

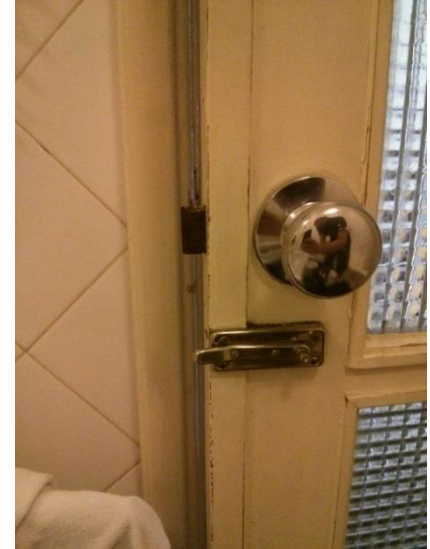
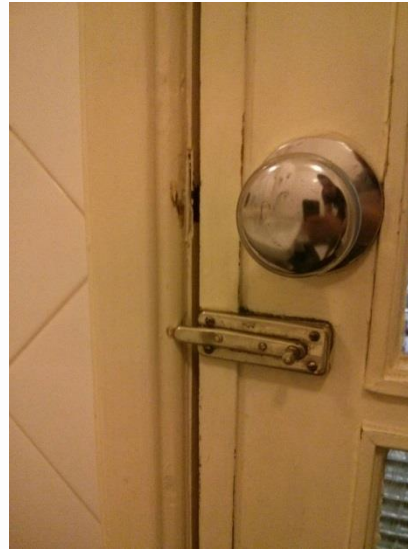
Defining and Managing Tests

**IHE GAZELLE**

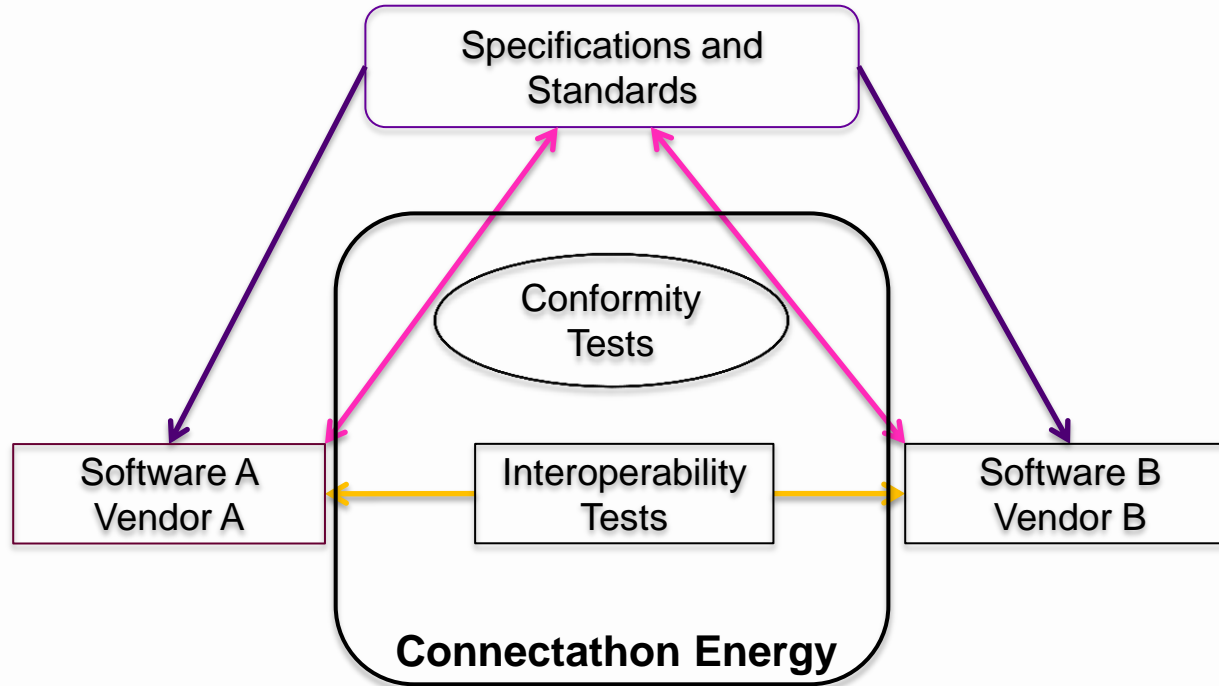
**Matthias Frohner – UASTW**

# Software Tests and Validation

Even with a set of available functional and non-functional requirements the resulting implementation might have flaws...

