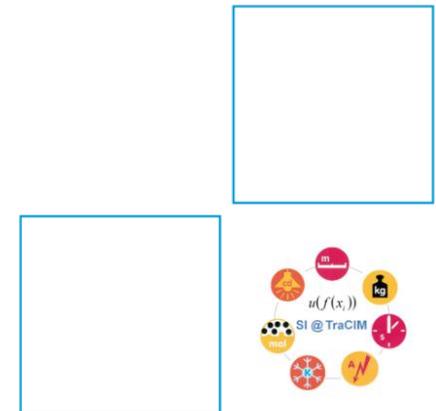
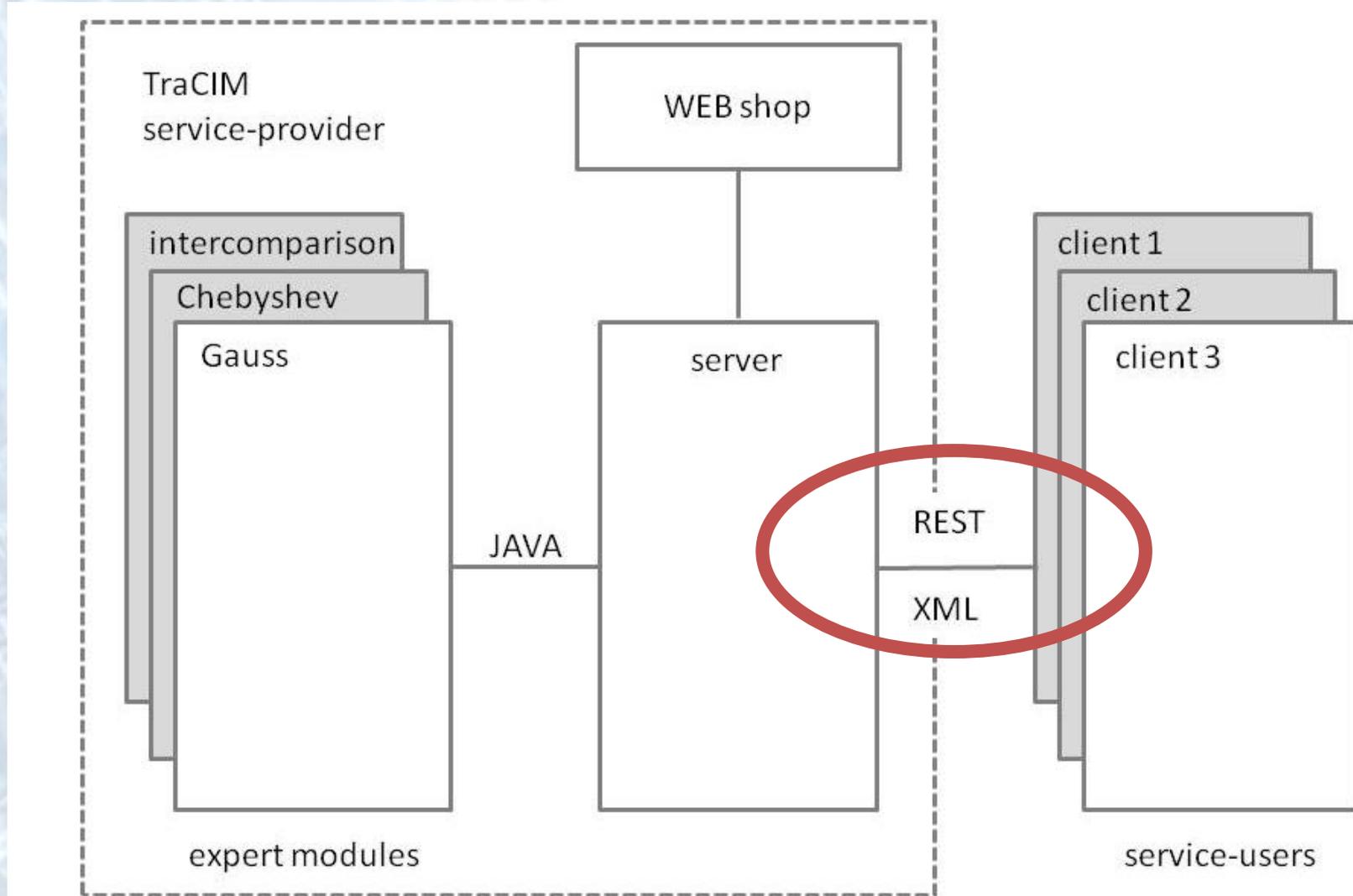


# TraCIM client design and data exchange format (XML)



- General concept of client server communication
- Xml format for data exchange
- Example client for PTB Gauss test



- *REpresentational State Transfer* - an architectural style which can be applied to Web service APIs
- Usually implemented based on http/https
- Defined by the following aspect:
  - base URI, such as  
`https://tracim.ptb.de/tracim/api/order/XXXXX/test`
  - Internet media type for the data. In our case XML but can be any other valid Internet media type (e.g. JSON, images, etc.)
  - standard HTTP methods (e.g., GET, PUT, POST, or DELETE)

