

ISTEC.MIP Measurement Data Integration Platform

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Booth 1145



ISTEC Company Profile

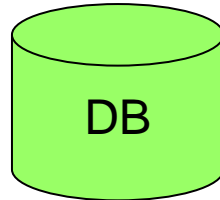
- Independent software and system house
- Since 1982 successful on market
- 60 regular employees
- Development of customer specific solutions
from the identification of problems up to the system installation
- Offices at Ettlingen (Karlsruhe) and Leinfelden (Stuttgart)



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Measurement Data Storage



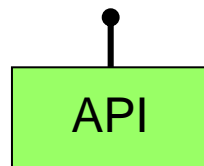
Relational Databases (Oracle, SQLServer, MS Access)

- customer specific data models
- tool specific data models



Files in Folders

- Excel: various known or free formats
- XML: various data models
- tool specific data files



API Accessed Storages

- hidden storage technology and format
- well defined standard APIs like ASAM ODS
- individual application models
freely designed or based e.g. on MDM

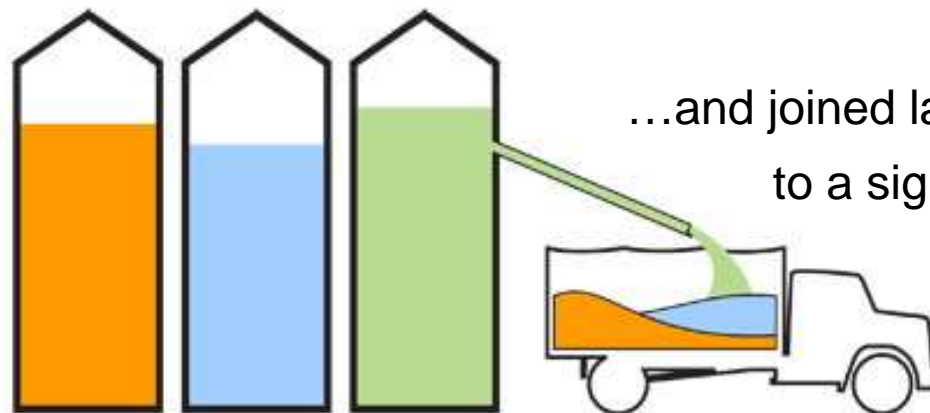


Measurement Data Domains

different measurement data domains (some examples):

