

Evolution of ASAM ODS 6.0

General Assembly Meeting 2017, Stuttgart, Germany

Presenter

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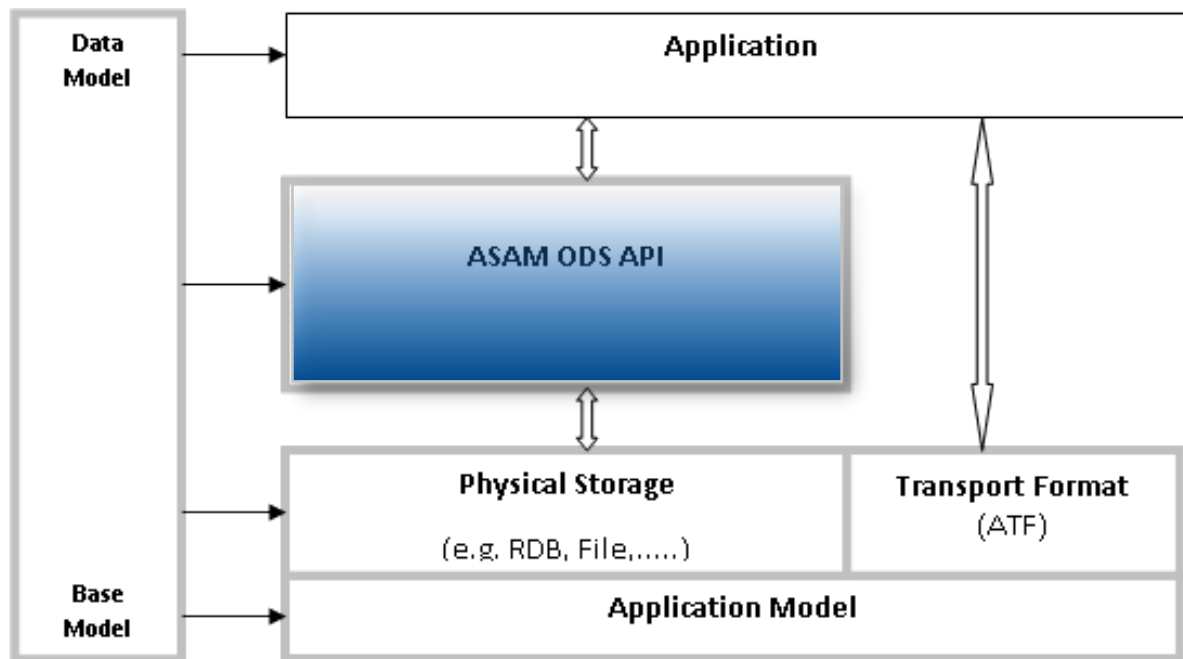
AVL List GmbH

