



ASAM Technical Seminar 2020

Enabling Scalable Analytics on ODS Data

New features in ASAM ODS V6.1.0

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Agenda

1

About the associate standard for Big Data

What is ODS? Challenges of growing data. Associate standard for big data.

2

Standard overview

How does the associate standard enable scalable analytics ?

3

What does the associate standard define

Instance data and mass data exports and data schemas

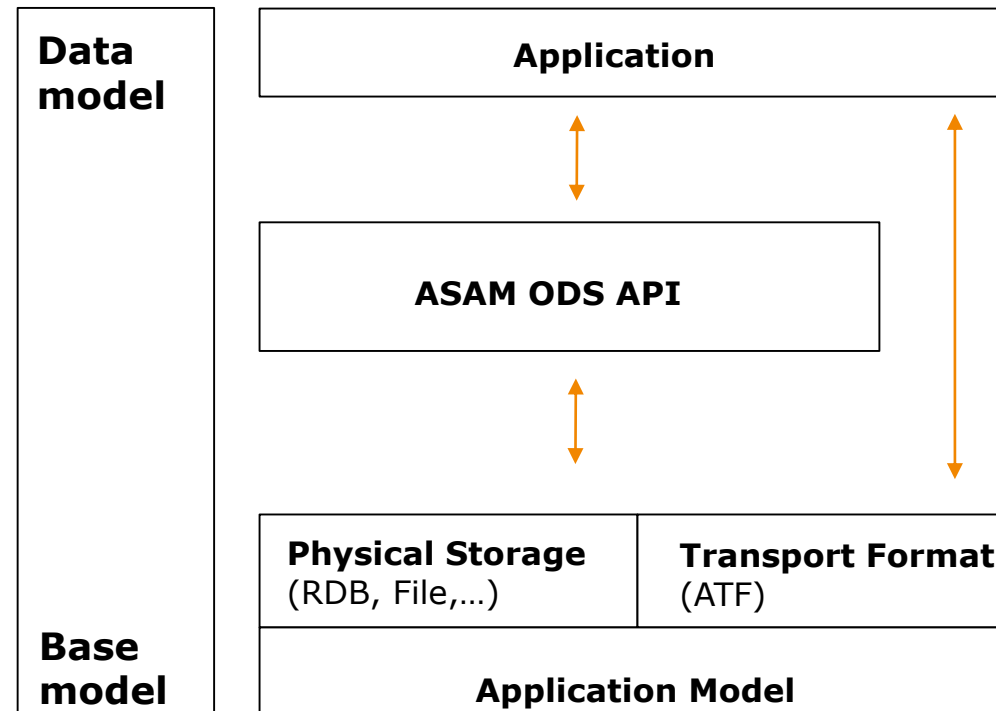
4

AVL implementation insights

How the implementation of the standard looks from the user perspective

What is ODS?

- ASAM ODS is the part of ASAM standards which focuses on **persistent storage** and **retrieval of data**. ASAM ODS describes the physical storage of information as well as **service interfaces**.

