

4th INTEGRATION TEST CAMP

Review

How was the Integration Test Camp carried out?

It has been performed as a virtual event where participants could test the interoperability of their components within an IDSA implementation composed of connectors, DAPs and Broker. Each participant was assigned with a slot of two hours in which the SQS lab was entirely dedicated for them.

SQS team evolved the lab environment of the 3rd edition (Figure 1), including IDSCPv2 communication protocol and the latest version of DataSpace Connector from Fraunhofer ISST.

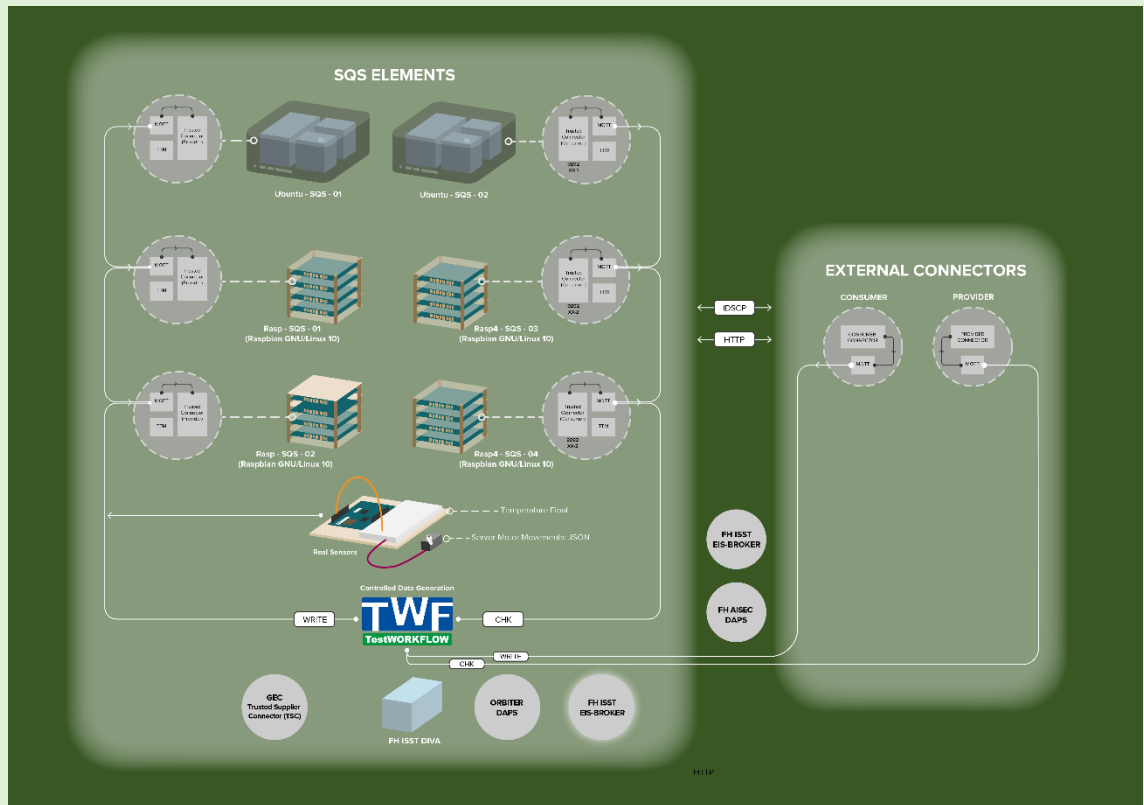


Figure 1 - SQS lab environment (3rd edition)