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3	Development Process of ODS 6.0
4	New ODS 6.0 API
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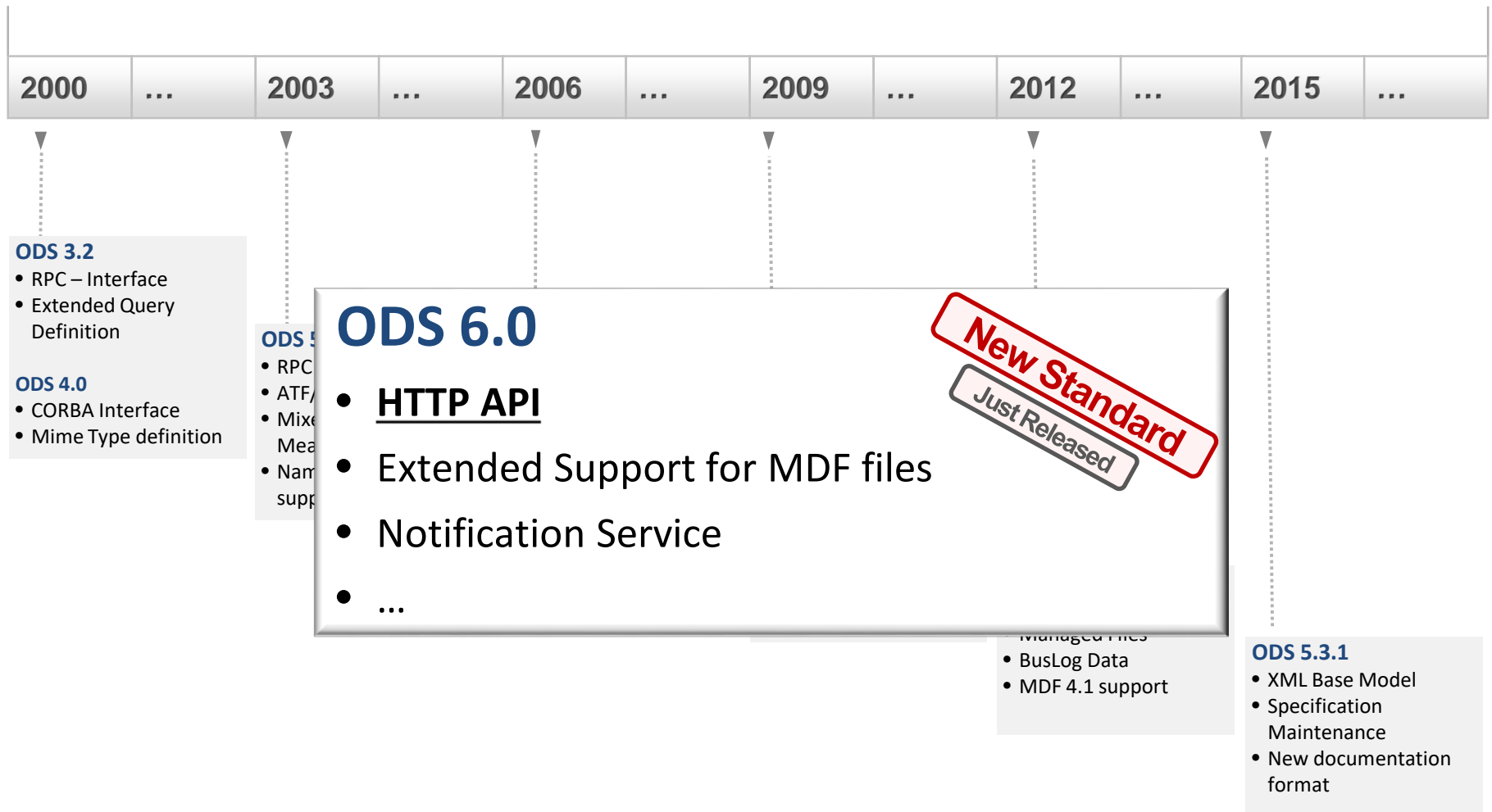
Positioning of ASAM ODS within ASAM