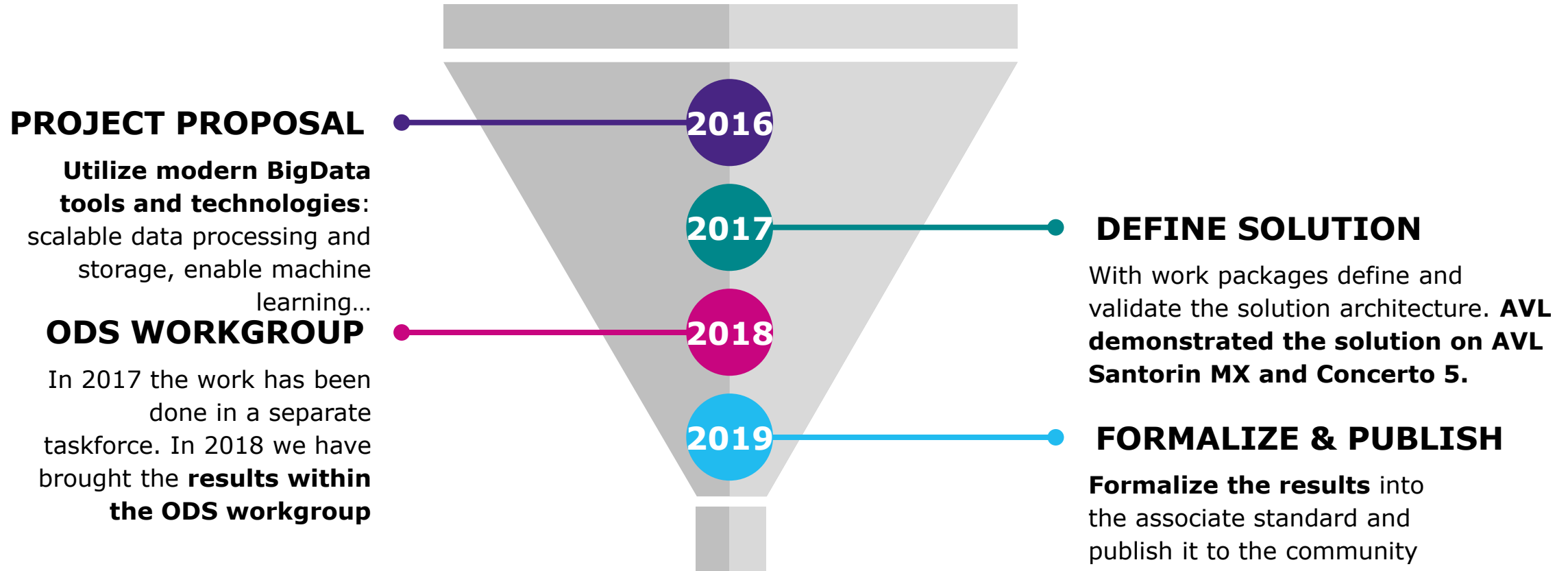


Challenges of growing data

- Measurement data volumes are exceeding ODS capabilities
 - Terabyte (TB) measurement sizes are coming on a daily basis
- It is not advisable to do data copying over network so that the clients can do data processing
 - What is needed is to bring the code to the data
- Big Data technologies provide the demanded features:
 - Volume
 - Velocity
 - Variety
 - Variability
 - Veracity
 - Visualization
 - Value