4th INTEGRATION TEST CAMP Review

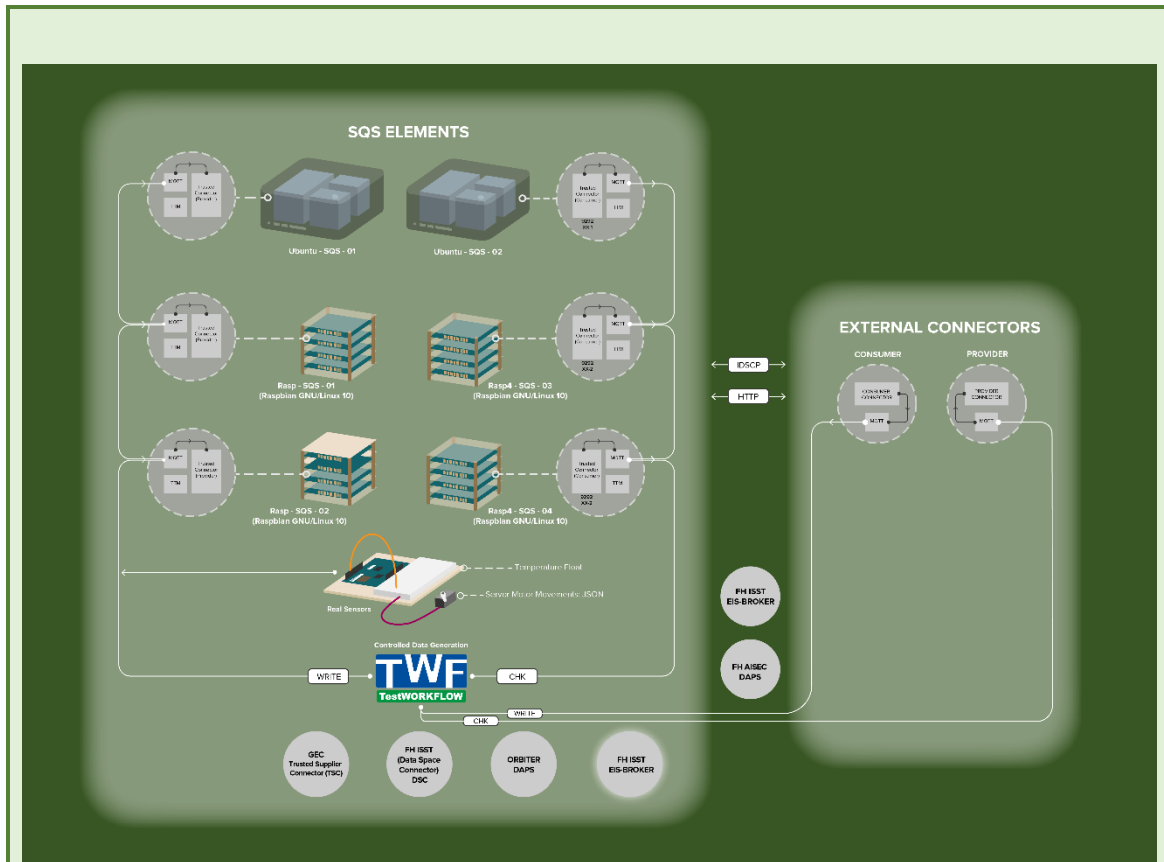


Figure 2 - SQS lab environment (4th edition)

With this architecture, the next scenarios were offered:

1. Connector Under Test (CUT) as Provider and SQS lab connector as Consumer, with IDSCP, IDSCPv2 or HTTP communication protocol
2. Connector Under Test (CUT) as Consumer and SQS lab connector as Provider, with IDSCP, IDSCPv2 or HTTP communication protocol
3. Connector Under Test (CUT) and lab DAPS
4. Connector Under Test (CUT) and lab Broker (FH IAIS Broker)

In all the scenarios the DAPS in SQS lab (Orbiter DAPS) and the DAPS from FH were offered, excluding the 4th scenario, because the actual version of the Broker uses the DAPS from FH.

4th INTEGRATION TEST CAMP

Review



Who participated?

The schedule for this Integration Test Camp:

03-nov	04-nov	05-nov	06-nov
	10:00-12:00 i2CAT		12:00-14:00 DATAPIXEL
15:30-17:30 FIWARE	14:00-16:00 FIWARE & ENGINEERING	15:00-17:00 ENGINEERING	15:00 - 17:00 FIWARE (2)

What were the participants able to do there?

Participants were able to test the interoperability of their pre-commercial components within a real IDSA architecture. They could interact with real IDSA infrastructure components and verify how their components will act in the real world.

For that, SQS lab team proposed the next Test Cases:

- Step 0. Receive Test Camp information
The participants receive an encrypted document with all the information needed to connect to the Integration Test Camp components.
- Step 1. Environment configuration
The CUT is registered in the DAPS and configured to communicate with the lab connector
- Step 2. Data interchange
After a successful configuration, the CUT sends/receives data correctly
- Step 3. Wrong connection attempt - With an expired certificate
Consumer connector with an expired certificate, tries to establish a connection with provider connector, asking for data, and the request is rejected.
- Step 4. Wrong connection attempt – With an expired DAT
Consumer connector, with an expired token, tries to establish a connection with provider connector, asking for data, and the request is rejected.

4th INTEGRATION TEST CAMP

Review



- Step 5. Connection failure (only if data flow is continuous)
While the CUT is sending/receiving data, the lab connector is turned off. 2 minutes later it is turned on, the connection is re-established and data flows correctly.
*DAT expiration greater than 5 minutes
- Step 6. Connection with more than one provider (optional)
The CUT as consumer is configured to receive data from more than one provider
- Step 7. Connection with more than one consumer (optional)
The CUT as provider is configured to send data to more than one consumer
- Step 8. Connection failure with more than one provider (only if you have gone through Step 6 or 7)
While the CUT is sending/receiving data, one of the lab connectors is turned off. 2 minutes later it is turned on. The connection is re-established and data flows correctly. Then, both lab connectors are turned off. 2 minutes later they are turned on. The connections are re-established and data flows correctly.
- Step 9. Wrong Registration attempt - Without self-information
CUT, without self-information, tries to register in the Broker and the request is rejected
- Step 10. Connector Registry in Broker
The CUT makes a request to register in a Broker and the Broker makes the register
- Step 11. Data interchange with the information received from a Broker (Step 7 to 10 only if the connector does it automatically)
The CUT makes a request for lab connector information to a Broker and then makes a connection to interchange data with the received information
- Step 12. Data interchange with the information received from a Broker (Step 7 to 10 only if the connector does it automatically)
The CUT makes a request for lab connector information to a Broker and then makes a connection to interchange data with the received information
- Step 13. Unregister connector from a Broker
The CUT requests to delete its information from a Broker

4th INTEGRATION TEST CAMP Review

What have been achieved during the Test Camp?