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



Components of the ASAM ODS standard

ODS-Standards Evolution



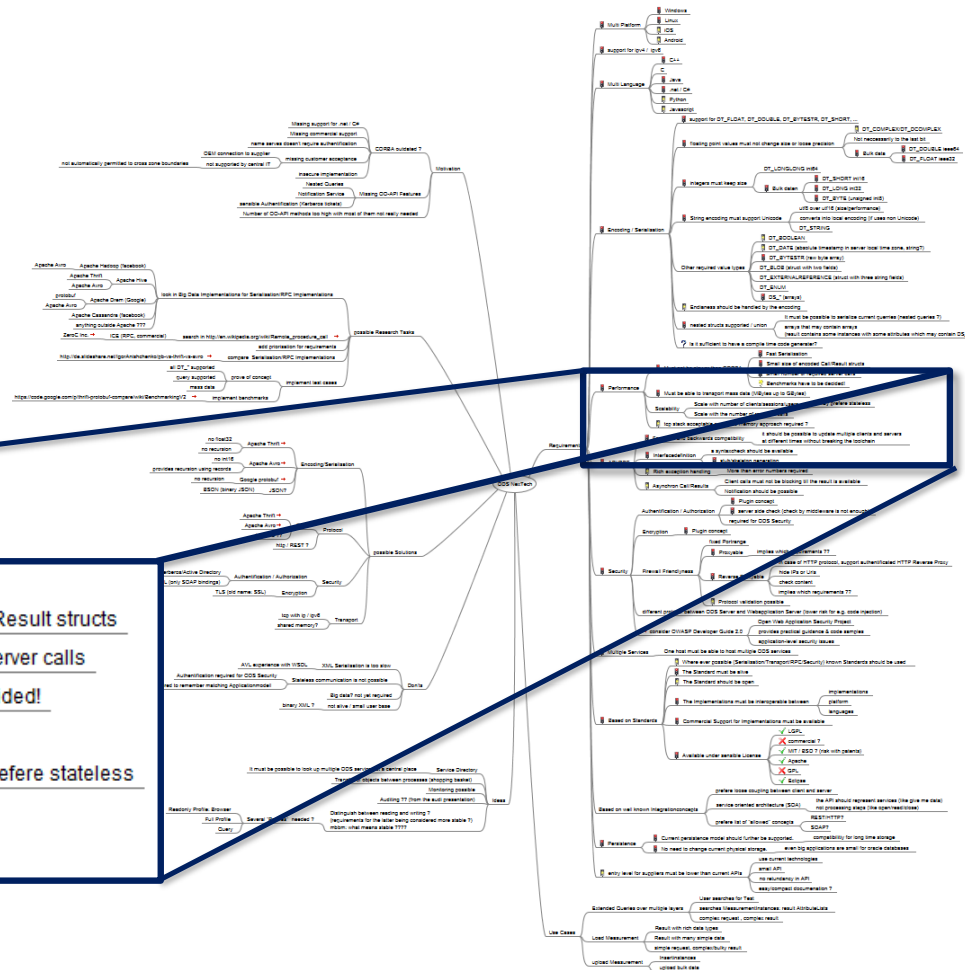
Key Drivers for ODS 6.0 API

- New communication technology
 - Enterprise IT ready technology stack
 - Encrypted data communication
- Reduce complexity of ODS API
 - Lower entry point for novice developers
 - Increase amount of ASAM ODS experts
- Support for new programming languages
 - Scripting languages
 - Native support for Microsoft .Net languages
- Reduced Support/Acceptance of CORBA infrastructure

Requirements Definition

... defined > 100 requirements

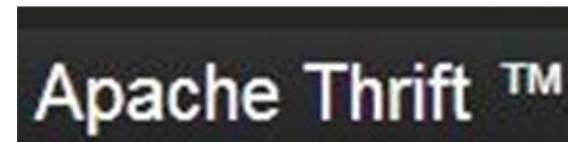
- Functional
- Non Functional
- License fee (runtime), support, ...
- assessed (mandatory – opt.)



Technology - Research

Voting for communication protocols

Technology	Communication
Google Protobuf	HTTP(s)
Apache Thrift	Thrift



Research budget funded by ASAM

- Fraunhofer IAIS
(Institute for Intelligent Analysis and Information Systems)
- science+computing AG



Result of Evaluation by Fraunhofer



Evaluation report for the applicability of Apache Thrift and Protocol Buffers and a test plan for ASAM ODS 6.0