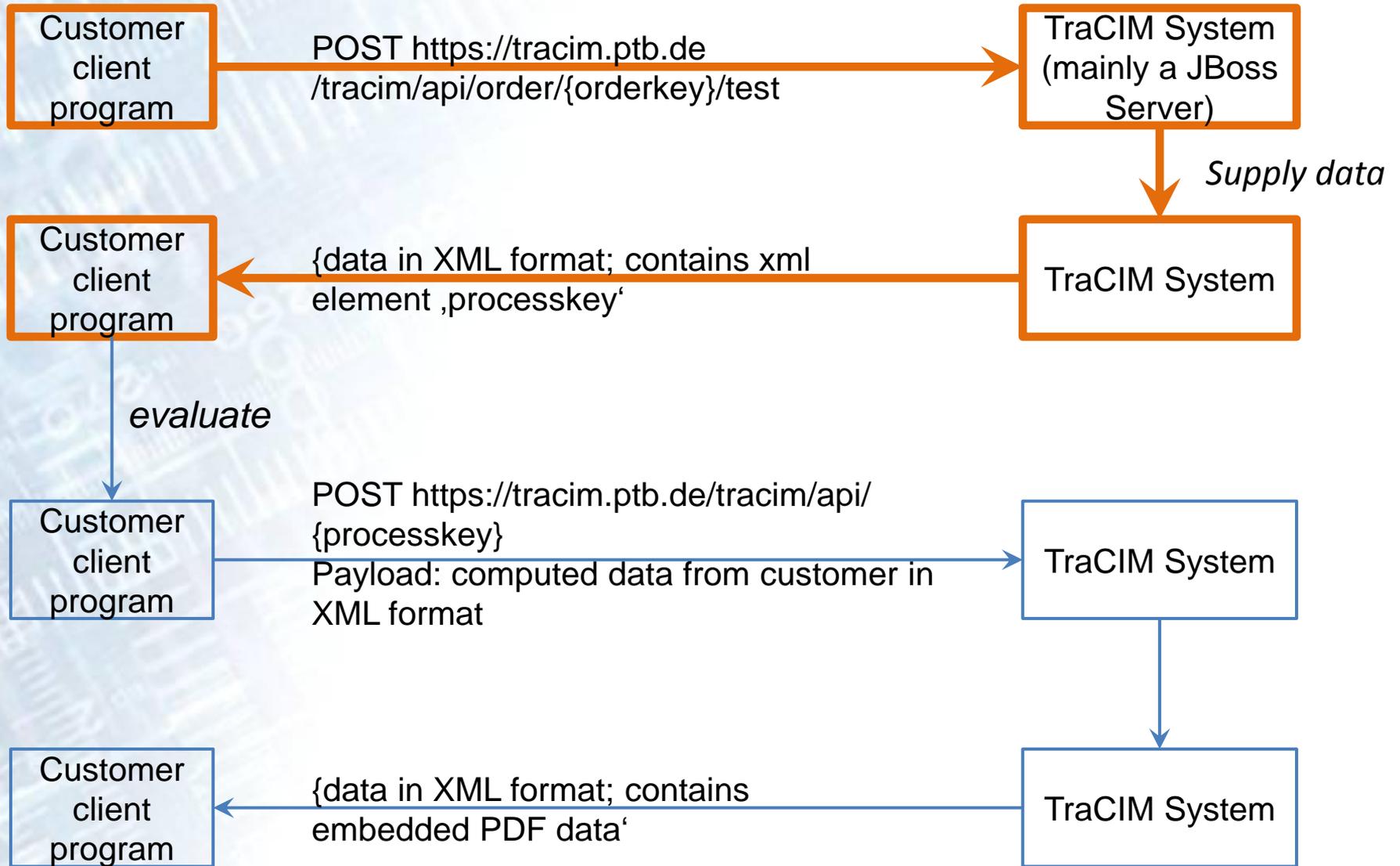
## • Example

Request	POST https://tracim.ptb.de/tracim/api/order/ORDER_E6C53D/test
Response (Header)	<p>Status Code: 200 OK          Connection: Keep-Alive          Content-Location: https://tracim.ptb.de/tracim/api/test/821CD5D7          Content-Type: application/xml          Date: Thu, 20 Nov 2014 21:58:29 GMT          Keep-Alive: timeout=15, max=100          Server: Apache/2.2.12 (Linux/SUSE)          Transfer-Encoding: chunked</p>
Response (Body)	<pre> &lt;tracim:order&gt;   &lt;tracim:key&gt;ORDER_E6C53D&lt;/tracim:key&gt;   &lt;tracim:creationDate&gt;2014-11-17T00:00:00.000+01:00&lt;/tracim:creationDate&gt;   &lt;tracim:expirationDate&gt;2014-11-17T00:00:00.000+01:00&lt;/tracim:expirationDate&gt; &lt;/tracim:order&gt; &lt;tracim:process&gt;   &lt;tracim:key&gt;821CD5D7&lt;/tracim:key&gt; &lt;/tracim:process&gt; &lt;tracim:test xsi:type="gauss:gaussTestPackage"&gt;   &lt;gauss:package&gt;     &lt;gauss:testElement&gt;       &lt;gauss:basicID&gt;b01&lt;/gauss:basicID&gt;       &lt;gauss:computationObject&gt;LINE_3D&lt;/gauss:computationObject&gt;       &lt;gauss:pointCloud&gt; </pre>