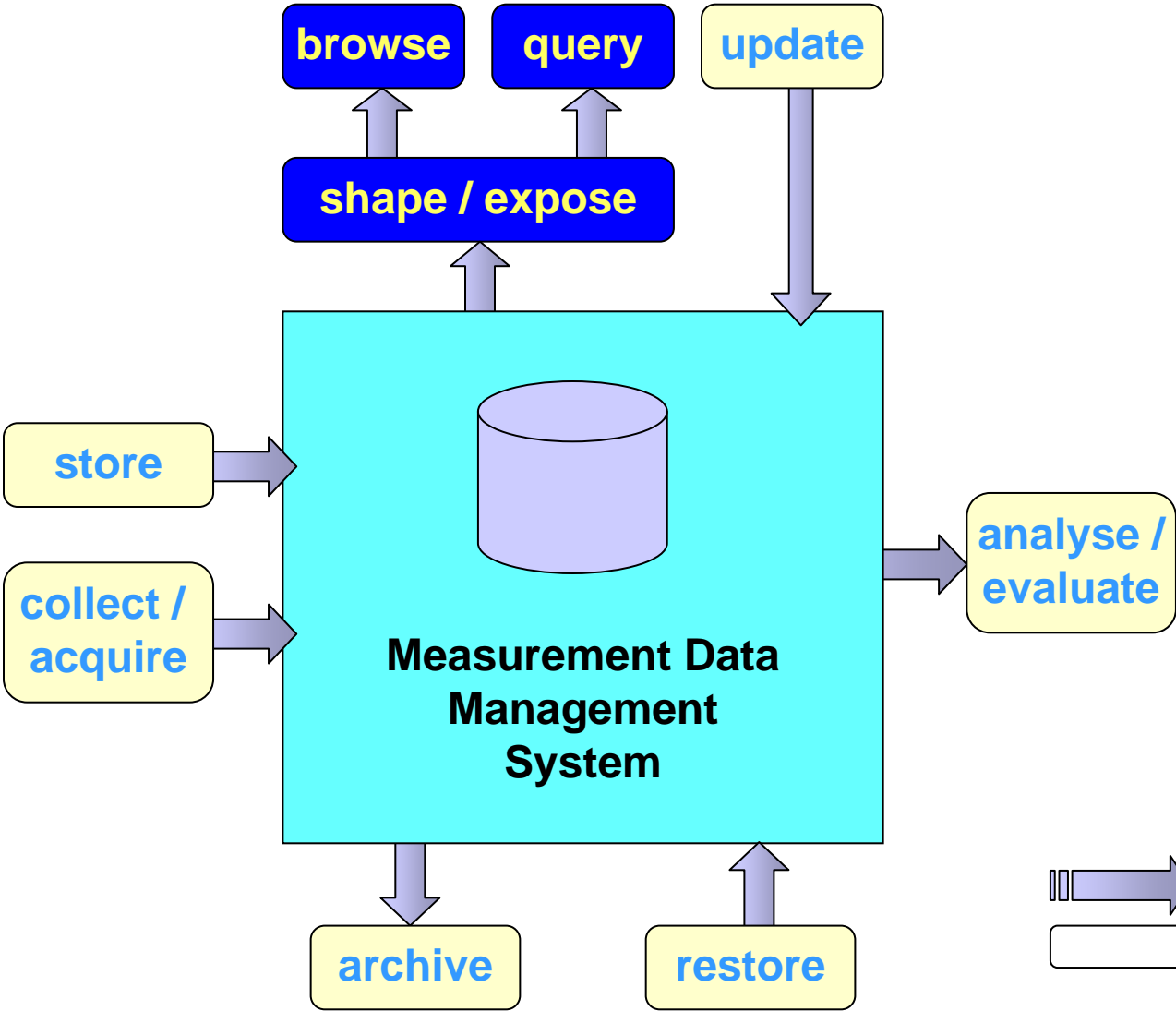
- **NVH Data**
- **Powertrain Data**
- **Vehicle Dynamics Data**
- **Vehicle Information**
- **Test Equipment Data**

each piece of data stored in its domain dedicated data silo...



...and joined laboriously
to a significant set of information
and measurement data

