Herausforderung Prüfstelle – Pilotprojekte im Praxisbetrieb

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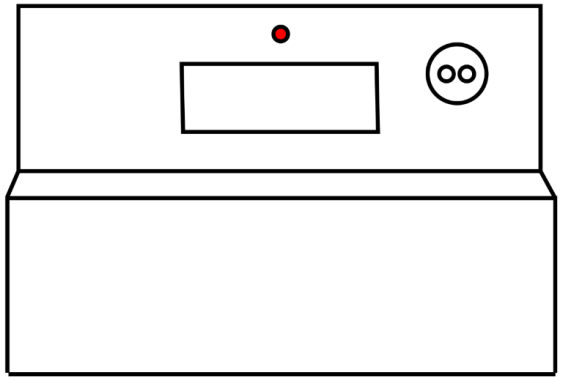
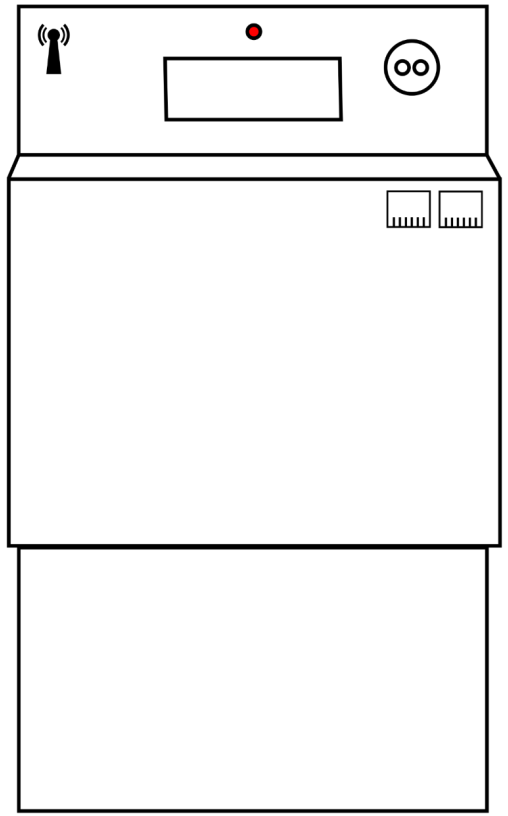
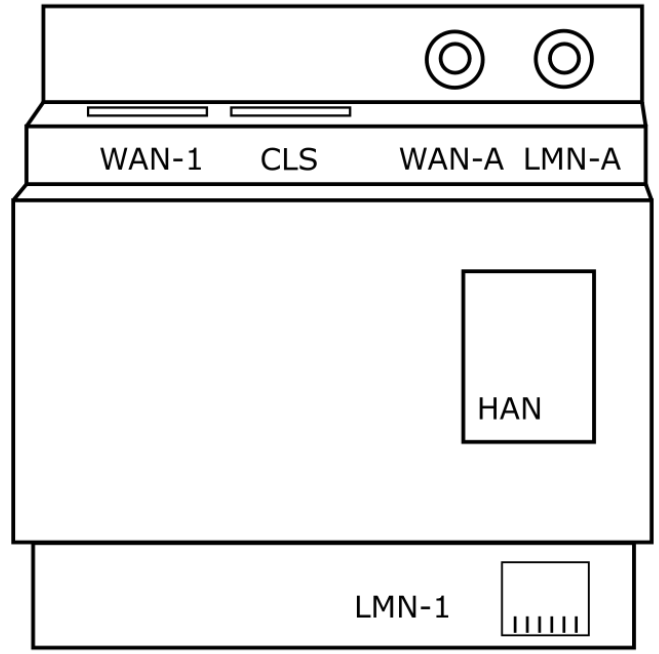
Target of Evaluation



Moderne
Messeinrichtung



FNN Basiszähler



Smart Meter Gateway

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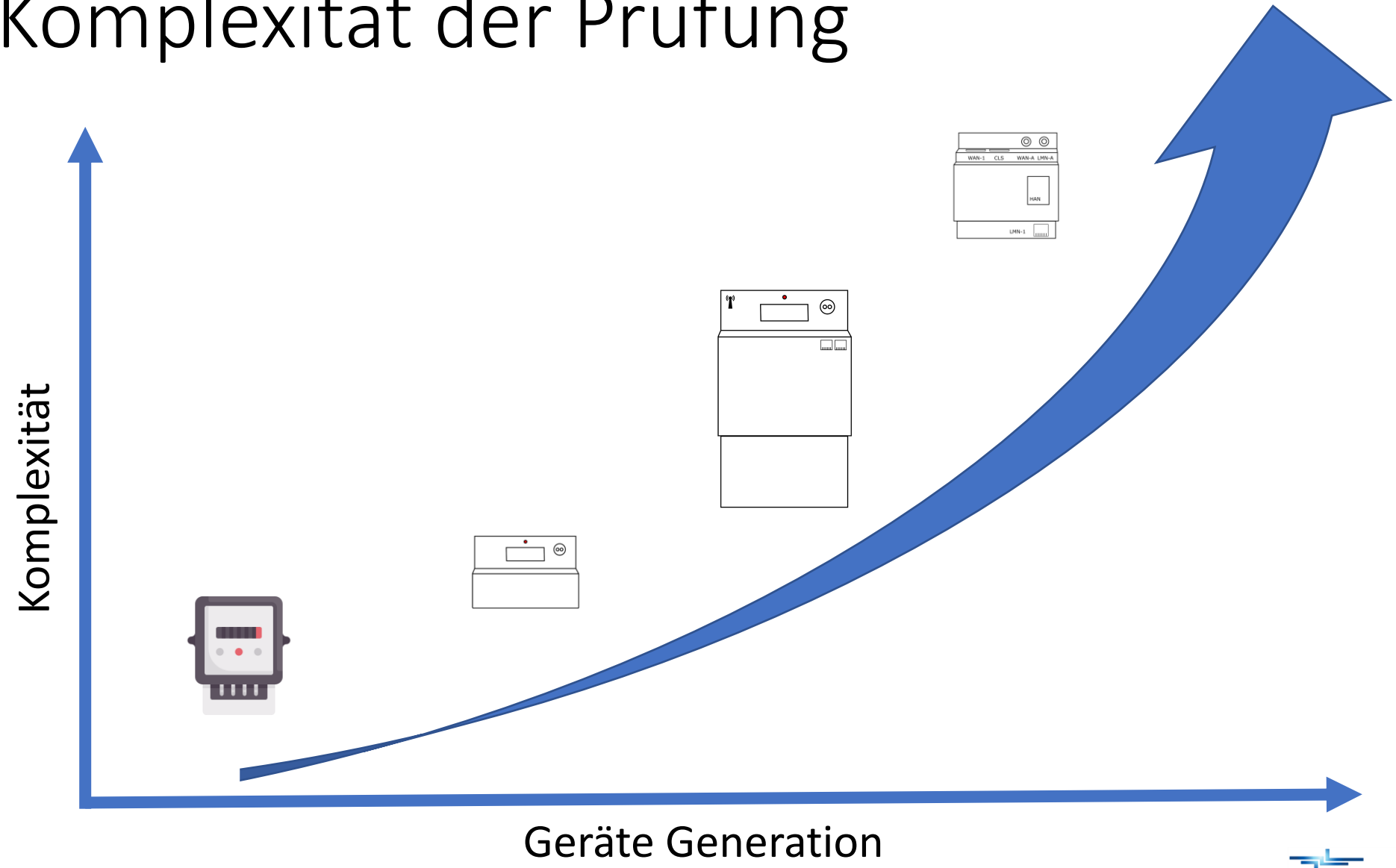
Komplexität der Prüfung