TraCIM Message

## The TraCIM server API

- URL of the TraCIM service
  - *<https://tracim.ptb.de/tracim/api>*
- Request testdata
  - *POST*  
*<https://tracim.ptb.de/tracim/api/order/{key}/test>*
- Send results to validate
  - *POST <https://tracim.ptb.de/tracim/api/test/{key}>*



## TraCIM message

Order

Process

Test

Validation

Error

- Key (identifies type of test and customer)
- creationDate
- expirationDate

## TraCIM message

Order

Process

Test

Validation

Error

- Key (identifies the individual test dataset)

## TraCIM message

Order

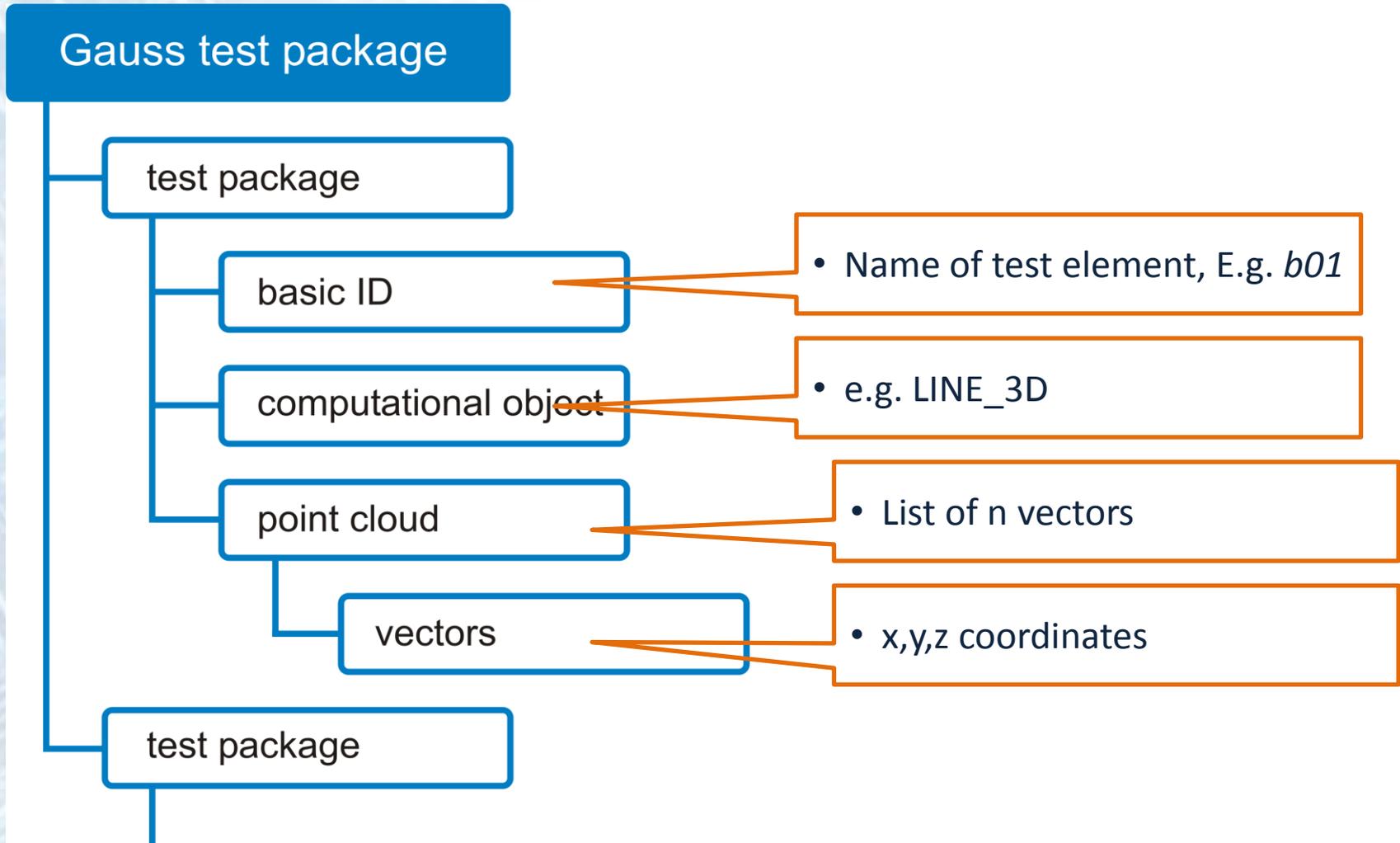
Process

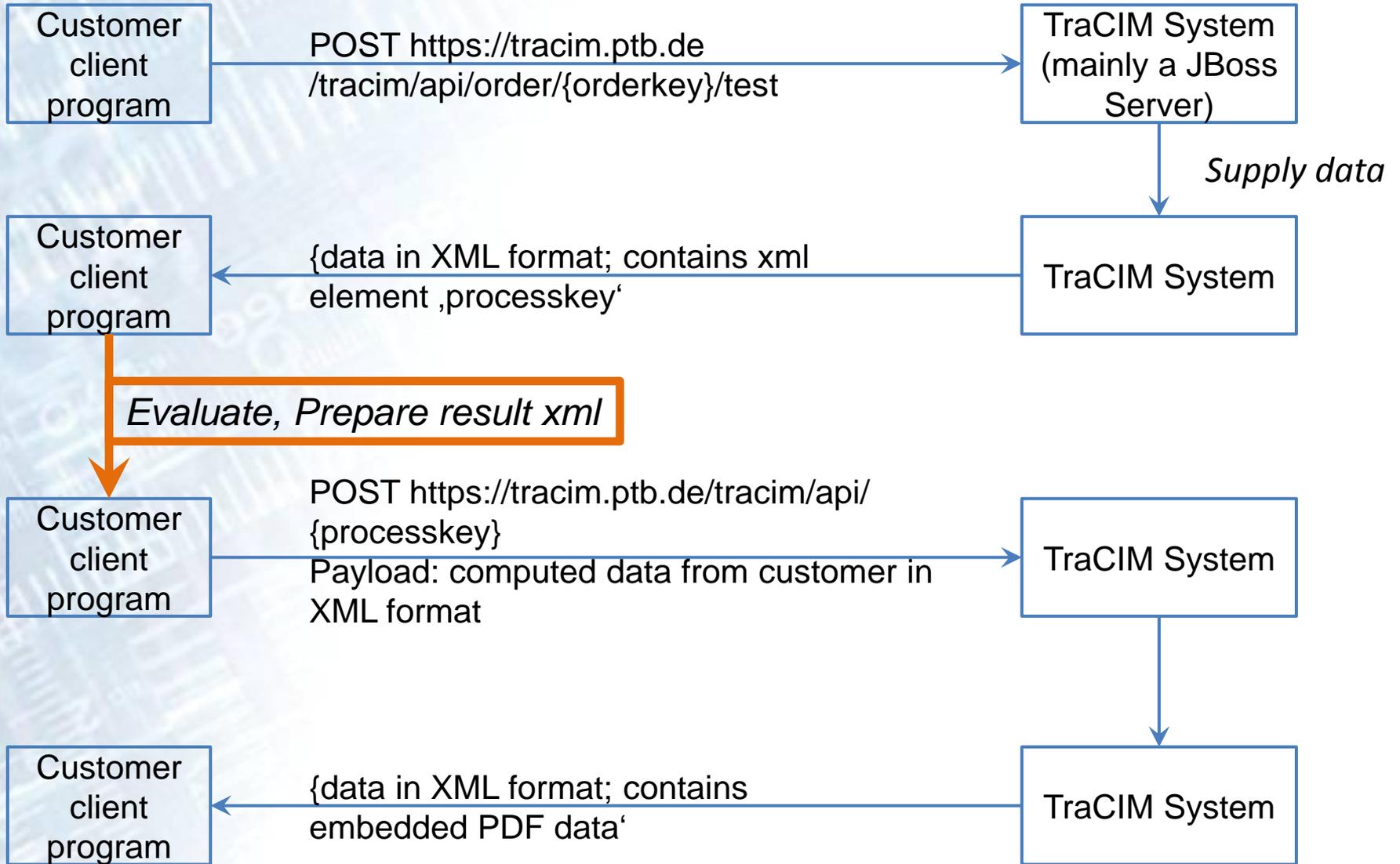
Test

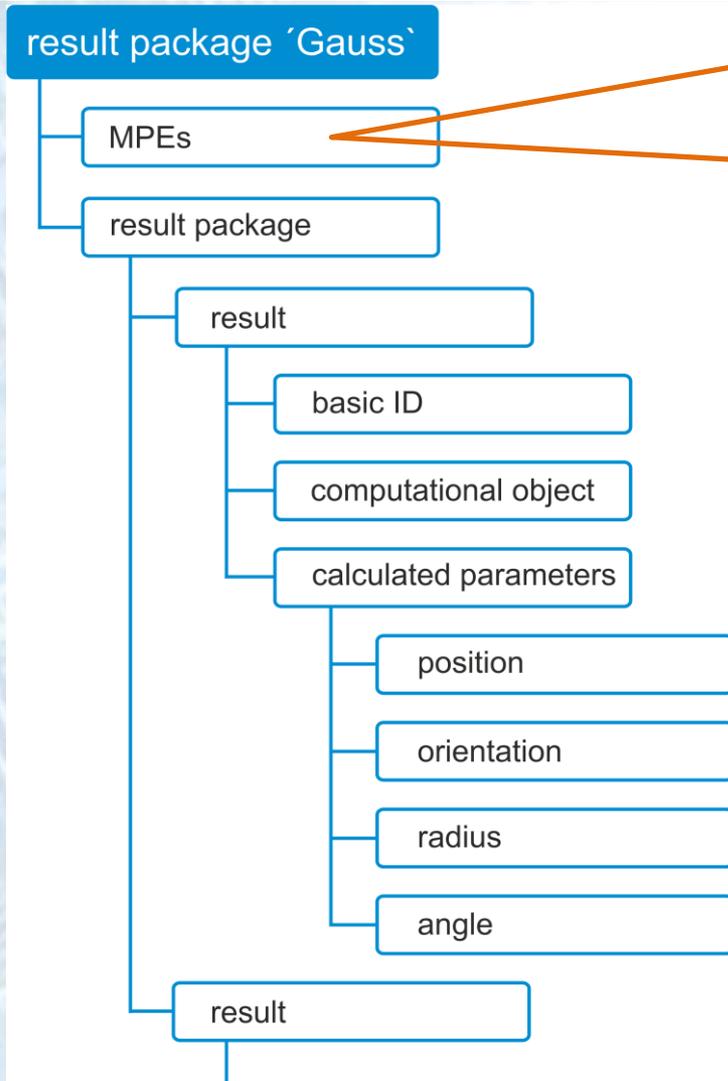
Validation

Error

- GaussTest Package <1..44>  
(the test dataset itself)