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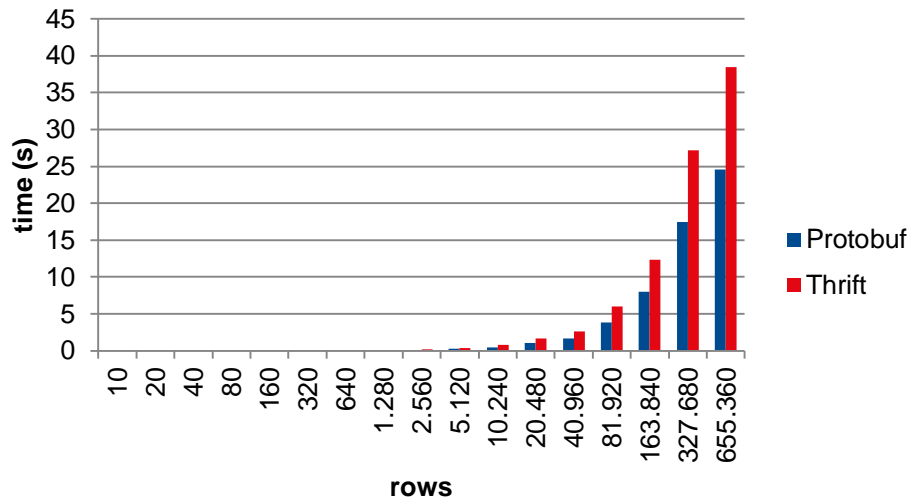
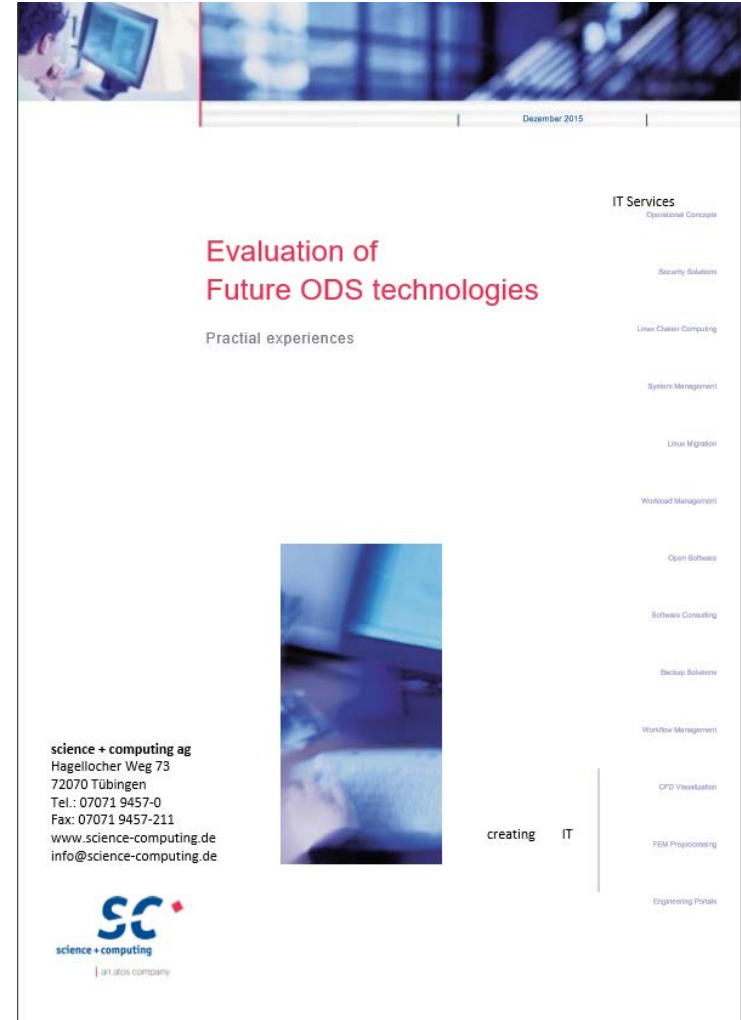
Category	Apache Thrift	Protocol Buffers / REST	Comment
Platform	36	36	
Language	54	52	
Encoding	102 + 99 = 201	87+105 = 192	
Performance initial data structure	Serialization Total Time Size Deflated Size ⇨ 40	Deserialization ⇨ 10	Each test is weighted with 10
New data structure	File Size (Deserialization) ⇨ 20	Serialization (Deserialization) Total time ⇨ 30	
Authentication and Authorization	--	---	In this category both technologies require significant customization, therefore this category is ignored.
Encryption	57	57	
Sustainability	Up-to-dateness Maturity Support ⇨ 30	Up-to-dateness Maturity ⇨ 20	Each listed is weighted with 10
Total Score	438	397	

Table 7: Overall result of the evaluation

Evaluation Result of s + c (ATOS)

Defined Test – Matrix

- Complex query structures
- Network
- Fast (SSL) / slow (SSL) / WAN
- Java / C++ / C#
- Windows / Linux
- Compared to CORBA
- Performance tests

December 2015

IT Services

- Operational Concepts
- Security Solutions
- Linux Cluster Computing
- Systems Management
- Linux Migration
- Workload Management
- Open Software
- Software Consulting
- Backup Solutions
- Workload Management
- CPD Visualization
- FEM Processing
- Engineering Portals

Evaluation of Future ODS technologies

Practical experiences

creating IT

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 science + computing
 | an atos company



ODS 6.0 Standard Specification

NEW additional HTTP-API

- Google Protocol Buffers 3.0 Serialisation
- W3C HTTPS transport protocol
- REST API based Interface definition
- Authentication
- W3C SSE Notification Service

What we have learned from the past ?