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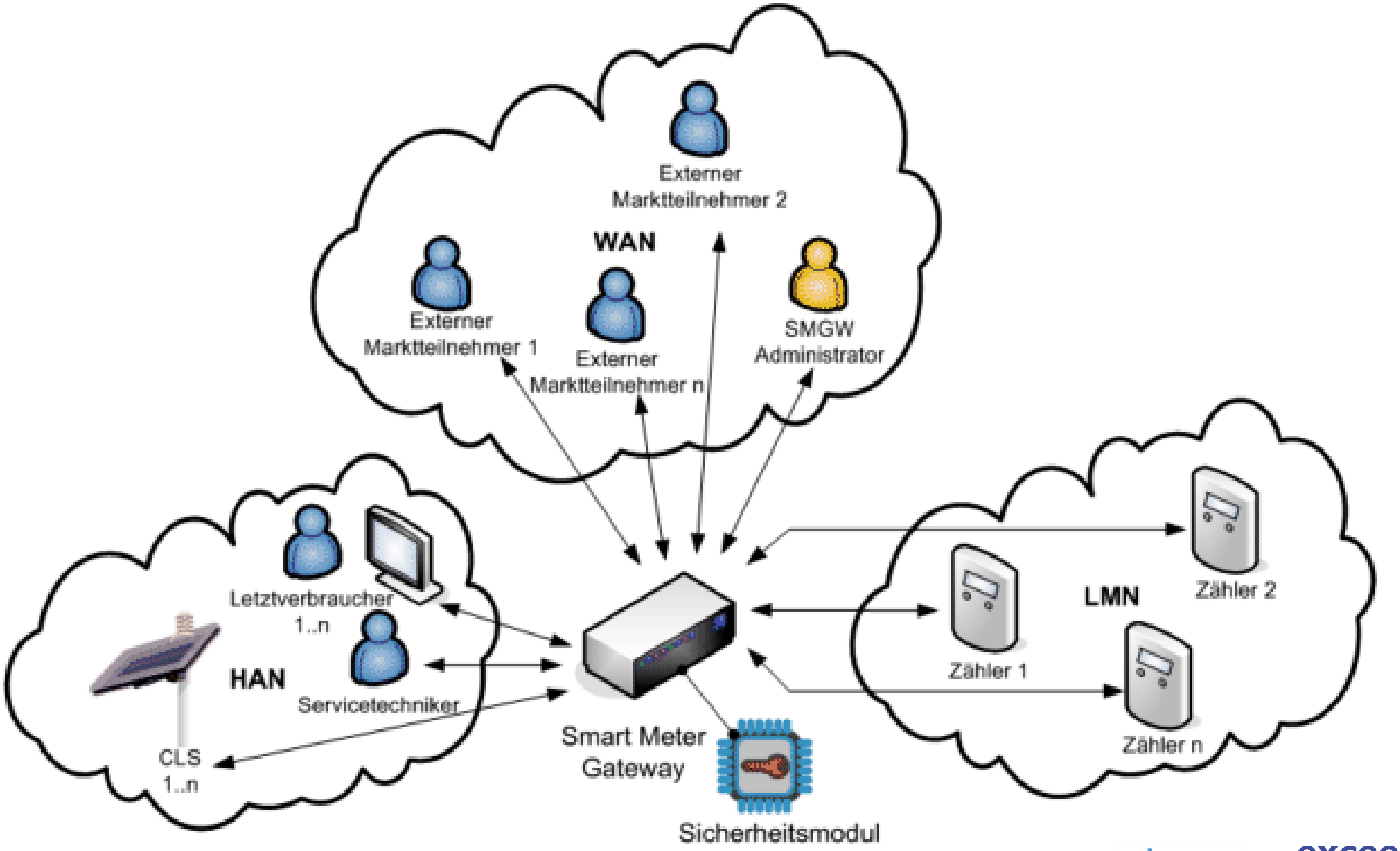

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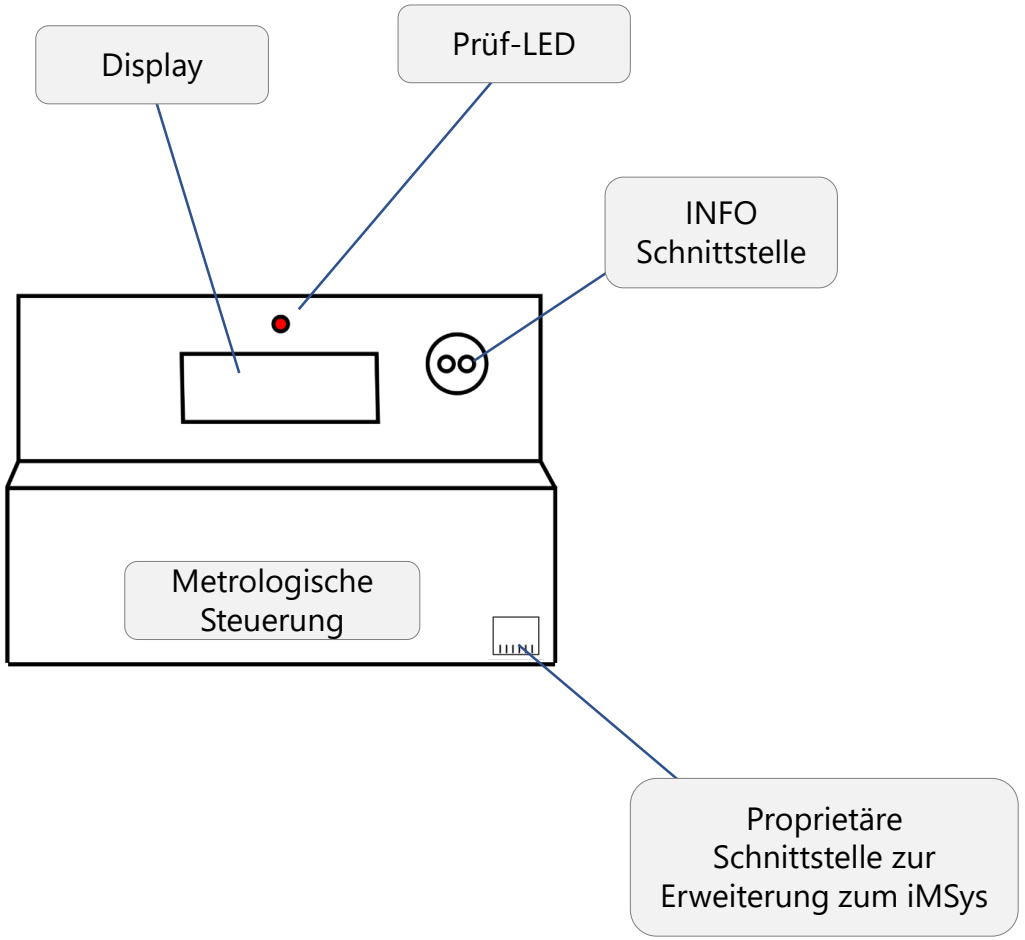
Moderne Messeinrichtung



- Prüfung mit „herkömmlicher“ Prüftechnik möglich
- Prüfung der proprietären Schnittstelle nur eingeschränkt möglich