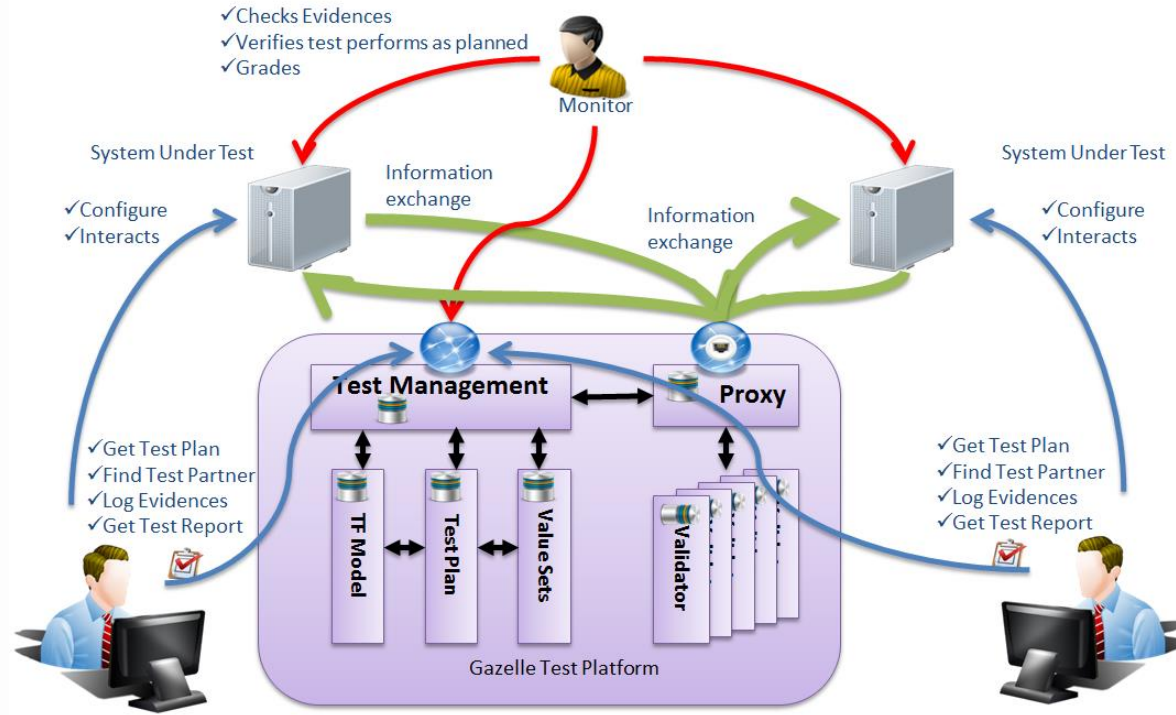


# IHE Gazelle Test Framework



# IHE Gazelle Test Framework

**IES** Integrating  
the  
Energy System



# IES Test Management in IHE Gazelle

**IES** Integrating  
the  
Energy System

## Test Case Definition

Step Index	Initiator Role	Responder Role	Transaction	Secured	Message Type	Option	Description
10	TPKInitiator_FSCH	TPKTResponder_FSCH	SPS-01	<input type="checkbox"/>	SPS-01_SchdIntv_Units	Required	Send Unit from Schedule Interval
Input and Output Contextual Information (0 - 0)							
15	TPKInitiator_FSCH	TPKTResponder_FSCH	SPS-01	<input type="checkbox"/>	SPS-01_ValASG_Unit	Required	Write the physical unit of the ValASG message SHALL be sent multiple times
Input and Output Contextual Information (0 - 0)							
20	TPKInitiator_FSCH	TPKTResponder_FSCH	SPS-01	<input type="checkbox"/>	SPS-01_NumEntr_SetVal	Required	Communicate the number of values (p
Input and Output Contextual Information (0 - 0)							
30	TPKInitiator_FSCH	TPKTResponder_FSCH	SPS-01	<input type="checkbox"/>	SPS-01_SchdIntv_SetVal	Required	Information about the schedule interval
Input and Output Contextual Information (0 - 0)							
40	TPKInitiator_FSCH	TPKTResponder_FSCH	SPS-01	<input type="checkbox"/>	SPS-01_ValASG_SetMag_multipleTimes	Required	Based on the number communicated in NumEntr, SetMag SHALL be sent multiple times. SetMag SHALL be a FLOAT32
Input and Output Contextual Information (0 - 0)							
50	TPKInitiator_FSCH	TPKTResponder_FSCH	SPS-01	<input type="checkbox"/>	SPS-01_StrTm_SetCal	Required	Set start time of the schedule
Input and Output Contextual Information (0 - 0)							
60	TPKInitiator_FSCH	TPKTResponder_FSCH	SPS-01	<input type="checkbox"/>	SPS-01_IntvPer_SetVal	Required	SetVal for the period interval. 0 means no repetition of the schedule. SHALL be 0
Input and Output Contextual Information (0 - 0)							
70	TPKInitiator_FSCH	TPKTResponder_FSCH	SPS-01	<input type="checkbox"/>	SPS-01_SchdReuse_setVal	Required	Defines whether the schedule is reusable. setVal SHALL be 0
Input and Output Contextual Information (0 - 0)							
80	TPKInitiator_FSCH	TPKTResponder_FSCH	SPS-01	<input type="checkbox"/>	SPS-01_ValReq	Required	Sending the Validate Request (Oper. type "Oper_Boolean", with cVal = true, origin or Cal = XX, origin orient = "testname", cNum = 0, T = currentTime, Test = false, Check = XX