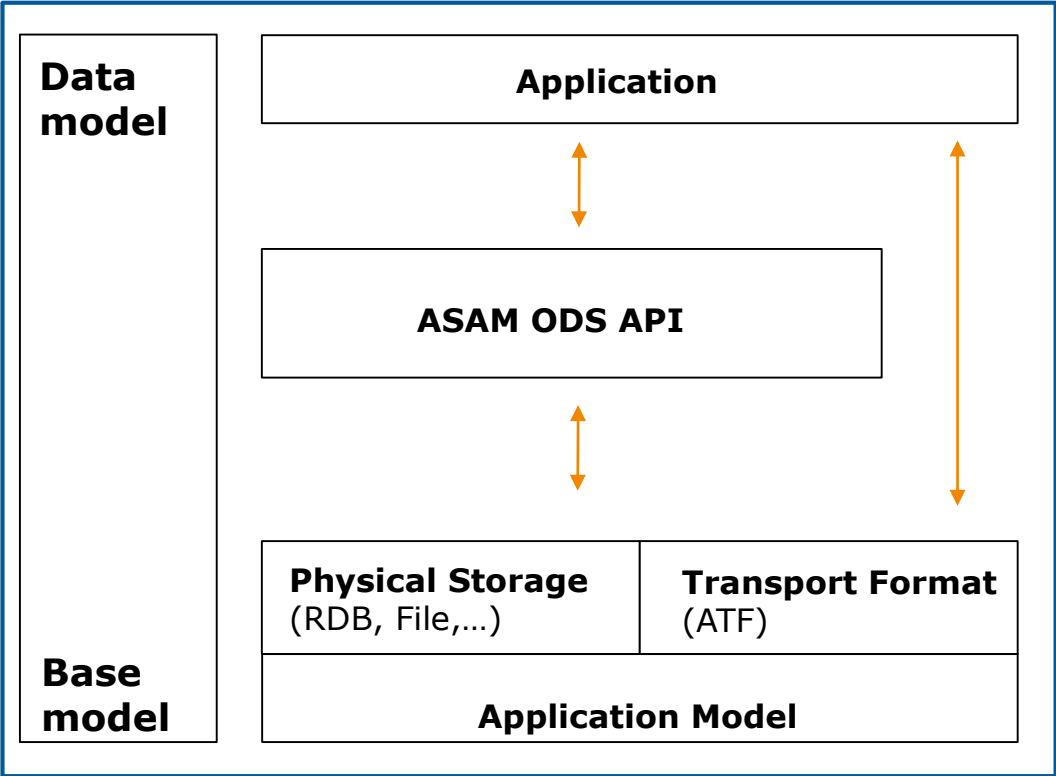


About the project – associate standard for ODS big data

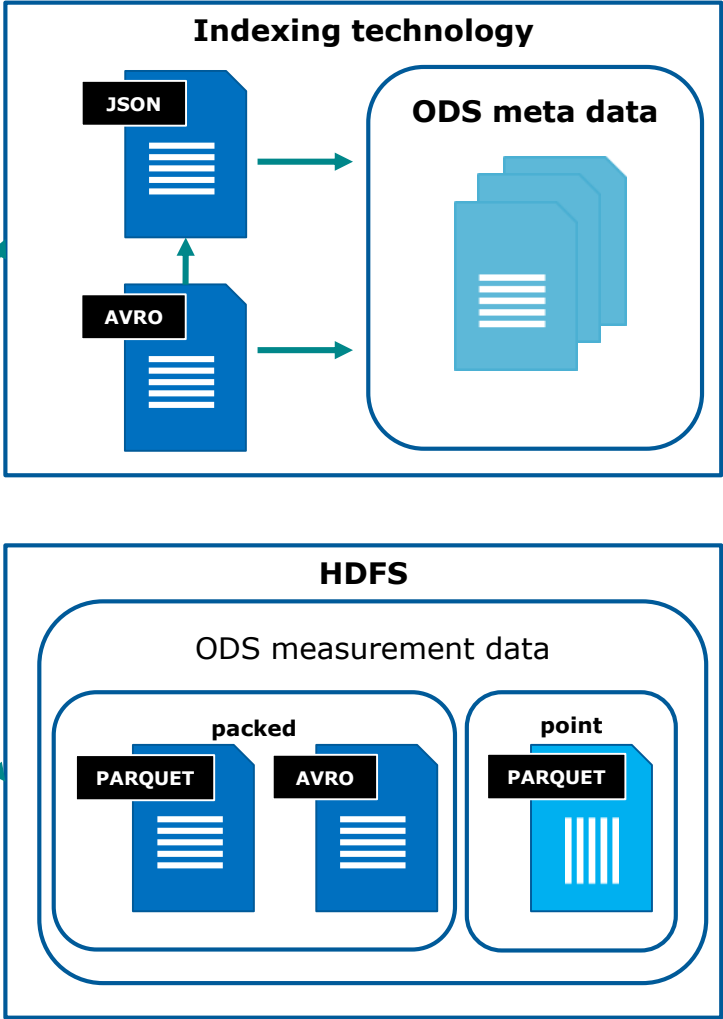


01. Jan 2020 ASAM ODS 6.1.0 is released

ODS and ODS Big Data



ASAM ODS 6



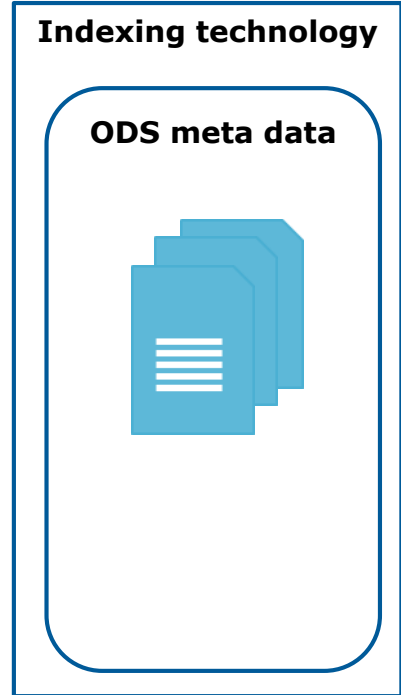
ASAM ODS 6.1 Big Data

<pre> Objavro.schema<{"type":"array","items":{"type":"record", "name":"Measurement","namespace":"Avl.For.Asam.BigOD S.Measurement","fields":[{"name":"ao_element","type":{"typ e":"string","avro.java.string":"String"}},{name":"ao_source", "type":{"type":"string","avro.java.string":"String"}},{name":"ao_id", "avro.java.string":"String"}]}}> </pre>	AVRO
<pre> </pre>	<pre> [{"ao_element": "Measurement", "ao_source": "myODS", "ao_id": "myODS_Unit_93", "ao_iid": "93", "Meald": 93, "Name": "MyMeasurement", "StartTime": 1133519475000, "Subtest": { "ao_element": "Subtest", "ao_source": "myODS", "ao_id": "myODS_Subtest_92", "ao_iid": "92", "SubtestId": 92, "Name": "MySubtest", "Result": "Succeeded", "Test": { "ao_element": "Test", "ao_source": "myODS", "ao_id": "myODS_Test_91", "ao_iid": "91", "TestId": 91, "Name": "MyTest", "Environment": { "ao_element": "Environment", "ao_source": "myODS", "ao_id": "myODS_Environment_90", "ao_iid": "90", "EnvId": 90, "Name": "MyEnvironment" </pre>