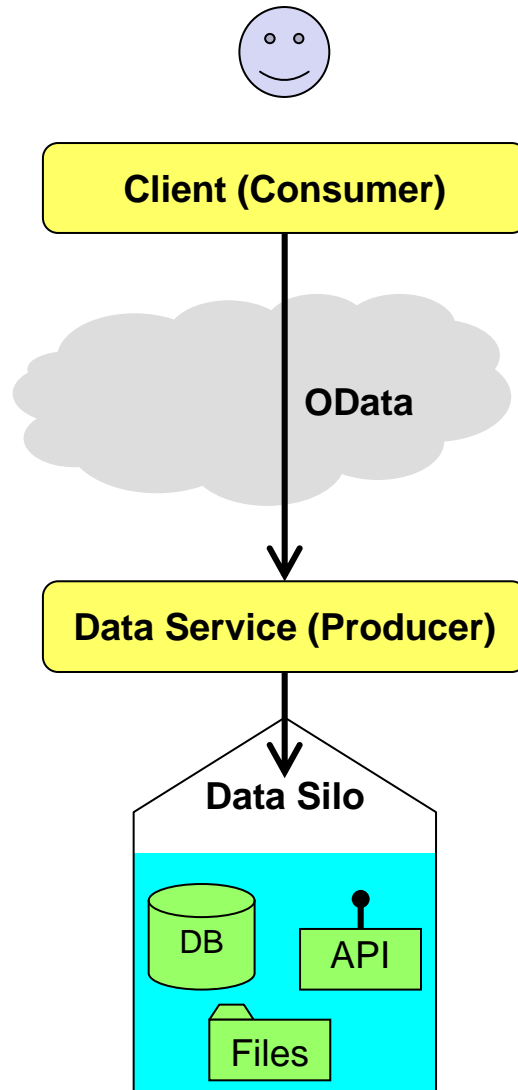
Measurement Data Management



Integration Requirements

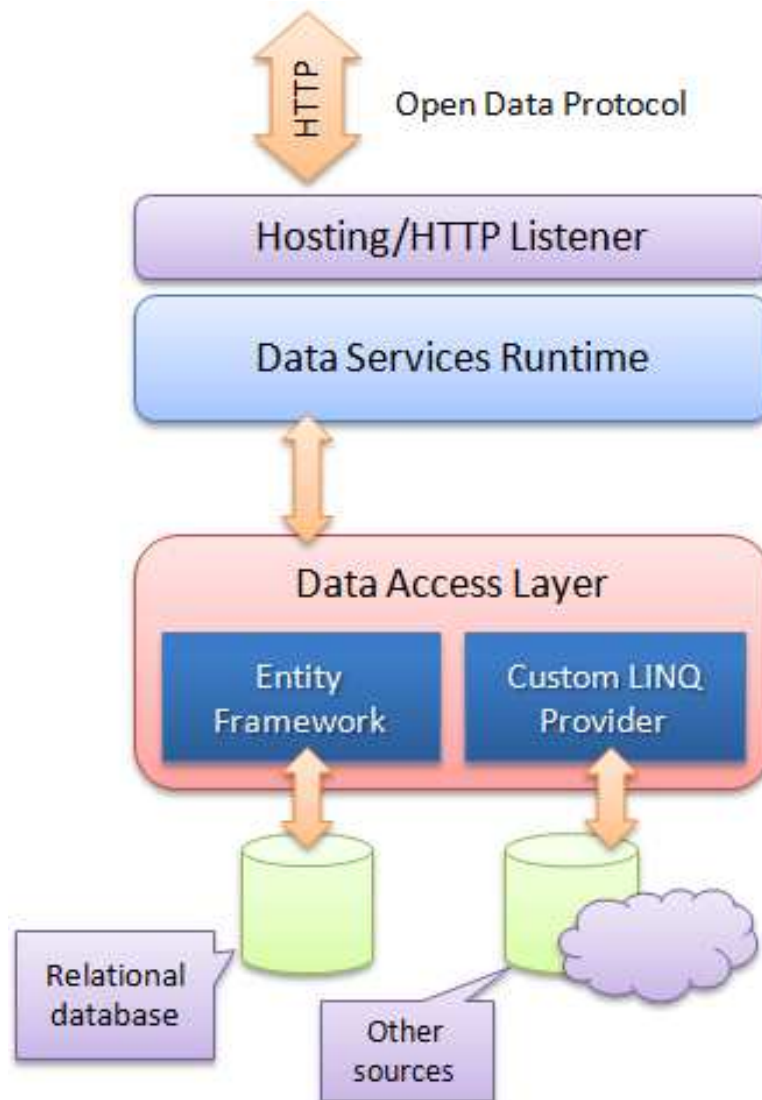
- enable joined queries over heterogeneous data sources (e.g. relational database and ASAM ODS database)
- integrate file based data stores
- browse, filter and query data in a common handy user interface
- provide data for evaluation and analysis
- ensure an acceptable performance
- minimize efforts to build new services for a new data silos
- consider security aspects

Open Data Protocol (OData)