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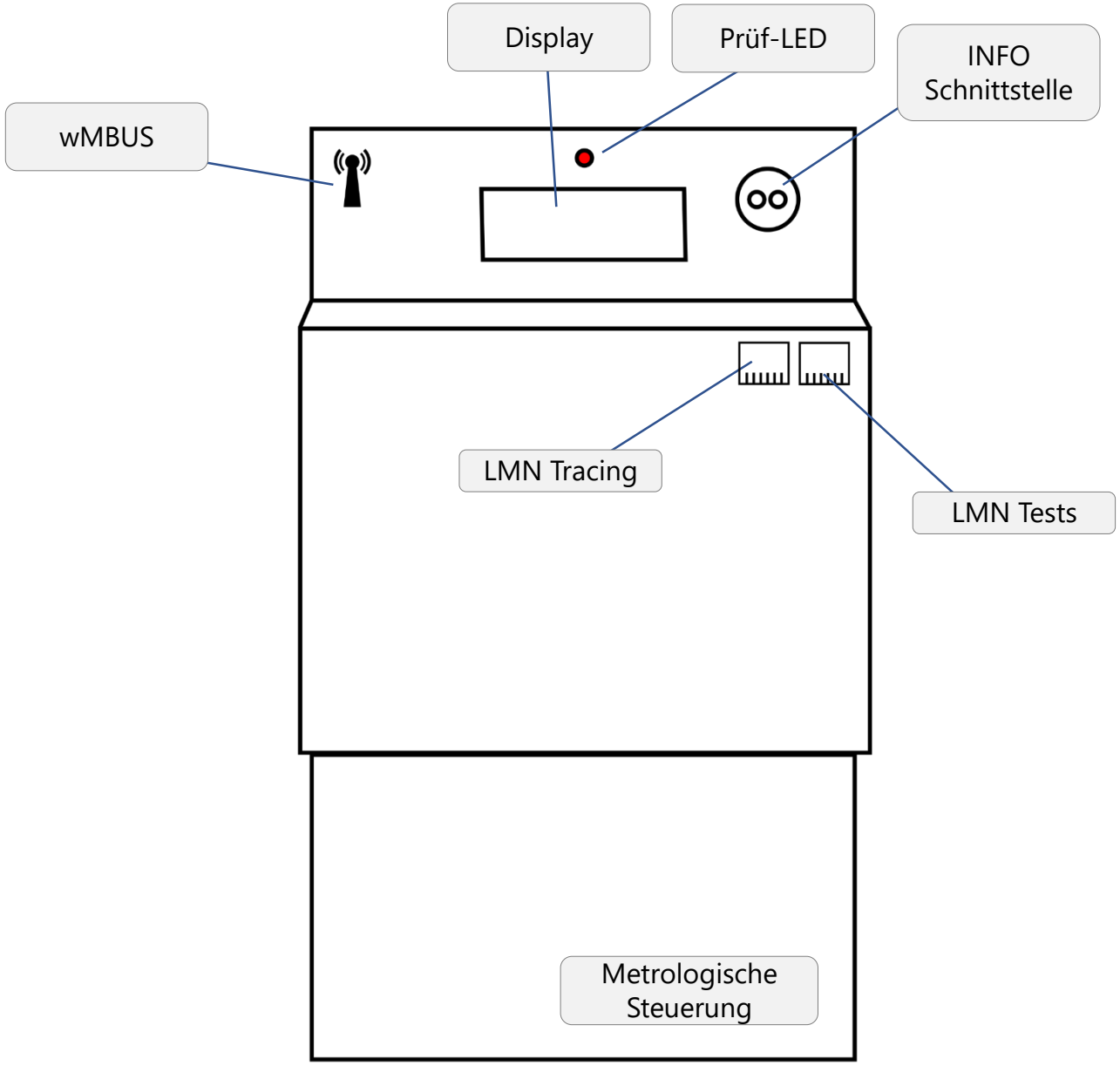
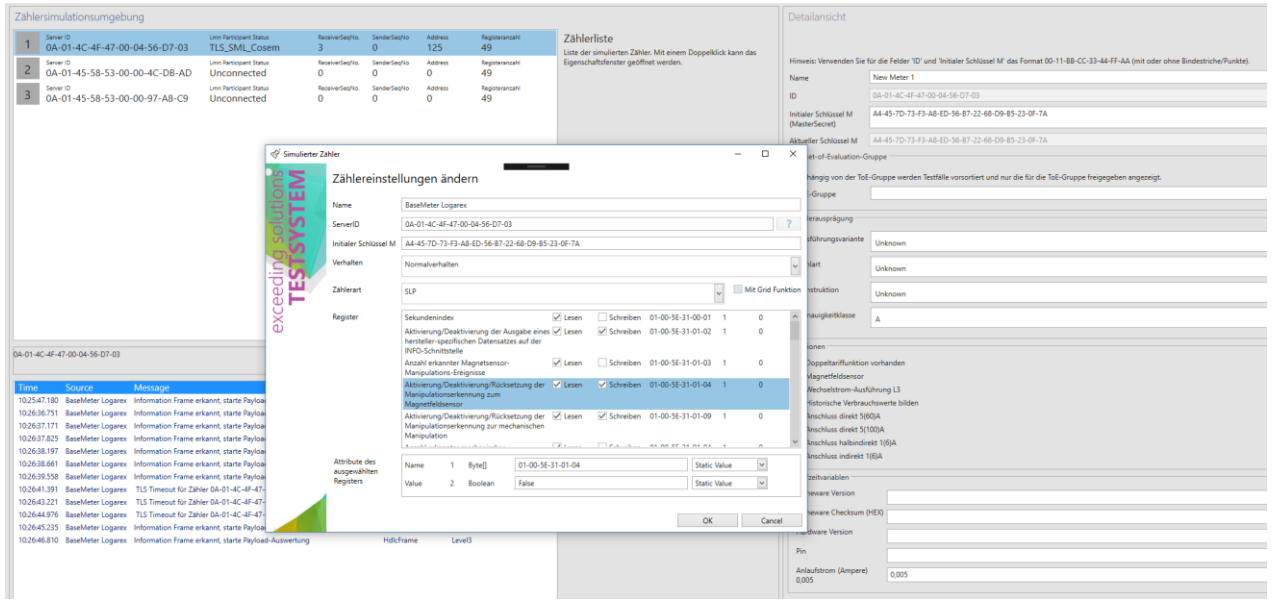
Basiszähler

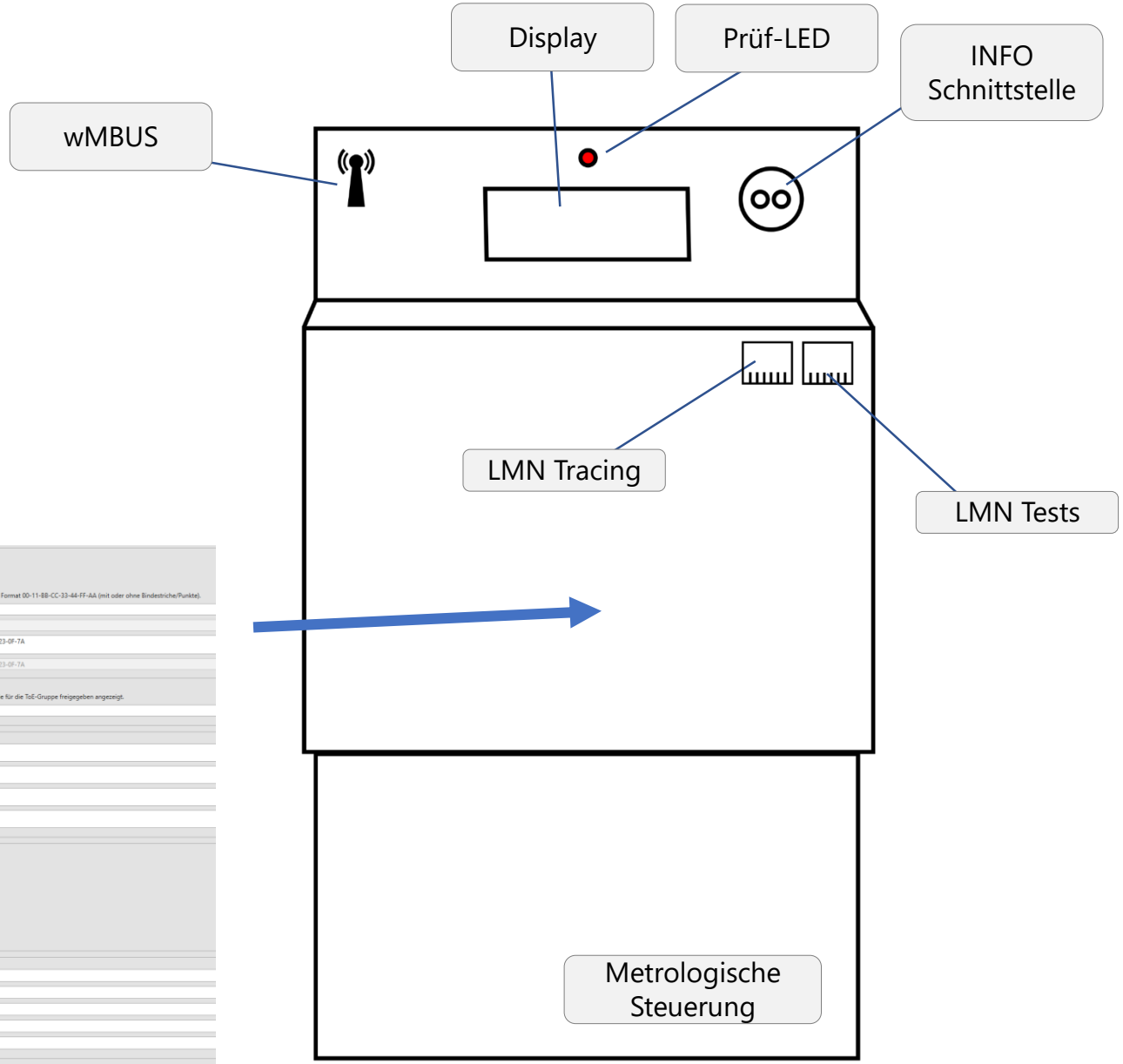
- Prüfung mit „herkömmlicher“ Prüftechnik nur eingeschränkt möglich
- Verwendung von komplexen kryptographisch gesicherten Protokollen an der LMN Schnittstelle
- *Testfallspezifikation Leitungsgebundene LMN-Protokolle*
- *Testfallspezifikation Basiszähler Funktionen*