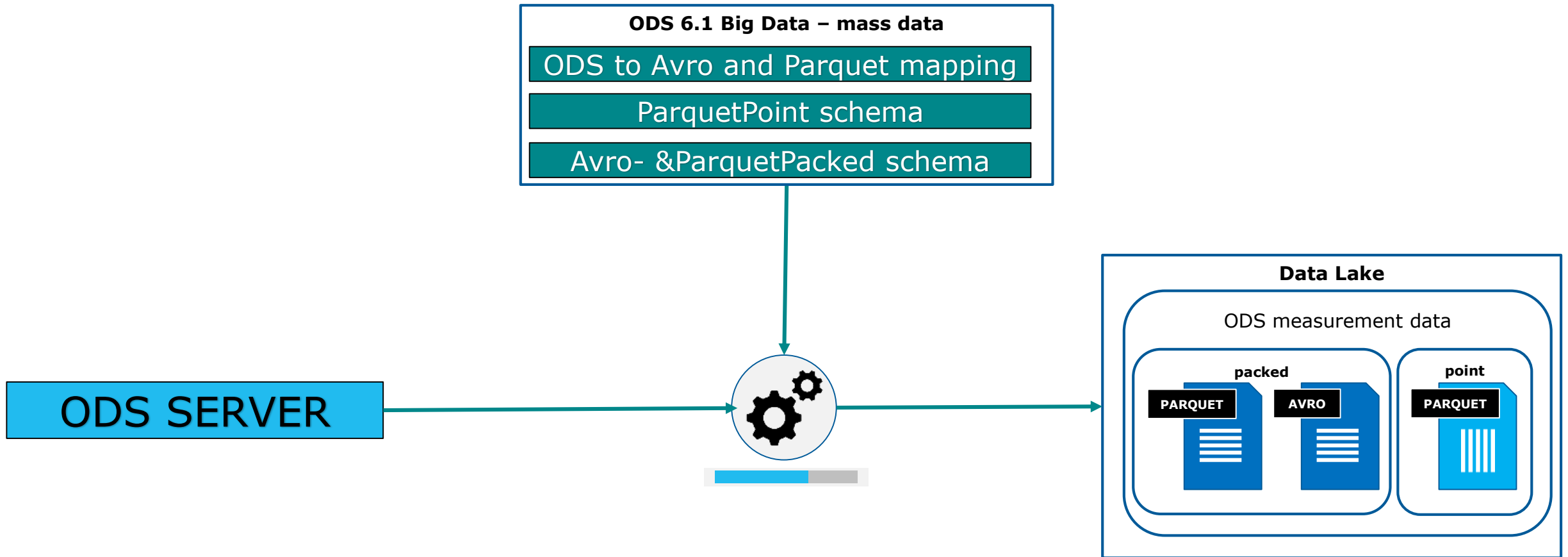
AVRO schema

AVRO instance

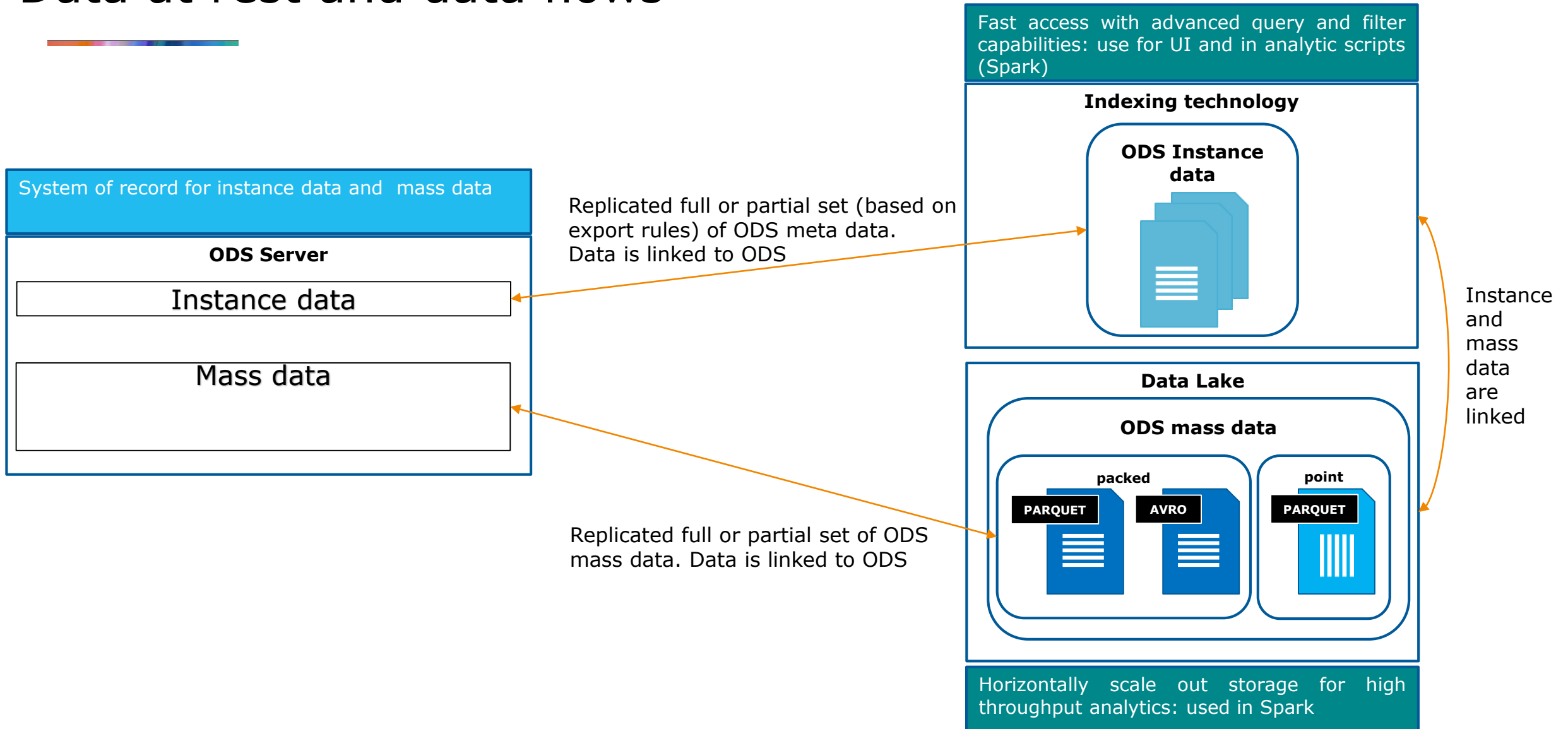
JSON instance



Mass data export