- Simplify interface
- Documentation
- Example programs




Abstract ODS 6.0 Technology - Overview

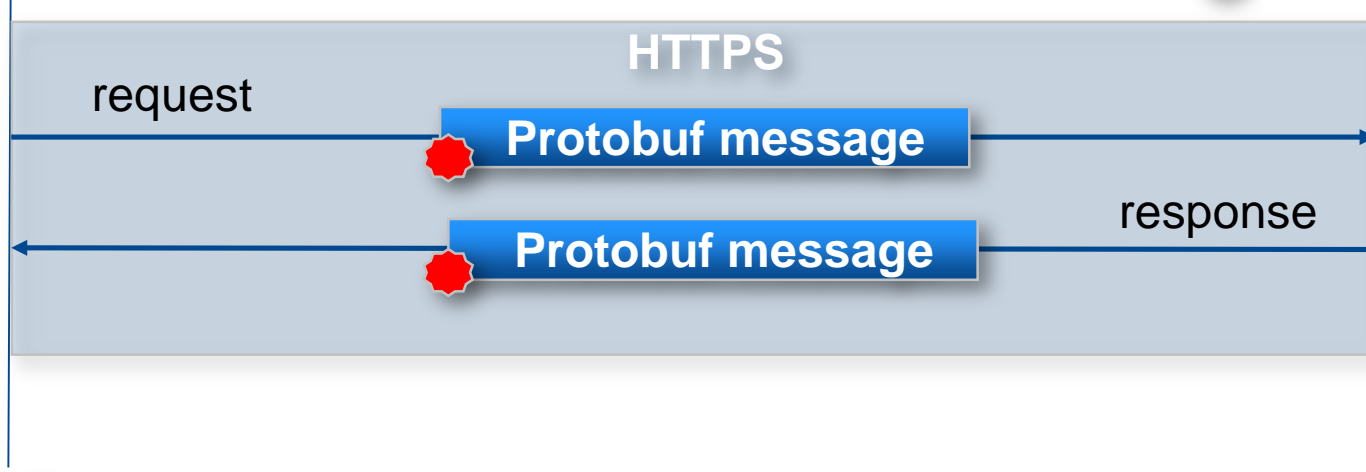
Client





Server



-  HTTP-API
-  Authentication
-  Notification



-  HTTP API documentation
-  .proto definition files

ODS 6.0 Interface simplification

ODS 5.3.1 OO-API has > 200 methods => subset only used

ODS 6.0 HTTP-API has only **30** functions

Common #15:

- Connection Handling
- Descriptive and Measurement Data
- Transaction Handling

Specific #15:

- Application Model modification
- Security Administration
- Event Notification
- Miscellaneous functions

ODS 6.0 – Connection API

Methods for opening and closing the connection to a server.

HTTP	PATH	ACTION
POST	{baseURI}/	ods
DELETE	{baseURI}/	ods/{conId}
POST	{baseURI}/ods/{conId}/	context-read
POST	{baseURI}/ods/{conId}/	context-update

ODS 6.0 Data Access API

Methods for read, write and modify descriptive and mass data

HTTP	PATH	ACTION
POST	{baseURI}/ods/{con1}/	data-read
POST	{baseURI}/ods/{con1}/	valuematrix-read
POST	{baseURI}/ods/{con1}/	data-create
POST	{baseURI}/ods/{con1}/	data-update
POST	{baseURI}/ods/{con1}/	data-delete
POST	{baseURI}/ods/{con1}/	data-copy
POST	{baseURI}/ods/{con1}/	n-m-relation-read
POST	{baseURI}/ods/{con1}/	n-m-relation-write

ODS 6.0 Notification API

Methods for register and receive notifications from the server.

Events for :

- Instances (new, changed, deleted)
- Application model changes
- Security setting changes

HTTP	PATH	ACTION
POST	{baseURI}/	events/{recl}
DELETE	{baseURI}/	events/{recl}
GET	{baseURI}/	events/{recl}

