosting of test bed 	150	ISA ²	Q2/2016	Q3/2016
Execution	<ul style="list-style-type: none"> Set up governance Deploy reference implementations Develop conformance tests 	200	ISA ²	Q3/2016	Q2/2017
Operation	<ul style="list-style-type: none"> Governance of Operation Operational Hosting Test development 	250	ISA ²	Q1 2017	Q4 2017
	Total	600			

8.8.12.2 Breakdown of ISA funding per budget year

Budget Year	Phase	Anticipated allocations (in KEUR)	Executed budget (in KEUR)
2016	Execution /Operation	250	
2017	Execution /Operation	350	

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Description	Reference link	Attached document
CEN GITB specification	Global eBusiness Interoperability Test Bed (GITB) Phase 3: Implementation Specifications and Proof-of-Concept	
Hosting requirements, deliverable from previous contract under	"Hosting requirements" (report to be published)	

the ISA programme		
Eligibility criteria for test services, deliverable from previous contract under the ISA programme	"Eligibility criteria for systems to request testing facilities" (report to be published)	