Data at rest and data flows



Insights from AVL's implementations of the standard

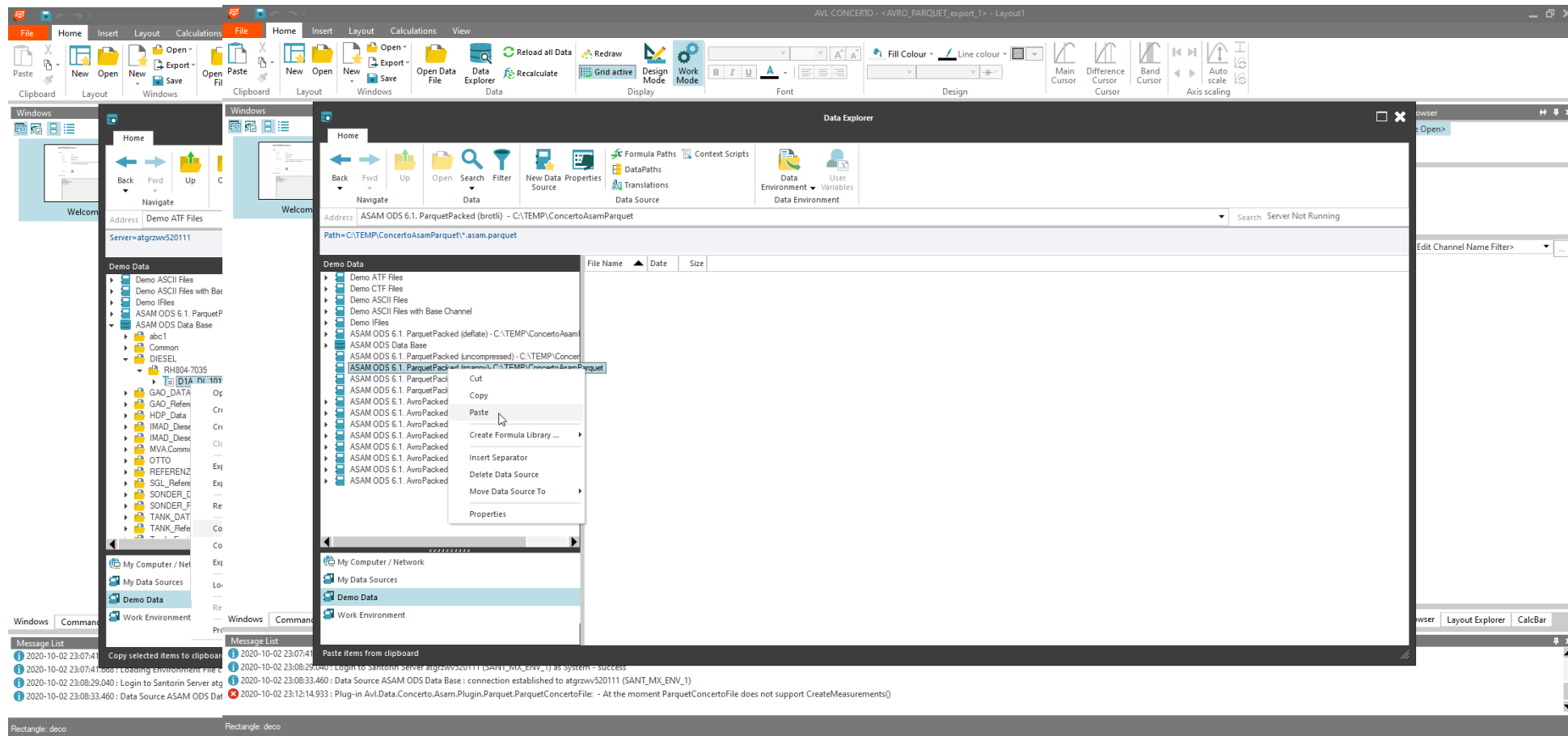
Conversion to ASAM ODS BigData in AVL Concerto