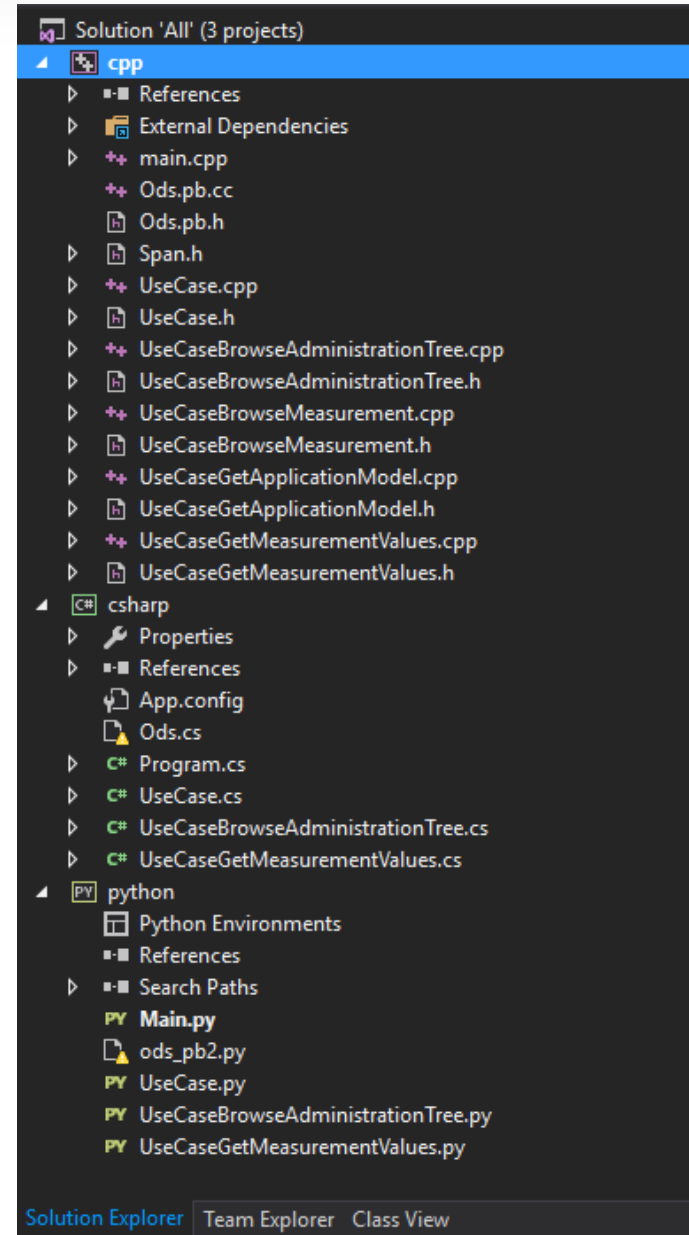
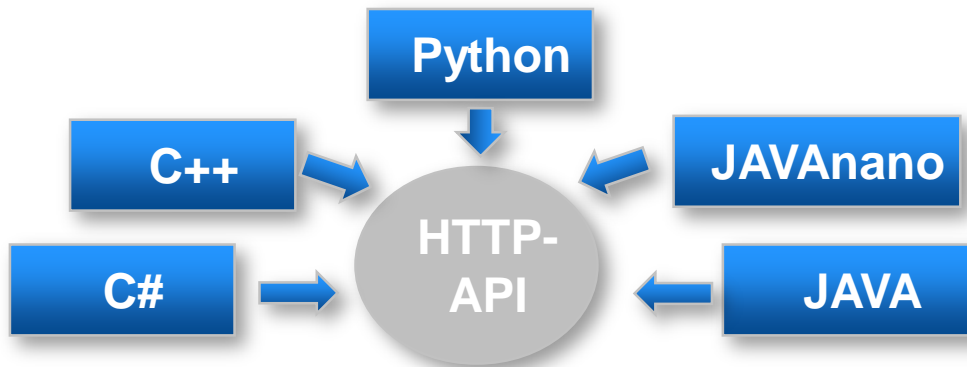
Example Programs

Demonstrate dynamic behaviour of API

Use-Case oriented Example Programs

- Connection Handling
- Data-model Handling
- (Mea)Data Handling

Examples provided for



Content of ODS 6.0 Specification

Base Standard Documentation

- Base Model, ATF, Physical Storage, OO-API, HTTP-API, Mime Types, ...

Base Standard Model and Interface Definitions

- Model
- CORBA API
- RPC API
- HTTP API
- XML Schema files

Associated Standards Documentation

- NVH, Calibration, Geometry, Workflow and Bus Data

Examples

- ATF, ATFX
- HTTP API examples
- Extended Query CORBA example

Conclusion ASAM ODS 6.0

Using **latest** IT communication **technology**

Simplified ODS API

Example programs for easy getting started

Can completely **substitute** the former **OO-API** of ODS 5.x



Questions?

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