Technical Framework  
Virtual Power Plant

Vol. 1

Version 00.10

Technical Framework  
Virtual Power Plant

Vol. 2

Specifications

Validation Tools

Schematron

Schematron - ID 93

Label:

Keyword:

Version:

Author:

Type:

Description:

Path:

XSD Path:

XSD Version:

Object Type:

Need dafodil transformation? ☒

DFOL schema Keyword:

Available: ☒

Need report generation transformation? ☒

```

1 <?xml version="1.0" encoding="UTF-8"?>
2 <schema xmlns="http://purl.oclc.org/dsdl/schematron"
3   queryBinding="xslt2"
4   xmlns:sqf="http://www.schematron-quickfix.com/validator/process">
5
6   <pattern id="test">
7     <!-- Checking all elements called Type -->
8     <rule context="confirmed-RequestPDU/invokeID/type">
9       <!-- Taking their value -->
10      <let name="value" value="number(.)"/>
11      <!-- Is the value integer? -->
12      <assert test="floor(.) = $value">
13        The Type value is not an integer.
14      </assert>
15      <!-- Is the value between 0 to 50 -->
16      <assert test="$value >= 0 and $value <= 50">
17        The Type must be integer between 0 to 50.
18      </assert>
19    </rule>
  
```

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OTHER_TWGMbH_VPPOP	SPS	TPKtInitiator	TPKT_FSCH	T	1/0	33%	0%	50%	0%	Please Se
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### Meta test

14806 14805

14806

14805



```

sequenceDiagram
    participant Client
    participant PS02 as OTHER_TwGmSH_DELIC_03_TPKTaskScheduler
    participant PS02_2 as OTHER_TwGmSH_VFPPOF_TPKTaskScheduler

    Note over Client: Send Unit from Schedule Interval
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, SchedInfo_Units

    Note over Client: Write the physical unit of the VMSSG. Based on the number communicated in NumUnit, the message SMSG will be sent multiple times
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, VMSSG_Unit

    Note over Client: Communicate the number of values (x suffixes in VMSSG) that are included in the schedule
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, NumEntire_SetVal

    Note over Client: Information about the schedule interval
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, SchedInfo_SetVal

    Note over Client: Based on the number communicated in NumEntire_SetVal, the message SMSG will be sent multiple times. Setting SMSG to be FLOUT32
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, VMSSG_SetVal, multipleTimes

    Note over Client: Set start time of the schedule
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, SctTime_SetVal

    Note over Client: SetVal for the period interval. 0 means no repetition of the schedule. SMSG will be 0
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, IntPerd_SetVal

    Note over Client: Defines whether the schedule is recursive. setVal SMSG will be 0
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, SctRecurse_SetVal

    Note over Client: Sending the Validate Request (Oper, type "Oper_Boolean", with cTime = true, originOrca = XX, originOrca = "testname", cTime = 0, T = currentTime, Test = False, Check = XX
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, VdInfo

    Note over Client: Polling the Schedule State till the server responses with SchedStateInd == "validate" (discontinued to poll not more frequently than 1min)
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, PollSchedState

    Note over Client: Sending the Validate Request (Oper, type "Oper_Boolean", with cTime = true, originOrca = XX, originOrca = "testname", cTime = 0, T = currentTime, Test = False, Check = XX
    Client->>PS02: 
    PS02-->>Client: SPS-01, SPS-01, EnInfo
  