The screenshot displays the AVL Concerto software interface. The main window is titled "AVL CONCERTO - <AVRO_PARQUET_export_1> - Layout1". The interface includes a menu bar (File, Home, Insert, Layout, Calculations, View), a toolbar with various icons for file operations, data exploration, and design, and a "Data Explorer" window.

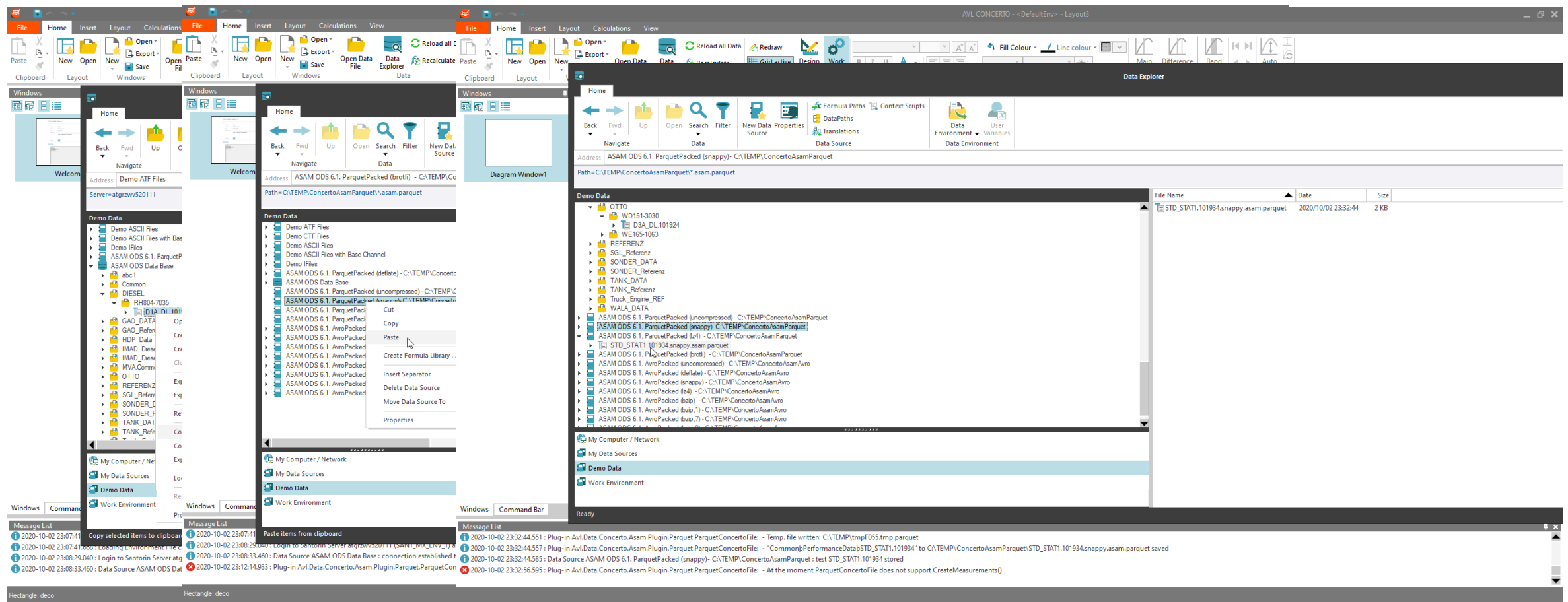
The "Data Explorer" window shows a tree view on the left with "Demo ATF Files" expanded. Below the tree view is a table of measurement data. The table has columns: Measurement, Id, IName, IVersion, IDescription, ITest, IType, IStartTime, IEndTime, ITimeBase, ICompleteFlag, ICompleteTime, IStartCondition, and IStartCo. The table contains 36 items, all of which are "NotAvailable".

At the bottom of the interface, there is a "Message List" showing several log messages, including "Copy selected items to clipboard" and "Login to Santorin Server atgrzw520111 (SANT_MX_ENV_1) as System - success".