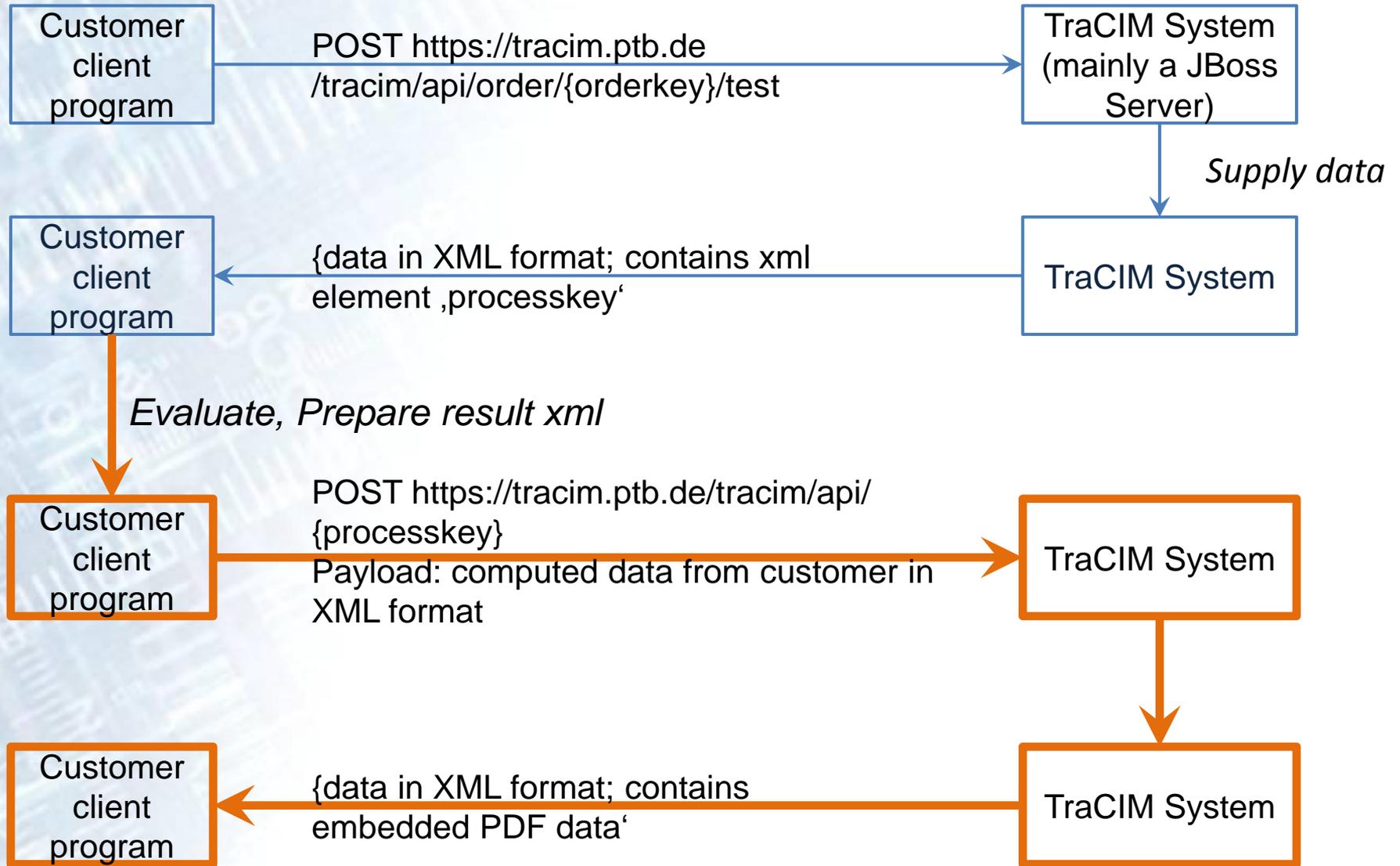






Maximum permissible errors for the software under test

- mpe size
- mpe angle
- mpe position
- mpe orientation



## TraCIM message

Order

Process

Test

Validation

Error

- Passed
- Report
- ReportPDF (Base64 encoded)

- code
- description

- XML schemas can be downloaded from:  
<https://tracim.ptb.de/tracim/schema/tracim.xsd>  
[https://tracim.ptb.de/tracim/schema/PTB\\_MATH\\_GAUSS\\_v0.1\\_BETA\\_test.xsd](https://tracim.ptb.de/tracim/schema/PTB_MATH_GAUSS_v0.1_BETA_test.xsd)  
[https://tracim.ptb.de/tracim/schema/PTB\\_MATH\\_GAUSS\\_v0.1\\_BETA\\_result.xsd](https://tracim.ptb.de/tracim/schema/PTB_MATH_GAUSS_v0.1_BETA_result.xsd)
- *The schema file can be use to validate the created/recieved XML files or to build classes (Java, C#, C++, VB,.. ) which can be serialized to XML*

- Example client (C#)
  1. Download:  
[ftp://ftp.ptb.de/incoming/franke05/setup\\_TraCIM\\_PT\\_B\\_Gauss\\_Example.exe](ftp://ftp.ptb.de/incoming/franke05/setup_TraCIM_PT_B_Gauss_Example.exe)
  2. Run the installer [setup\\_TraCIM\\_PT\\_B\\_Gauss\\_Example.exe](#) (no administrator privileges are required)
  3. Start the application
  4. Open the VisualStudio solution *TraCIM\_PT\_B\_CMM\_Gauss\_CSharpExample.sln* and examine the example code

TraCIM Example software under test (PTB MATH GAUSS) - □ ×

**Test related**

TraCIM

Order ID

Process ID

Server request and response will be shown here ...