```

Address	0	1	2	3	4	5	6	7	8	9	a	b	c	d	e	f
00000000	03	00	00	8a	02	f0	80	01	00	01	00	61	7d	30	7b	02
00000010	01	03	a0	76	a0	74	02	01	3f	a5	6f	a0	2e	30	2c	a0
00000020	2a	a1	28	1a	0d	4f	50	45	4e	4d	55	43	49	45	44	4c
00000030	44	31	1a	17	4d	52	5f	46	53	43	48	31	24	43	4f	24
00000040	56	6c	64	52	65	71	24	4f	70	65	72	a0	3d	a2	3b	83
00000050	01	ff	a2	22	85											
00000060	6f	65	62	6c	40											
00000070	39	65	6e	2e	61											
00000080	60	41	8a	83	01											

```

1  <?xml:namespace?>http://example.com
2  <headerChoice3?><headerChoice?>
3  <CR?>
4  <headerInfo?>4696273830554784788974603996744656735862?
5  <Choice?160?>Choice?
6  <confirmedRequest?>
7  <length?116?>length?
8  <invokeId?>

```

00000080 60 41 8a 83 01  
Message Sent

Transformed Message

```

24 <length>sequenceLength
25 </choice>
26 </choice>
42 </sequence>
43 </sequenceSpecification>
44 </dataOfVariable>
45 </variableAccessSpecification>
46 </listOfVariables>
47 </length>
48 </listOfData>
94 </write>
95 </confirm>
96 </confirm-RequestFDU>

```

Validation result

Information

**Validation Result**

**Validation result**

Information

File Name	71052.jpg
OID	1.3.6.1.4.1.12569.11.1.2.1.10.200
Schematron	MDS_14020E (version N/A)
Schematron Validation ...	<a href="#">PASSING</a>
Validation Date	4/16/10 12:59:00 PM (GMT GMT+0000)
Model Based Validator	N/A (version N/A)
Model Based Validation ...	N/A
Permanent link	<a href="https://husk.technion.ac.il/EVS/ClientDetails/Result.aspx?Type=XML&amp;oid=1.3.6.1.4.1.12569.11.1.2.1.10.200">https://husk.technion.ac.il/EVS/ClientDetails/Result.aspx?Type=XML&amp;oid=1.3.6.1.4.1.12569.11.1.2.1.10.200</a>
Data Visibility	Public

[Validate again](#) [Perform another validation](#)

---

**Validation Results**

Schematron validation

**XML Validation Report** [PASSING](#)

The document you have submitted is supposed to be a wellformed XML document. The validator has checked if it is well-formed, results of this validation are given in this section.

[Click on document to view its content](#)

---

**XSD Validation detailed Result** [PASSING](#)

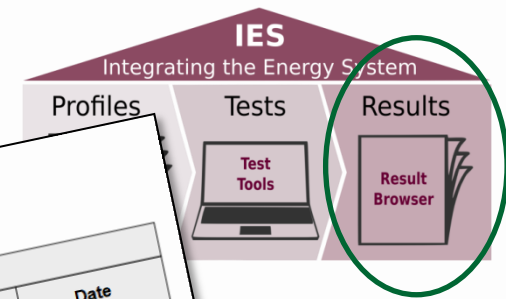
This XML document has been validated with the appropriate XSD schema, here is the detail of the validation outcome.

[Click on document to view its content](#) [Click on document to view its content](#)

# Results

Vendors are entitled to publish the successful testing of profiles in form of an integration statement

**IES** Integrating the Energy System



IHE Integrating the Healthcare Enterprise			
IHE Integration Statement			
Vendor	Product Name	Version	Date
Technikum Wien GmbH	VPPOP	01	9/12/18
This product implements all transactions required in the IHE Technical Framework to support the IHE Integration Profiles, Actors and Options listed below :			
Integration Profile	Actor	Integration Profile Option	
Send DRCT	TPKTIInitiator	DER Controller Characteristics	
Send Measured Values	TPKTIInitiator	Send MMXU	
Send Planned Schedule	TPKTIInitiator	Schedule over MMS	
Send Planned Schedule	TPKTIInitiator	None	



# Test Event for Interoperability 1<sup>st</sup> Connectathon Energy 2018

**IES** | Integrating  
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- Presentation of project activities
- Text experiences in the energy sector



April 2018 The Hague  
in the context of the European  
**IHE-Connectathon 2018**

→ Test of first profiles





# Get in Contact

**IES** | Integrating  
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