Conversion to ASAM ODS BigData in AVL Concerto



Conversion to ASAM ODS BigData in AVL Concerto



Web search and filtering

Search for Lab Management

Search

Simple

Extended

Expert

And

Or

Search group

All

Field

Speed_kmh

Operator

>=

Value

120

Search group

mx

Field

Proj

Operator

Value

SEARCH

SAVE REQUEST

Filters

(no filters selected)

Results

(142)

Project Id

Project Description

Project Type

rProject

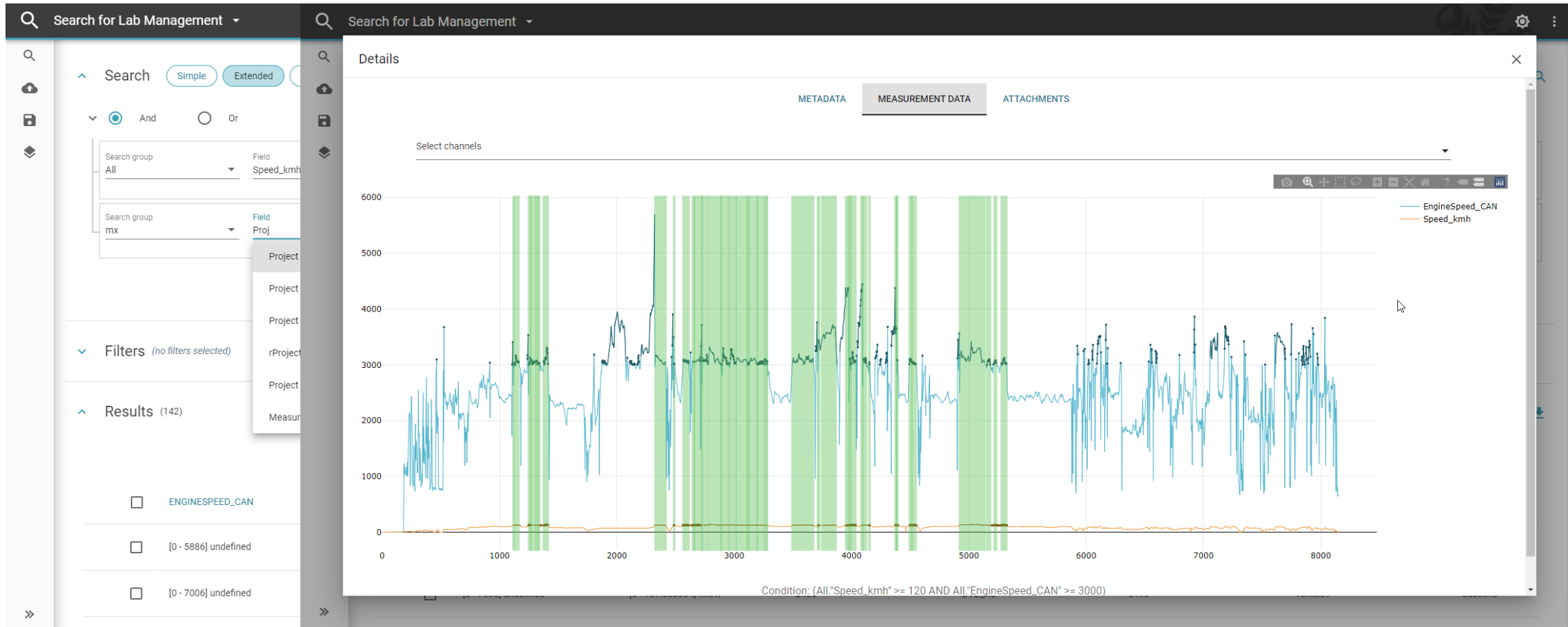
Project Name

Measurement Project Number

MEASUREMENTS

	ENGINESPEED_CAN	SPEED_KMH	TESTSERIE_DERIVEDID	NAME (TS)	TEST_DERIVEDID	NAME (T)	FUEL CATEGOR
☐	[0 - 5886] undefined	[0 - 139.485232] km/h	2435	DVD_A6	3493	Vehicle1	BioFuel
☐	[0 - 7006] undefined	[0 - 157.803364] km/h	2435	DVD_A6	3493	Vehicle1	Gasoline

Web search and filtering



Web search and conversion

The screenshot displays the AVL Lab Management web interface. At the top, there is a search bar labeled "Search for Lab Management". Below it, the "Search" section includes tabs for "Simple", "Extended", and "Expert". The "Simple" tab is active, showing two search criteria: "Speed_kmh" with a value of "120" and "EngineSpeed_CAN" with a value of "3000". The "Filters" section shows "(no filters selected)". The "Results" section displays 142 results, with a table titled "CHANNELS/TIME SERIES DATA". The table has columns for "ENGINESPEED_CAN", "SPEED_KMH", "TESTSERIE__DERIVEDID", "NAME (TS)", and "TEST__DERIVEDID". Two rows are visible, both for "DVD_A6" with "TEST__DERIVEDID" 3493. The right sidebar shows "Measurements selected: 3" and a "View in" dropdown set to "AVL Concerto". Below this, there are sections for "DISPLAY", "MX Automate", "SCHEDULE PROCESSING", and "Data Lake Sync". A "Format" dropdown menu is open, showing options: "ASAM ParquetPacked Conversion", "ASAM AvroPacked Conversion", and "ASAM ParquetPoint Conversion".