Basiszähler

- Spezifikation des entsprechenden Zählertyps





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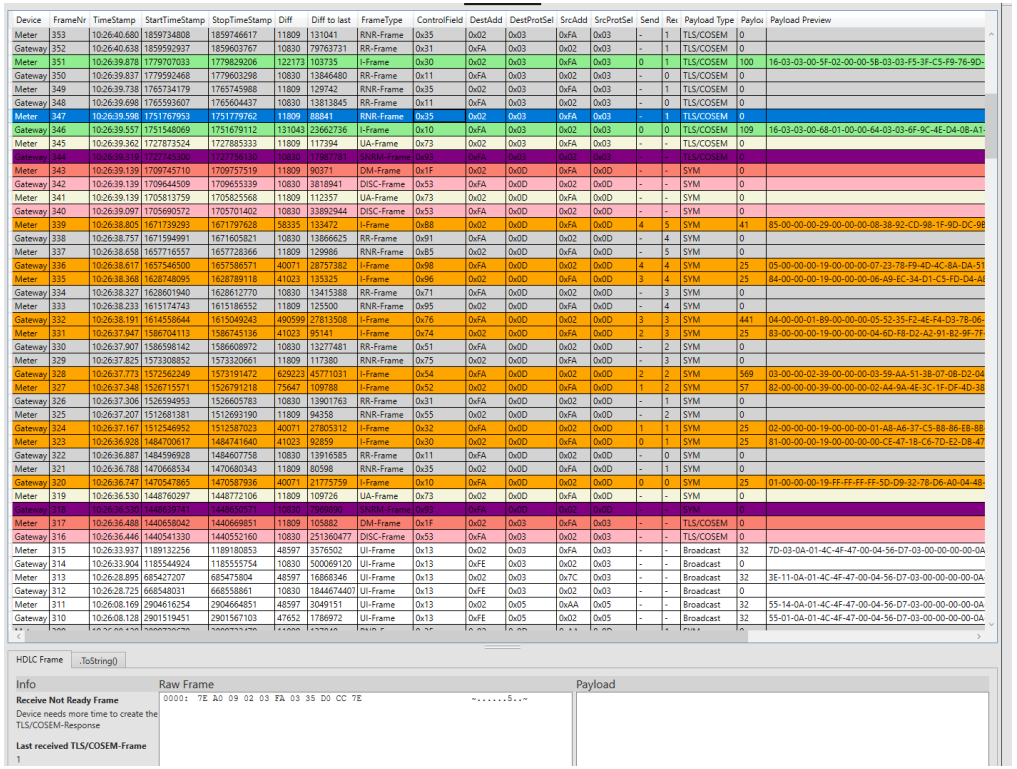
Basiszähler



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Gateway	350	10:26:39.837	1779592468	1779603298	10830	13846480	RR-Frame	0x11	0xFA	0x03	0x02	0x03	-	0	TLS/COSEM	0	
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Meter	347	10:26:39.598	1751767953	1751779762	11809	88841	RNR-Frame	0x35	0x02	0x03	0xFA	0x03	-	1	TLS/COSEM	0	
Gateway	346	10:26:39.557	1751548069	1751679112	131043	23662736	I-Frame	0x10	0xFA	0x03	0x02	0x03	0	0	TLS/COSEM	109	16-03-03-00-68-01-00-00-64-03-03-6F-9C-4E-D4-08-A1-
Meter	345	10:26:39.362	1727873524	1727885333	11809	117394	UA-Frame	0x73	0x02	0x03	0xFA	0x03	-	-	TLS/COSEM	0	
Gateway	344	10:26:39.319	1727743300	1727756130	10830	17987781	SNRM-Frame	0x93	0xFA	0x03	0x02	0x03	-	-	TLS/COSEM	0	
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Gateway	342	10:26:39.139	1709644509	1709655339	10830	3818941	DISC-Frame	0x53	0xFA	0x0D	0x02	0x0D	-	-	SYM	0	
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Meter	339	10:26:38.805	1671739293	1671797628	58335	133472	I-Frame	0x88	0x02	0x0D	0xFA	0x0D	4	5	SYM	41	85-00-00-00-29-00-00-00-08-38-92-CD-98-1F-9D-DC-98
Gateway	338	10:26:38.757	1671594991	1671605821	10830	13866625	RR-Frame	0x91	0xFA	0x0D	0x02	0x0D	-	4	SYM	0	
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HDLC Frame | .ToString()