**Software related**

Customer

Software

Software version

Software revision

Software vendor

**MPE**

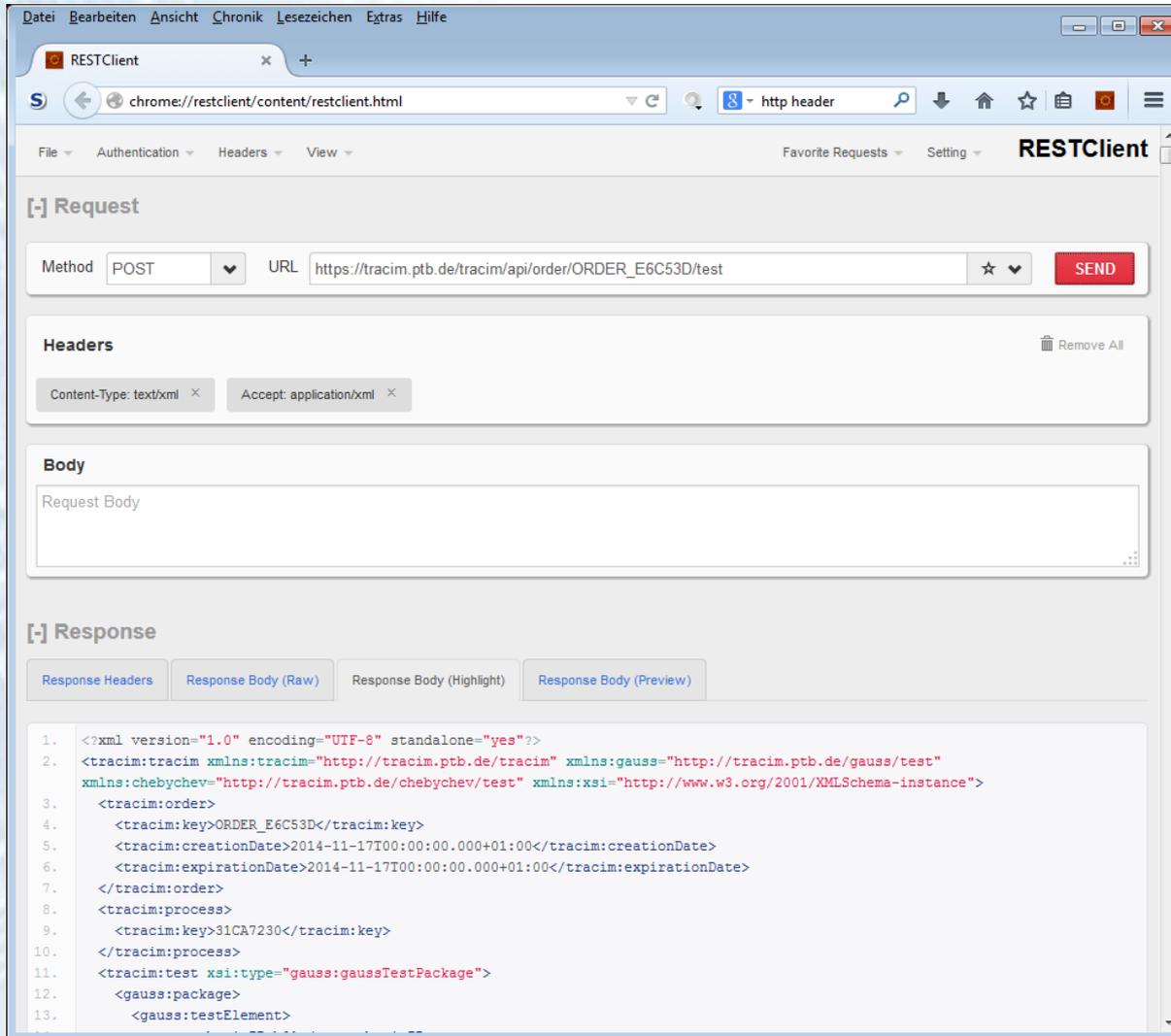
Position   $\mu\text{m}$

Orientation   $\mu\text{rad}$

Size   $\mu\text{m}$

Angle   $\mu\text{rad}$

To get your individual order key for example data  
please contact: [info.tracim@ptb.de](mailto:info.tracim@ptb.de)



The screenshot shows the RESTClient interface in a Chrome browser. The URL bar shows `chrome://restclient/content/restclient.html`. The main interface is titled "RESTClient" and has a menu with "File", "Authentication", "Headers", and "View".

**Request Section:**

- Method: `POST`
- URL: `https://tracim.ptb.de/tracim/api/order/ORDER_E6C53D/test`
- Buttons: `SEND`