Search for Lab Management

Search Simple Extended Expert

And Or

Search group All Field Speed_kmh Operator >= Value 120

Search group All Field EngineSpeed_CAN Operator >= Value 3000

SEARCH SAVE REQUEST

Filters (no filters selected)

Results (142)

CHANNELS/TIME SERIES DATA

ENGINESPEED_CAN	SPEED_KMH	TESTSERIE__DERIVEDID	NAME (TS)	TEST__DERIVEDID
[0 - 5886] undefined	[0 - 139.485232] km/h	2435	DVD_A6	3493
[0 - 7006] undefined	[0 - 157.803364] km/h	2435	DVD_A6	3493

Measurements selected 3

View in AVL Concerto

DISPLAY

MX Automate

Generate report Manual configuration

SCHEDULE PROCESSING

Data Lake Sync

Workflow name * Webinar_Conversion123

Format *

- ASAM ParquetPacked Conversion
- ASAM AvroPacked Conversion
- ASAM ParquetPoint Conversion

Web search and conversion

The screenshot displays a web application interface for Lab Management. The main content area shows a table titled "Webinar_Conversion123" with two columns: "MEASUREMENT" and "STATUS". The table contains three rows, all with a status of "WAITING".

MEASUREMENT	STATUS
2b47f9fc-91e3-45dd-a089-5a6a46fb2eb0	WAITING
16b8e66d-7515-488f-9e80-5b3bfe6b4f74	WAITING
c6619575-e311-4d3d-864c-b0ebb7fcf482	WAITING

The left sidebar contains search and filter options. The right sidebar shows a list of workflows, including "Webinar_Conversion123", "demo1233", "Webinar_1", and "Webinar_Check_1".

Web search and conversion

The screenshot shows a web application interface with a search bar at the top. Below the search bar, there are three panels. The first panel on the left is a sidebar with a search icon and a list of search groups. The middle panel shows the search results for 'Webinar_Conversion123'. The results are displayed in a table with columns for 'MEASUREMENT' and 'STATUS'. The table contains three rows of data. The first row has a measurement ID of '2b47f9fc-91e3-45dd-a089-5a6a46fb2eb0' and a status of 'FINISHED'. The second and third rows have measurement IDs '16b8e66d-7515-488f-9e80-5b3bfe6b4f74' and 'c6619575-e311-4d3d-864c-b0ebb7fcf482' respectively, both with a status of 'WAITING'. The interface also includes a 'Filters' section and a 'Results' section at the bottom.

MEASUREMENT	STATUS
2b47f9fc-91e3-45dd-a089-5a6a46fb2eb0	✓ FINISHED
16b8e66d-7515-488f-9e80-5b3bfe6b4f74	⌚ WAITING
c6619575-e311-4d3d-864c-b0ebb7fcf482	⌚ WAITING

Web search and conversion

The screenshot displays a web application interface with a search bar at the top. Below the search bar, there are three panels showing search results for 'Webinar_Conver' and 'Webinar_Conversion12'. The results are organized into a table with columns for 'MEASUREMENT' and 'ID'. The 'ID' column contains values like '2b47f9fc-91e3-45dd-a089-5a6e' and '16b8e66d-7515-488f-9e80-5b3d'. The interface also includes a sidebar with 'Filters' and 'Results' sections. On the right, a detailed view of a file is shown, including its name, URL, and properties.

Search Results:

MEASUREMENT	ID
2b47f9fc-91e3-45dd-a089-5a6e	2b47f9fc-91e3-45dd-a089-5a6e
16b8e66d-7515-488f-9e80-5b3d	16b8e66d-7515-488f-9e80-5b3d
c6619575-e311-4d3d	c6619575-e311-4d3d

File Details:

Name: environment_MX_SC_InVehicleTest_A6_DVD_A6_Vehicle1.3493_

URL: <https://xdmishowroompersistafis.file.core.windows.net/mx...>

LETZTE ÄNDERUNG: 26.5.2020, 9:58:36 AM

GRÖSSE: 24.41 MiB

ETAG: "0x8D8014A9640D648"

CONTENT-MD5: -

Thank you



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