Info

Receive Not Ready Frame

Device needs more time to create the TLS/COSEM-Response

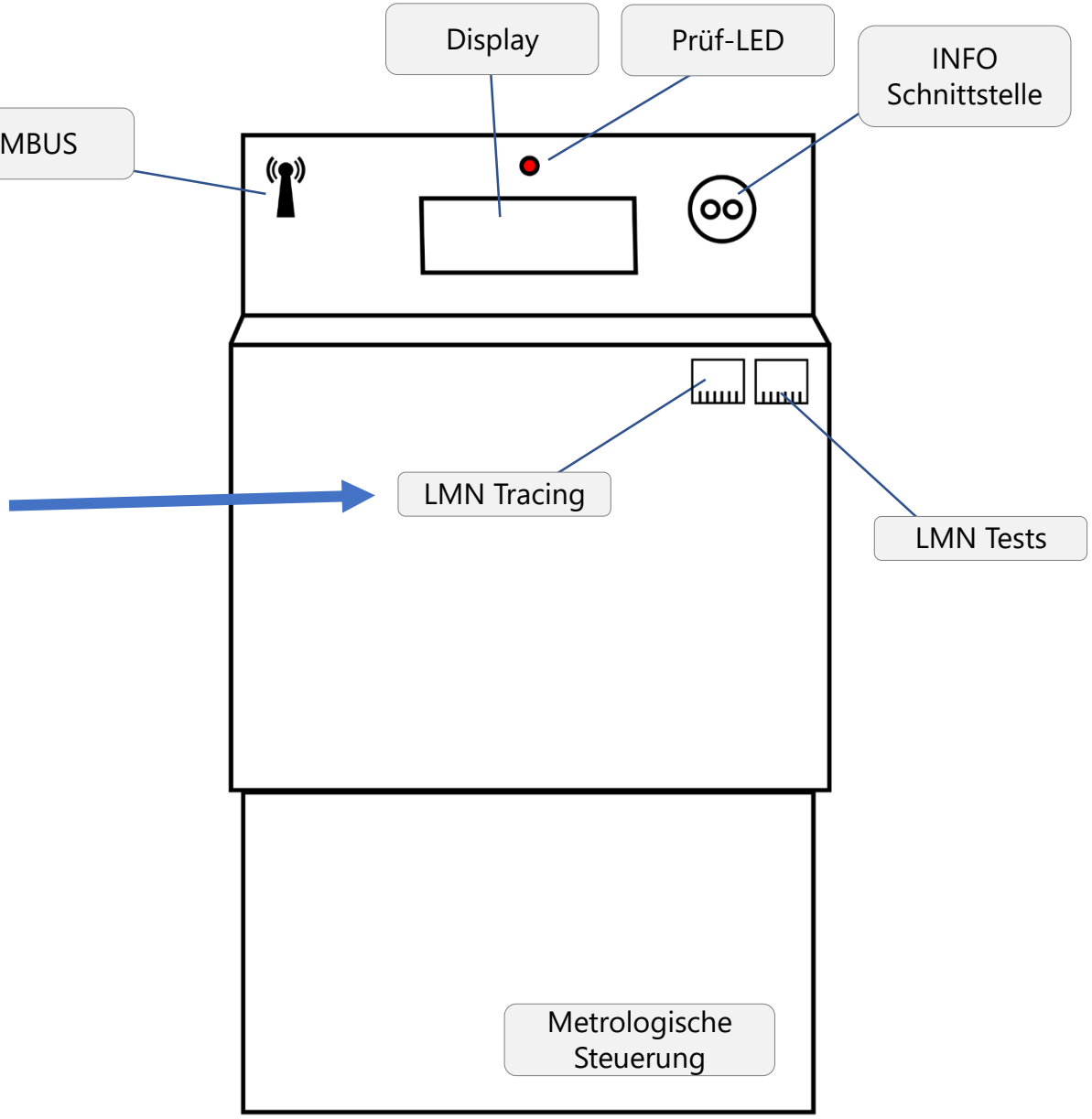
Last received TLS/COSEM-Frame

1

Raw Frame

0000: 7E A0 09 02 03 FA 03 35 D0 CC 7E ~.......5..~

Payload



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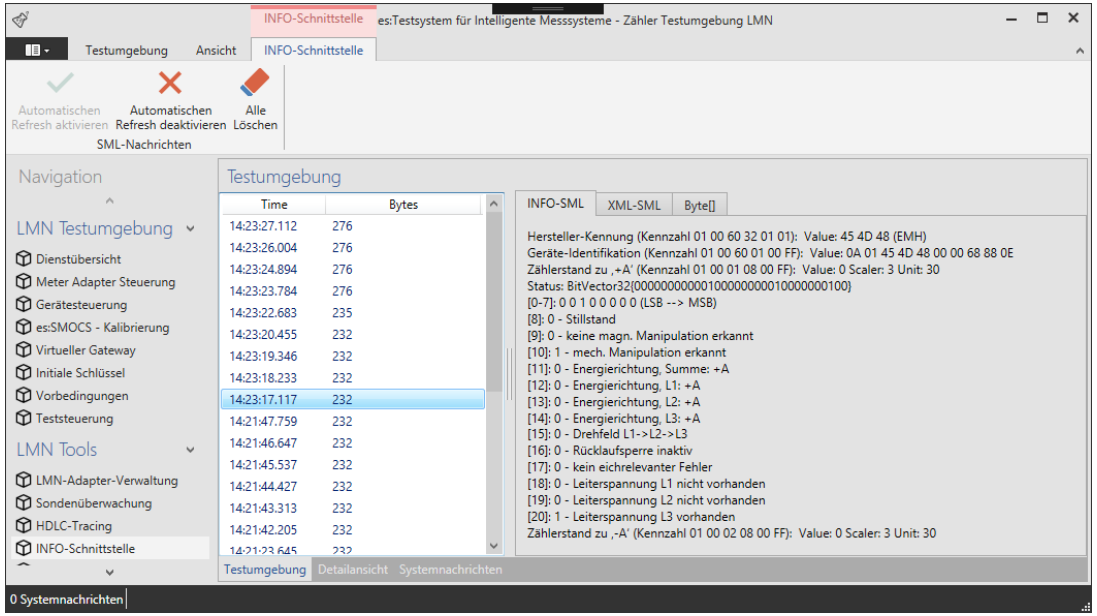
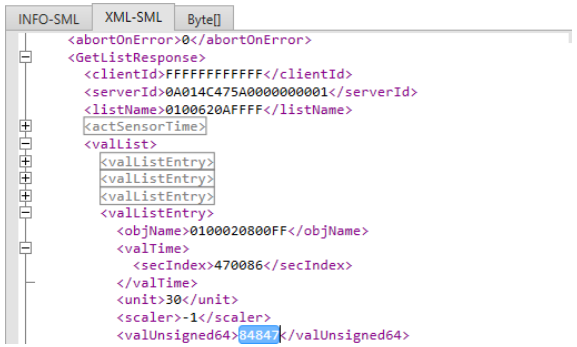
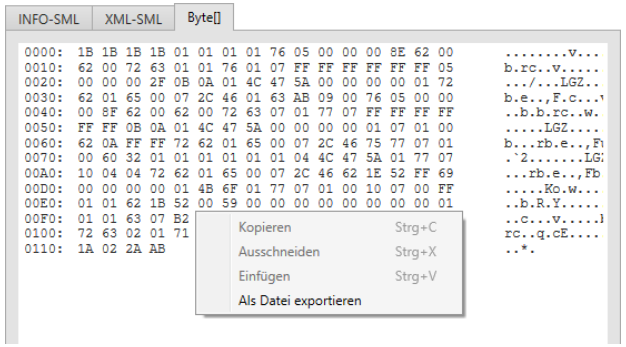
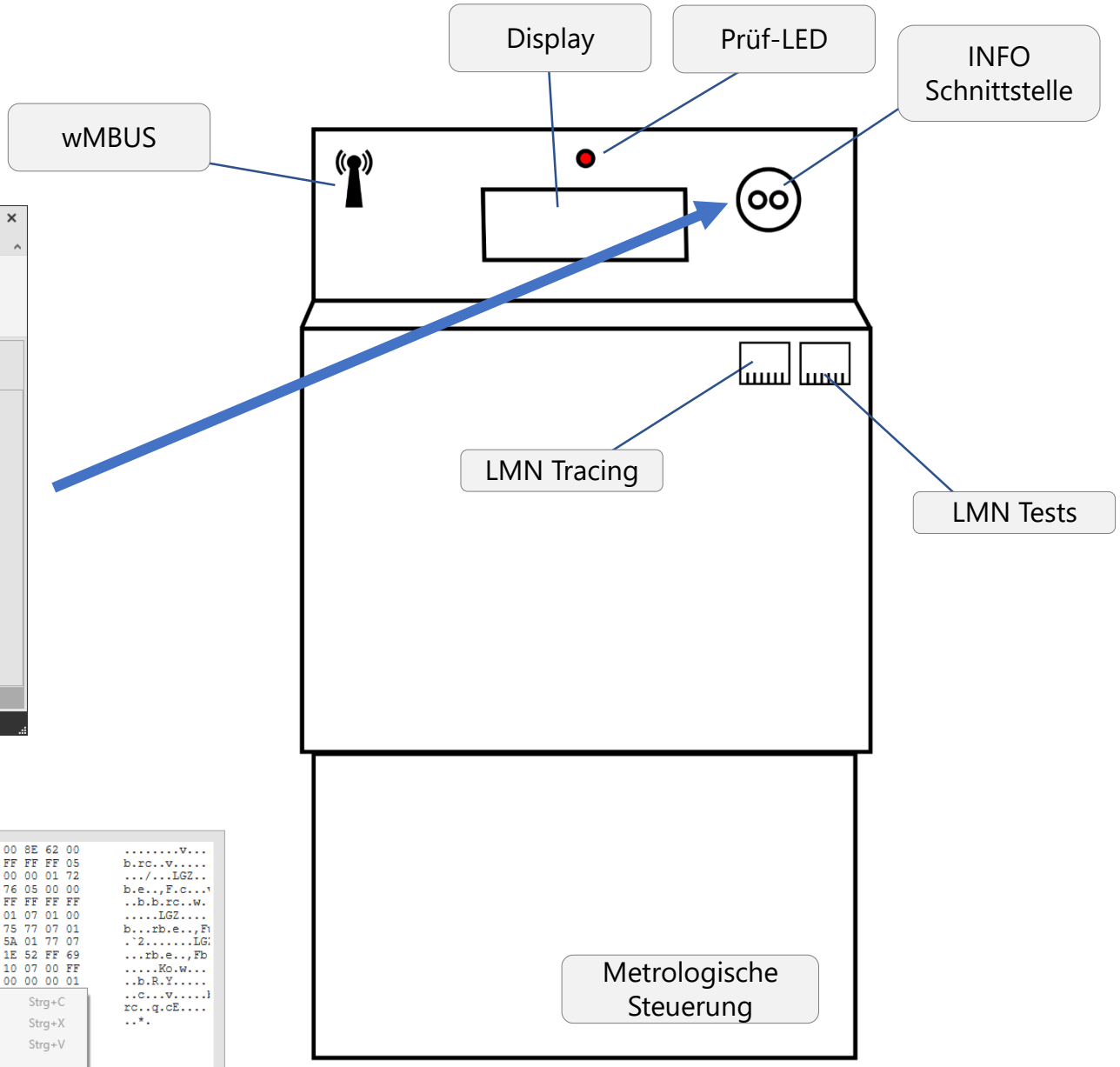
Basiszähler