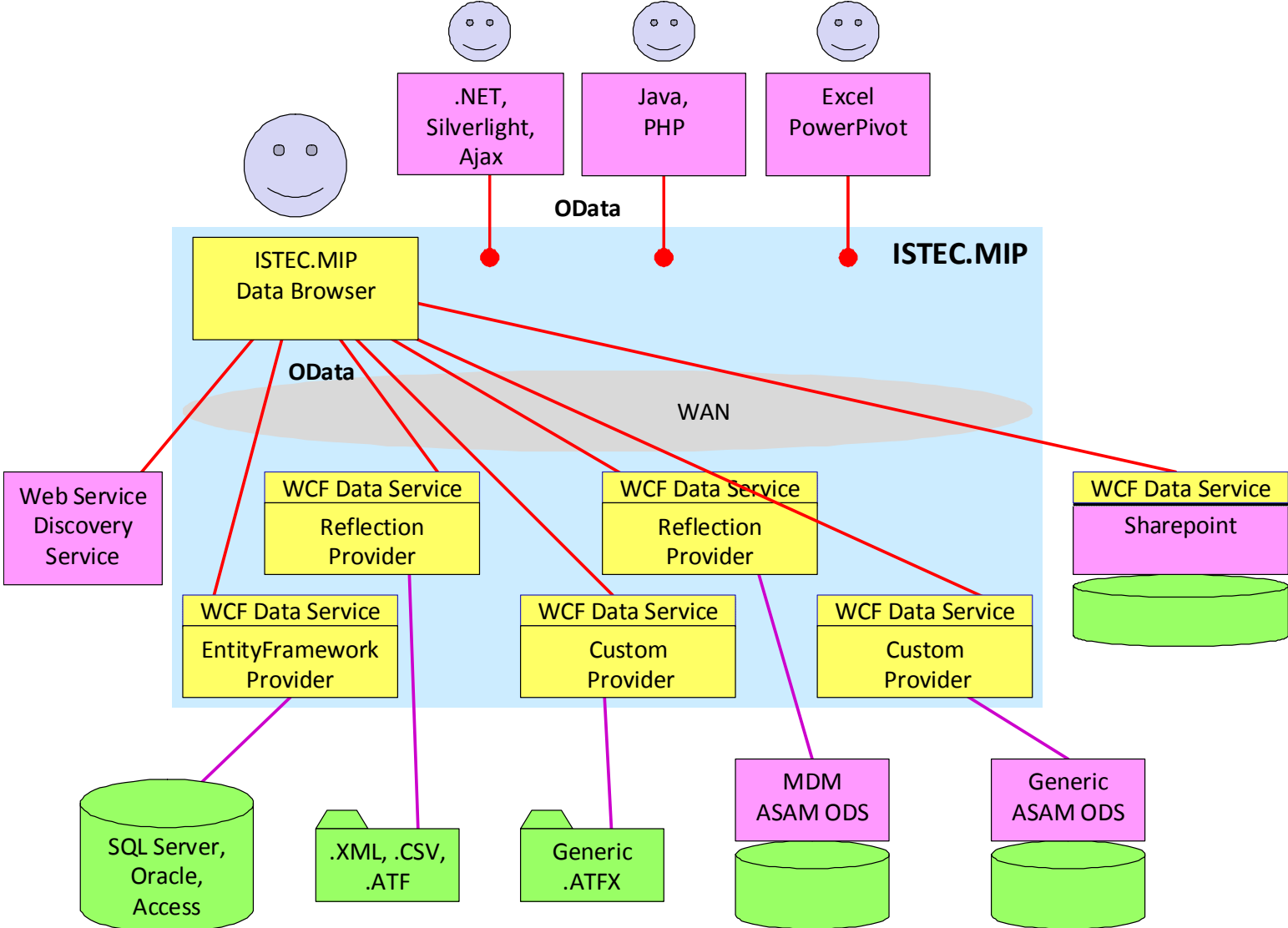
- Open standard for querying and updating data
<http://www.odata.org>
- HTTP centric
- released under the *Microsoft Open Specification Promise*
<http://www.microsoft.com/interop/osp/default.aspx>
- *Producers* expose their data using *OData* protocol (e.g. *Sharepoint 2010*, *IBM WebSphere*)
- *Consumers* consume data exposed using *OData* protocol (e.g. *PowerPivot for Excel2010*, *LINQPad*)

WCF Data Services



- WCF Data Services were previously known as ADO.NET Data Services
- data services framework enables easy creation of services for flexible querying, paging and association traversal
- client libraries exist for .NET, Silverlight, AJAX, PHP and Java
- Service is addressed by an URI
*http://mipdev-test/DataServices/
FahrzeugDataService/
FahrzeugDataService.svc*