**Headers Section:**

- Content-Type: `text/xml`
- Accept: `application/xml`
- Remove All button

**Body Section:**

Request Body

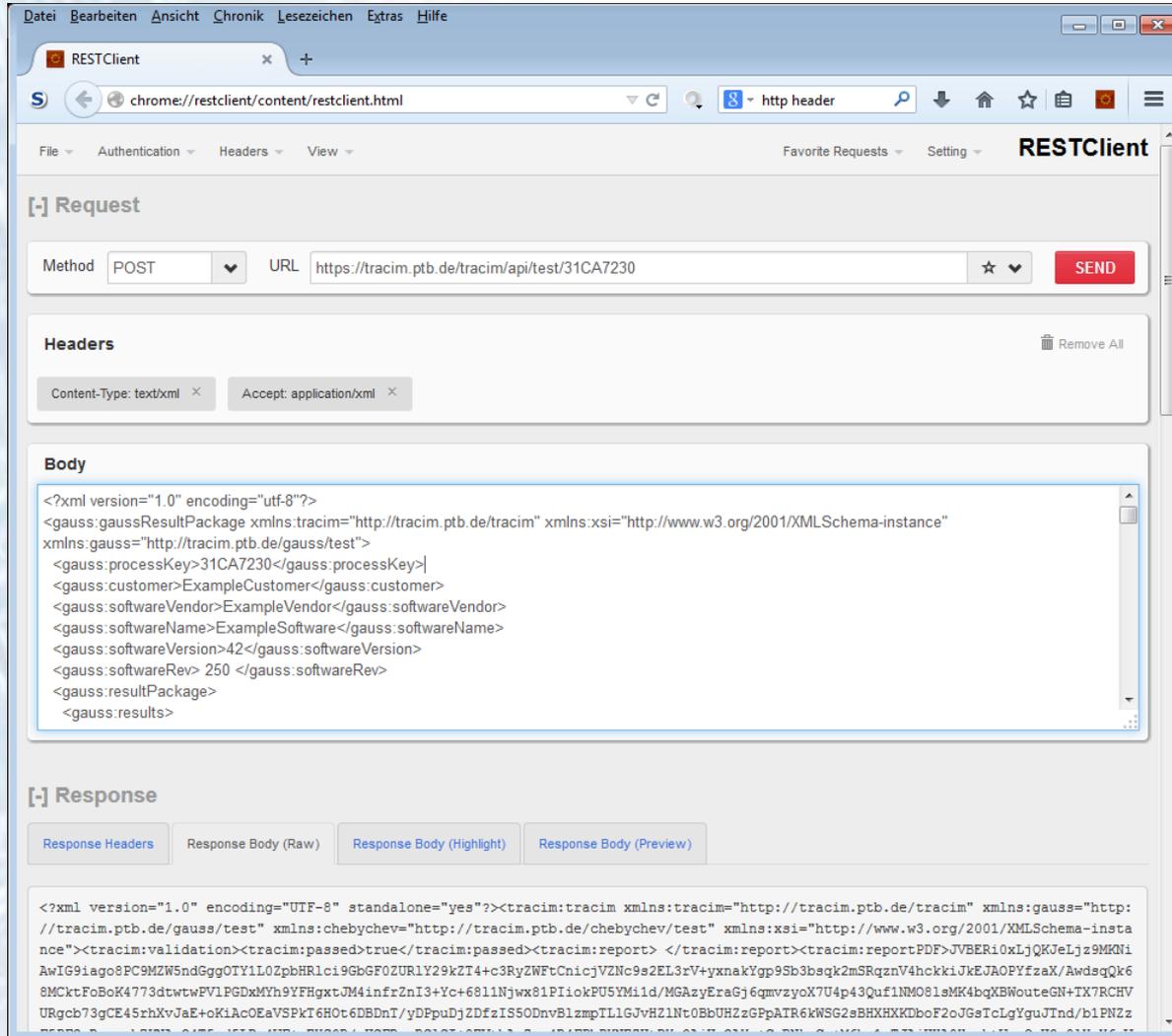
**Response Section:**

Response Headers | Response Body (Raw) | Response Body (Highlight) | Response Body (Preview)

```

1. <?xml version="1.0" encoding="UTF-8" standalone="yes"?>
2. <tracim:tracim xmlns:tracim="http://tracim.ptb.de/tracim" xmlns:gauss="http://tracim.ptb.de/gauss/test"
   xmlns:chebychev="http://tracim.ptb.de/chebychev/test" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
3.   <tracim:order>
4.     <tracim:key>ORDER_E6C53D</tracim:key>
5.     <tracim:creationDate>2014-11-17T00:00:00.000+01:00</tracim:creationDate>
6.     <tracim:expirationDate>2014-11-17T00:00:00.000+01:00</tracim:expirationDate>
7.   </tracim:order>
8.   <tracim:process>
9.     <tracim:key>31CA7230</tracim:key>
10.  </tracim:process>
11.  <tracim:test xsi:type="gauss:gaussTestPackage">
12.    <gauss:package>
13.      <gauss:testElement>

```



The screenshot shows the RESTClient interface with the following details:

- Request:** Method: POST, URL: `https://tracim.ptb.de/tracim/api/test/31CA7230`
- Headers:** Content-Type: text/xml, Accept: application/xml
- Request Body (XML):**

```
<?xml version="1.0" encoding="utf-8"?>
<gauss:gaussResultPackage xmlns:tracim="http://tracim.ptb.de/tracim" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