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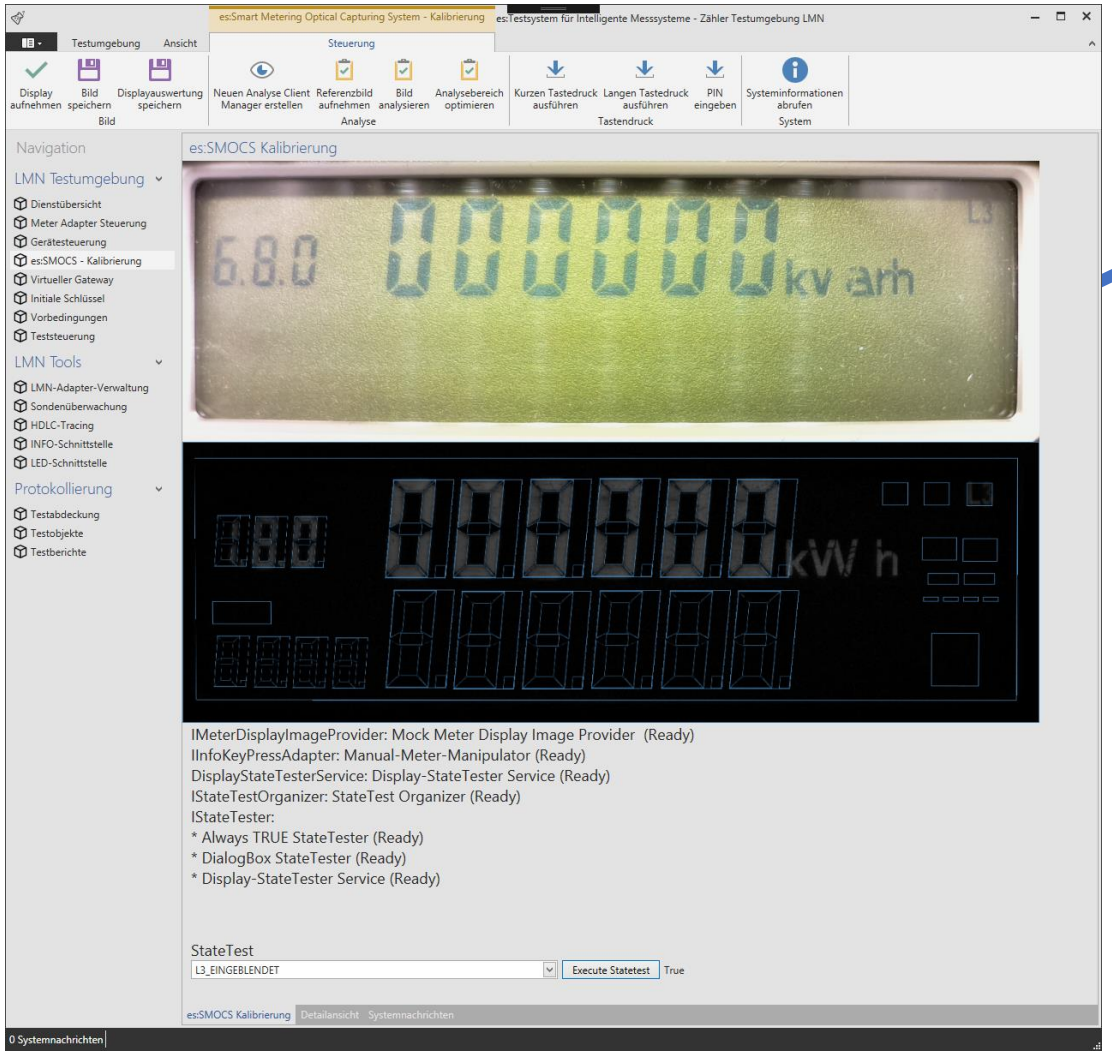
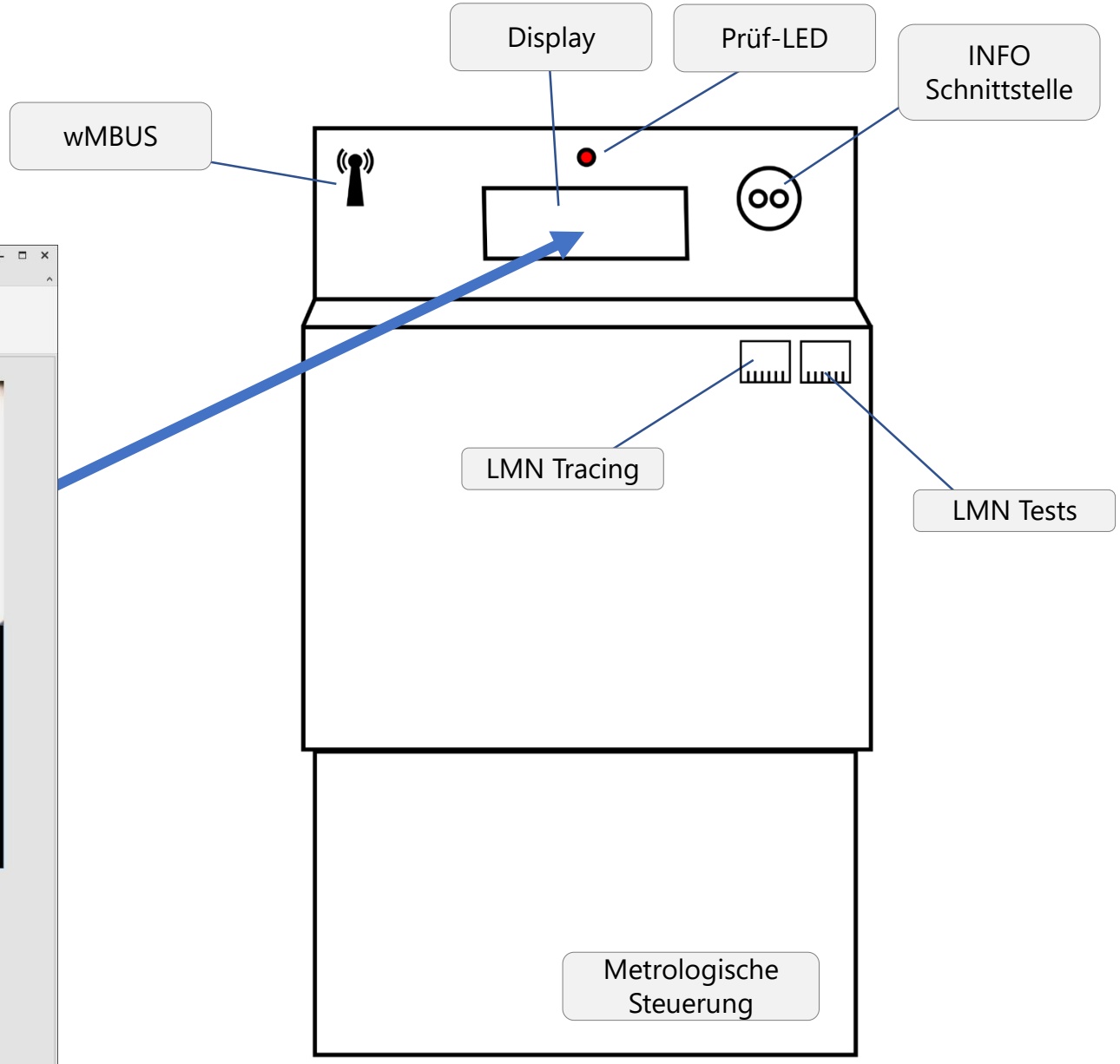
Basiszähler





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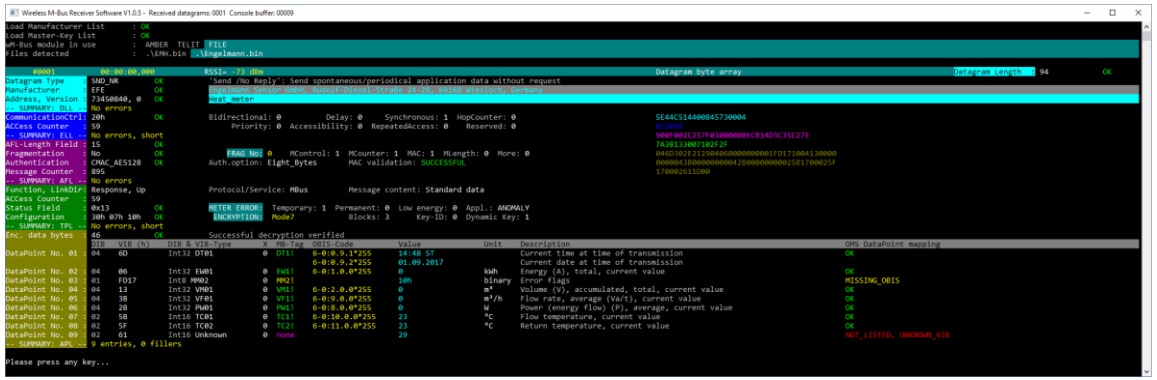
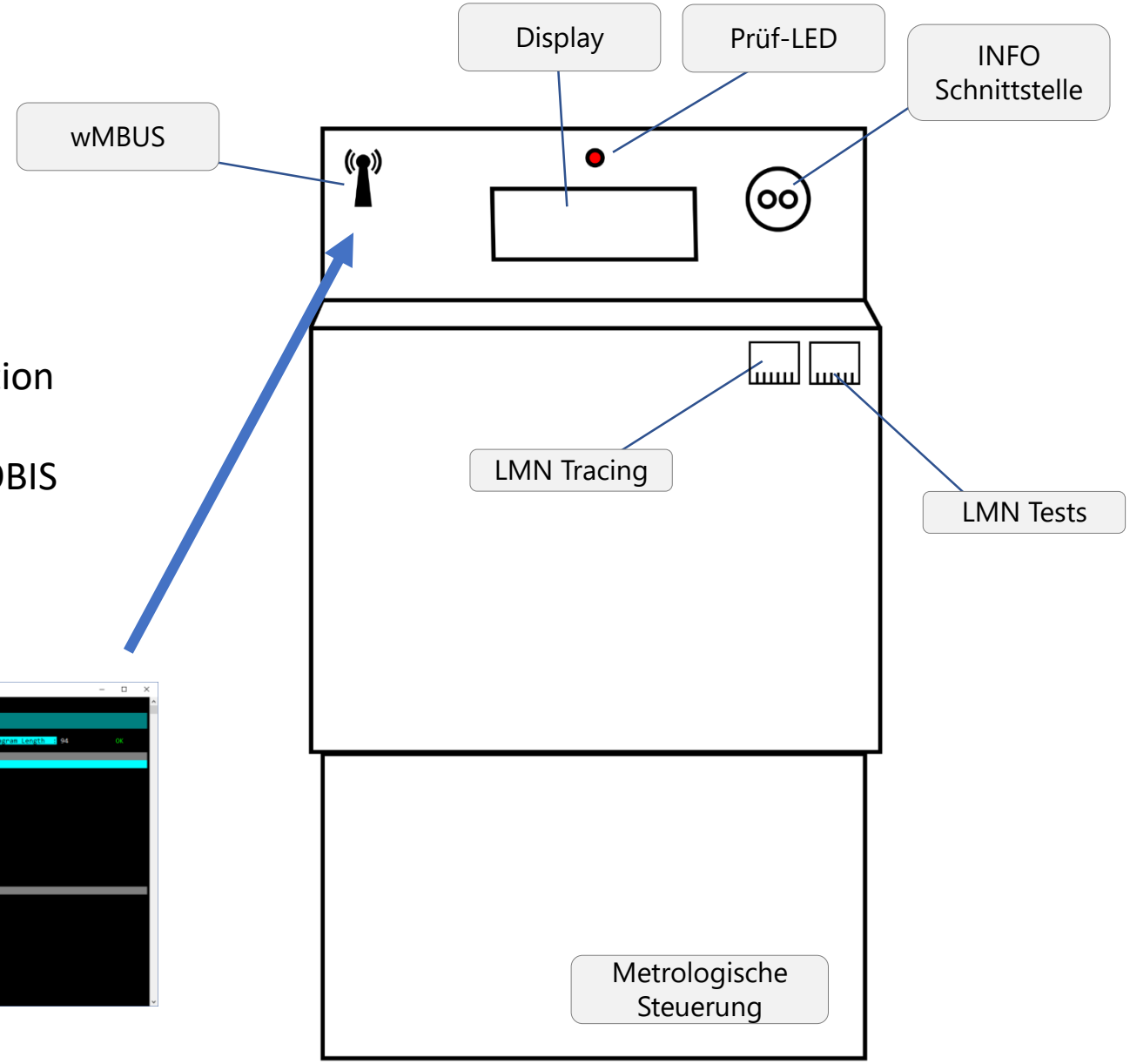
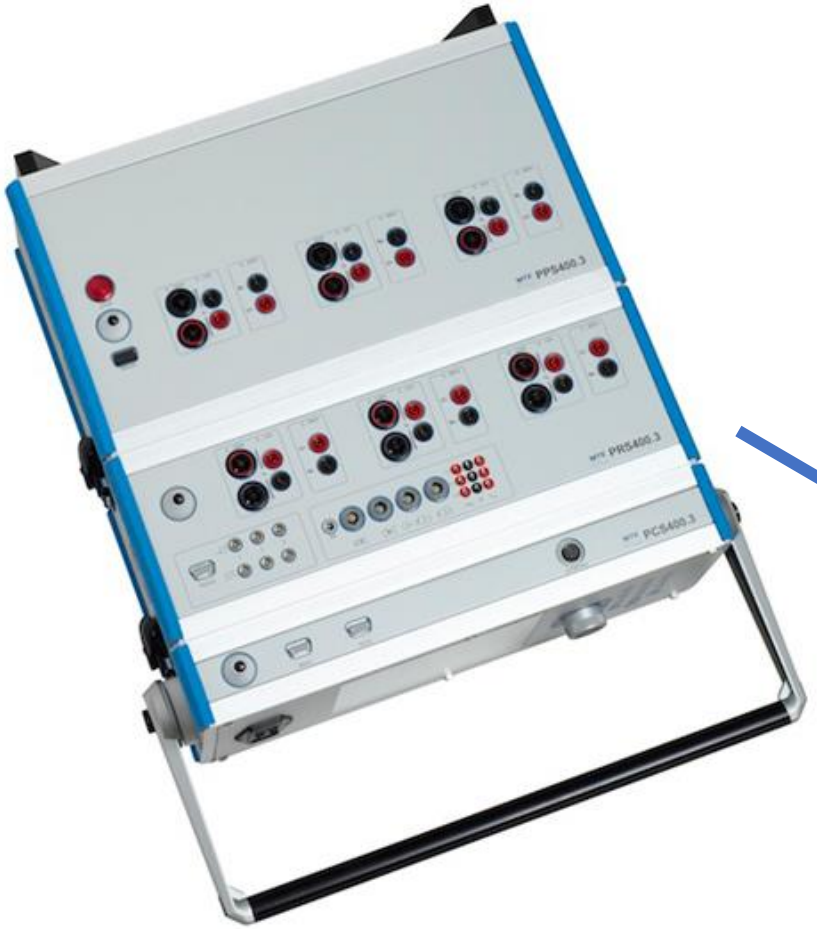
Basiszähler