In the next tables the results of the Test Camp are shown:

DAPS Interoperability	Orbiter DAPS				FH DAPS													
	FIWARE Provider	FIWARE Consumer	ENGINEERING Provider	ENGINEERING Consumer	FIWARE Provider	FIWARE Consumer	ENGINEERING Provider	ENGINEERING Consumer	I2CAT Provider	I2CAT Consumer	DATAPIXEL Provider	DATAPIXEL Consumer	Trusted Connector Provider	Trusted Connector Consumer	GEC Provider	GEC Consumer	DSC Provider	Broker
Get DAT Component gets a DAT from the DAPS, requesting it with a valid certificate.	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	OK	Not Tested	Not Tested
Get DAT - Negative answer Component, with an expired or invalid certificate, requests a DAT to the DAPS. The DAPS sends a negative response.	OK	OK	OK* (need to change the error message)	OK	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	Not Tested	OK	OK	Not Tested	Not Tested	Not Tested	Not Tested
Validate DAT Component providing data requests DAPS to verify a DAT given by a component requesting for data. DAPS validates it.	OK	NA	OK	NA	OK	NA	OK	NA	Not Tested	NA	OK	NA	Not Tested	NA	OK	NA	Not Tested	Not Tested
Validate DAT - Negative answer Component providing data requests DAPS to verify an invalid or expired DAT given by a component requesting for data. DAPS gives a negative response.	OK	NA	OK	NA	Not Tested	NA	OK	NA	Not Tested	NA	Not Tested	NA	Not Tested	NA	OK	NA	Not Tested	Not Tested

* NA: Not Applicable, the component does not have that feature

4th INTEGRATION TEST CAMP

Review

Broker Interoperability	FH DAPS (as a service)								
	FIWARE Provider	FIWARE Consumer	ENGINEERING Provider	ENGINEERING Consumer	DSC Provider	Trusted Connector Provider	Trusted Connector Consumer	GEC Provider	GEC Consumer
Connector Registry The connector gets registered in a Broker	OK	OK	OK	OK	NA	NA	NA	NA	NA
Connector Registry - Negative answer (without self-description/ with a wrong self description) The connector, without self-information, tries to register in the Broker and the request is rejected	OK	OK	OK	OK	NA	NA	NA	NA	NA
Connector Registry - Negative answer (with wrong DAT) The connector, with a invalid or expired DAT, tries to register in the Broker and the request is rejected	Not Tested	Not Tested	OK	OK	NA	NA	NA	NA	NA
Get data (request for everything) The connector gets all the information contained in a Broker	OK	OK	OK	OK	NA	NA	NA	NA	NA
Get data (request for specific connector) The connector gets the information of a specific connector to a Broker	Not Tested	Not Tested	Not Tested	Not Tested	NA	NA	NA	NA	NA
Get data (request for specific content) The connector gets the information of a specific content to a Broker	Not Tested	Not Tested	Not Tested	Not Tested	NA	NA	NA	NA	NA
Update connector information The connector updates its information at a Broker	OK	OK	OK	OK	NA	NA	NA	NA	NA
Unregister connector The connector gets unregistered from a Broker	OK	OK	OK	OK	NA	NA	NA	NA	NA

4th INTEGRATION TEST CAMP

Review



What difficulties have been encountered?

- The execution of error handling tests has shown that the connectors do not respond with the same error codes, and this can lead to misunderstandings.
 - Error messages need to be agreed in IDSA community for a better understanding
- To test the data search at the Broker just a SPARQL message asking for all the content has been provided.
 - Different data search messages must be prepared, to also search for specific content or components.
- When using IDSCPv2, connectors were able to interchange data when they were deployed in same machine, but not from different machines, but it was not possible to find the reason for that behaviour.
 - A deeper research will be performed to find a solution

Conclusions

First, SQS wants to thank all the participants that have taken part. It has been a great opportunity to know better each participant and component and to get a deeper knowledge of what is being developed in IDSA environment. The Integration Test Camp has been a great opportunity to collaborate and face the needs of the components to work with each other.

With the feedback received and the lessons learned from the problems faced in the sessions, SQS will keep improving the lab environment and the organization for the next Integration Test Camp.