xmlns:gauss="http://tracim.ptb.de/gauss/test">
  <gauss:processKey>31CA7230</gauss:processKey>
  <gauss:customer>ExampleCustomer</gauss:customer>
  <gauss:softwareVendor>ExampleVendor</gauss:softwareVendor>
  <gauss:softwareName>ExampleSoftware</gauss:softwareName>
  <gauss:softwareVersion>42</gauss:softwareVersion>
  <gauss:softwareRev> 250 </gauss:softwareRev>
  <gauss:resultPackage>
    <gauss:results>
```
- Response:** The response body (raw) is shown as:

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"><tracim:tracim xmlns:tracim="http://tracim.ptb.de/tracim" xmlns:gauss="http://tracim.ptb.de/gauss/test" xmlns:chebychev="http://tracim.ptb.de/chebychev/test" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"><tracim:validation><tracim:passed>true</tracim:passed><tracim:report> </tracim:report><tracim:reportPDF>JVBER10xLjQKJeLjz9MKN1AwIG91ago8PC9MZW5ndGggOTY1L0ZpbHRlcj9GbGF0ZUR1Y29kZTI4+c3RyZWFrCnicjVZNc9s2EL3rV+yxnakYgp95b3bsqk2mSRqznV4hckkiJkEJAOPYfzaK/AwdsqQk68MCktFoBoK4773dctwPv1PGDxMYh9YFHgxtJM4infrZnI3+Yc+6811Njwx81PIokPU5Ym1d/MGAzyEraGj6qmvzyoX7U4p43Quf1NM081sMK4bqXBWouteGN+TX7RCHVURgcb73gCE45rhXvJaE+oKiAcOEaVSPkT6H0t6DBDnT/yDpPuDjZDfzISS0DnvBlzmpTL1GJvH21Nt0BbUHzzGpATR6kWSG2sBHXHKDbF2oJGsTcLgYguJTnd/b1PNZz
```

Thank you for your attention!



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Stand: 11/14