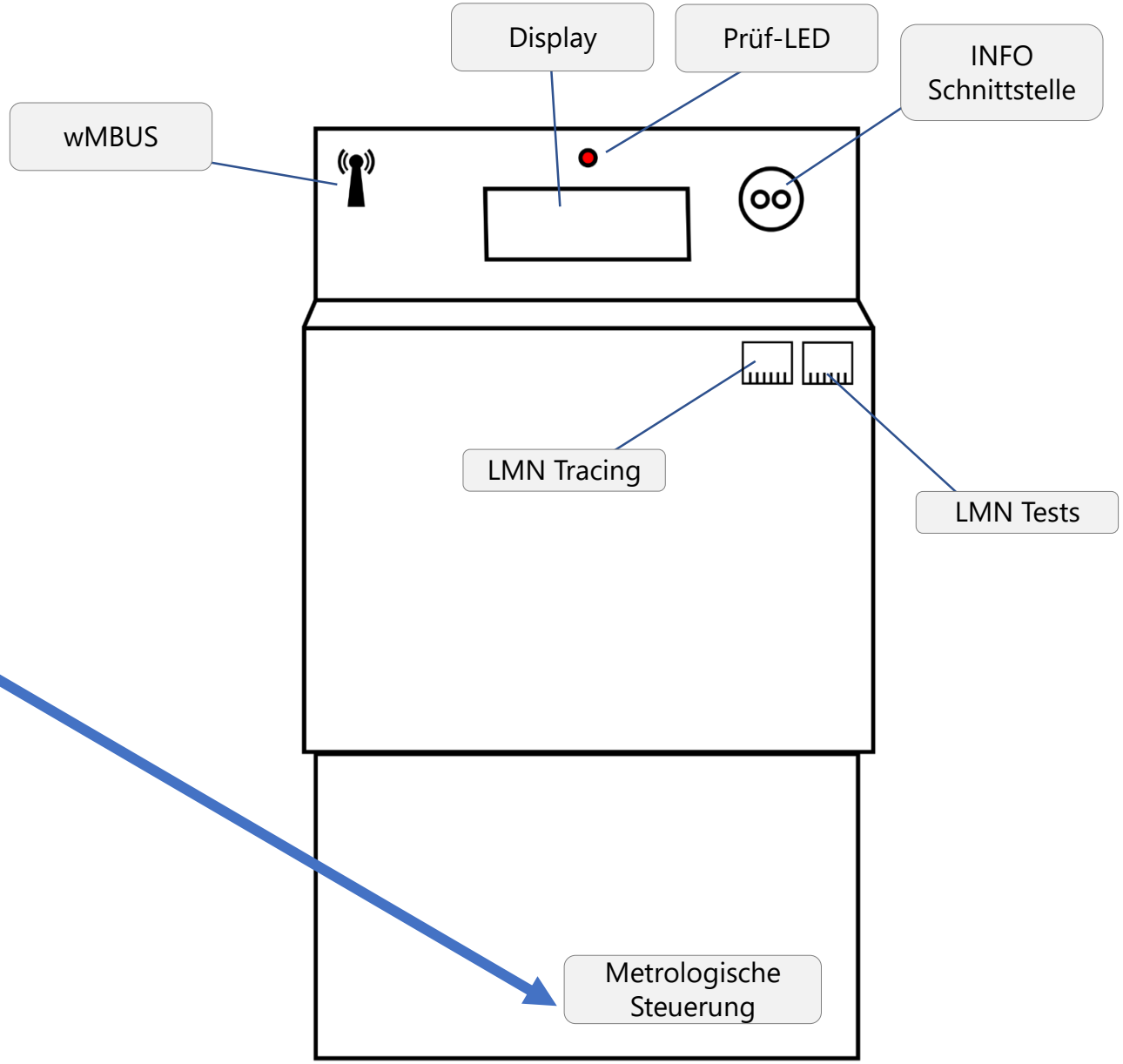
- Bewertung der Konformität zur OMS Spezifikation
- Transparenz auf allen Protokollschichten
- Umwandlung von wM-Bus Datenformaten in OBIS