ISTEC.MIP Architecture



Data Service Output Sample in Web Browser

```

http://mipdev-test/DataServices/FahrzeugDataService/FahrzeugDataService.svc/TBLFAHRZEUG - Windows Internet Explorer
http://mipdev-test/DataServices/FahrzeugDataService/FahrzeugDataService.svc/TBLFAHRZEUG
http://mipdev-test/DataServices/Fahrzeu...

<?xml version="1.0" encoding="utf-8" standalone="yes" ?>
- <feed xml:base="http://mipdev-test/DataServices/FahrzeugDataService/FahrzeugDataService.svc/"
  xmlns:d="http://schemas.microsoft.com/ado/2007/08/dataservices"
  xmlns:m="http://schemas.microsoft.com/ado/2007/08/dataservices/metadata"
  xmlns="http://www.w3.org/2005/Atom">
  <title type="text">TBLFAHRZEUG</title>
  <id>http://mipdev-test/DataServices/FahrzeugDataService/FahrzeugDataService.svc/TBLFAHRZEUG</id>
  <updated>2010-06-15T10:27:02Z</updated>
  <link rel="self" title="TBLFAHRZEUG" href="TBLFAHRZEUG" />
- <entry>
  <id>http://mipdev-test/DataServices/FahrzeugDataService/FahrzeugDataService.svc/TBLFAHRZEUG
    (1D)</id>
  <title type="text" />
  <updated>2010-06-15T10:27:02Z</updated>
- <author>
  <name />
</author>
  <link rel="edit" title="TBLFAHRZEUG" href="TBLFAHRZEUG(1D)" />
  <link rel="http://schemas.microsoft.com/ado/2007/08/dataservices/related/TBLKOMPONENTEN"
    type="application/atom+xml;type=feed" title="TBLKOMPONENTEN" href="TBLFAHRZEUG
    (1D)/TBLKOMPONENTEN" />
  <category term="FahrzeugModel.TBLFAHRZEUG"
    scheme="http://schemas.microsoft.com/ado/2007/08/dataservices/scheme" />
- <content type="application/xml">
- <m:properties>
  <d:FAHRZEUGID m:type="Edm.Double">1</d:FAHRZEUGID>
  <d:FAHRZEUGIDENTNUMMER>CAR100301001</d:FAHRZEUGIDENTNUMMER>
  <d:KENNZEICHEN>KA-IS1001</d:KENNZEICHEN>
  <d:AUFBAUART>Kombi</d:AUFBAUART>
  <d:BAUREIHE>H1</d:BAUREIHE>
  </m:properties>
</content>
</entry>
  
```

ISTEC.MIP Browser

MIP Browser

File Vorlage Help
Vorlage laden...
Vorlage speichern...

Add Data Source

Data Service Database File

http://ods/Akustik.svc

Filter

	(... Field		Value)...
AND	((CompanyNa	LIKE *istec*	
OR		Orders.Date	< 10.12.1999)
		ZipCode	= 0815)

Add Source...

Northwind (DB)

- Customers
- CustomerId
- CompanyName
- Address
- << Orders
- OrderID
- OrderDate
- >> Demographics

Employees

Akustik (ODS)

P2 Test (ATFx)

- Engine
- Measurements

Customers...

CustomerID	CompanyName	Orders...	
		OrderID	OrderDate
10056	ISTEC GmbH	10056	10.12.2009
		11111	13.08.2008
		45305	13.08.2008
11111	Daimler AG	2342	10.12.2009
		45647	10.12.2009

9342 Items 1 of 240

Join

Parent	Child
OrderItems	Measurements
ProductID	PartNo

OrderItems

ProductID	ProductName	Quantity
0815	Piston	122
0816	Clutch	2
3133	Camshaft	222
2344	Hammer	33

9342 Items 1 of 240

Measurements (PartNo=0815)

Channel	Value	Comment
\$Complete	234234	
\$id	24323	
\$Descriptor	56456	
B_vs	5464	
CO	464	
COL2	564	

Hierarchical Grid

Summary

1. Measurement data silos exist side by side in various forms
2. Integrating heterogeneous data sources requires a common protocol
3. OData and WCF Data Services are powerful approaches to fulfil these requirements
4. ISTE.C.MIP implements server and client side components for measurement data integration

Questions

automotive
testing expo 2010
europe

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Über
25 Jahre
Kompetenz und Kommunikation