Basiszähler





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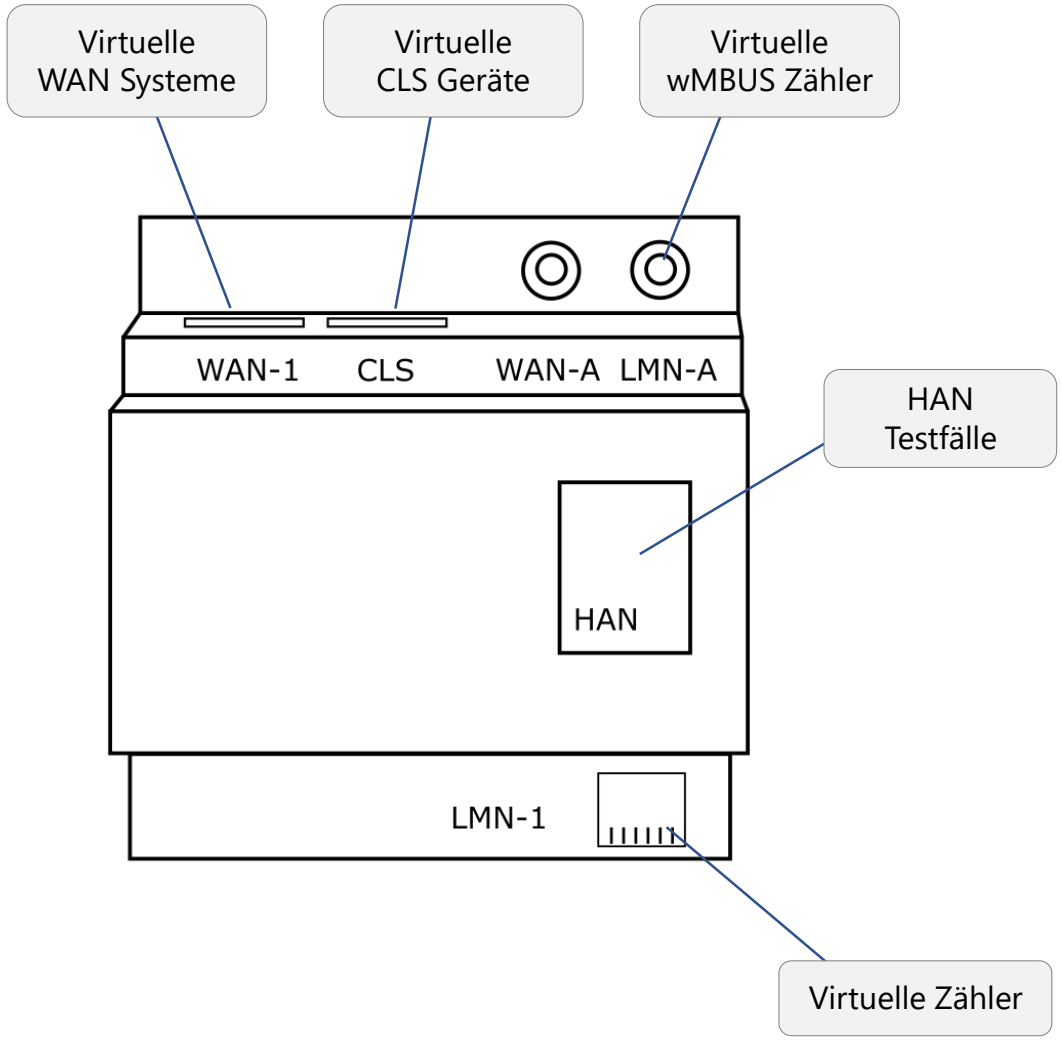
Smart Meter Gateway

- Prüfung eines Smart Meter Gateways bedingt das Vorhandensein eines vollständigen Smart Meter Ökosystems
- Testfallspezifikationen in Erarbeitung



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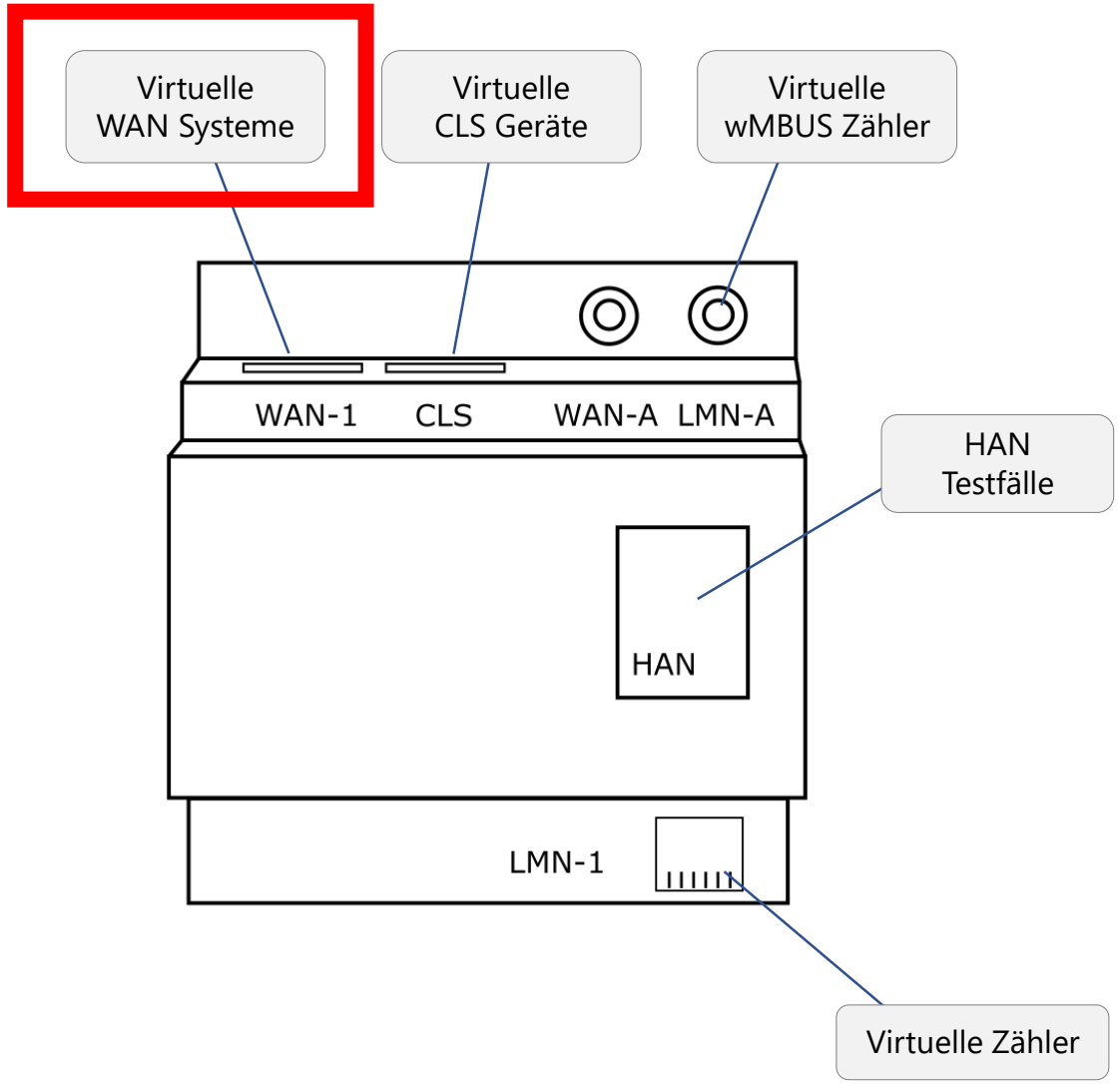
Smart Meter Gateway

Smart Meter Gateway Administrator

Public Key Infrastructure

Externer Marktteilnehmer

Zeitdienst



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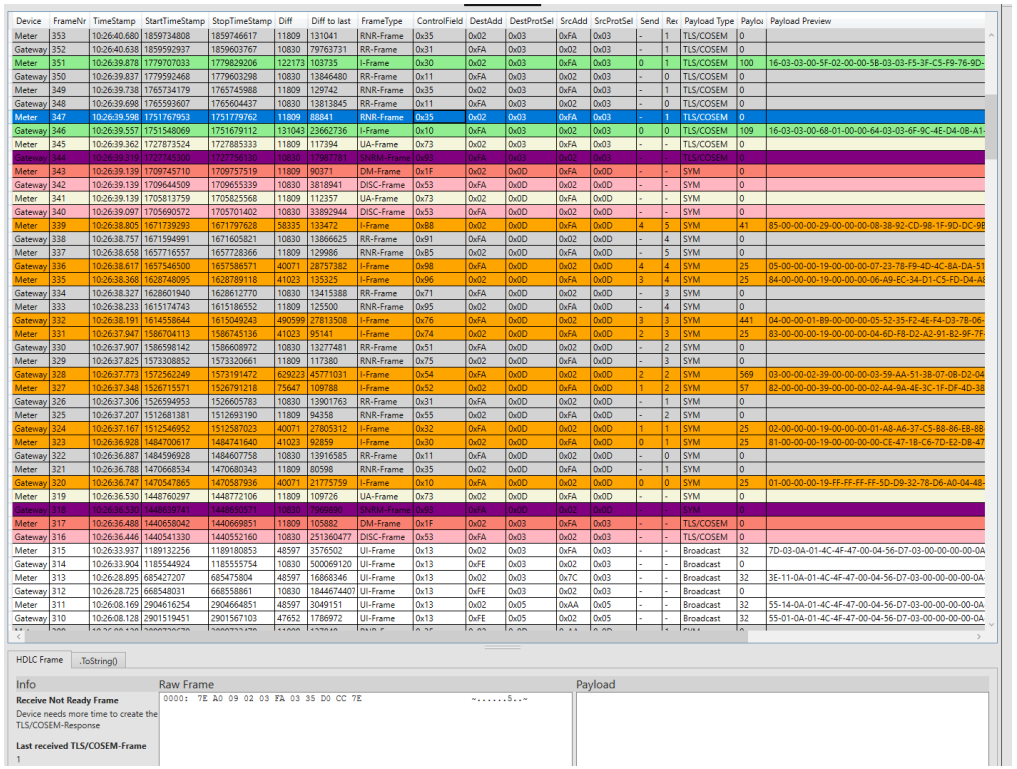

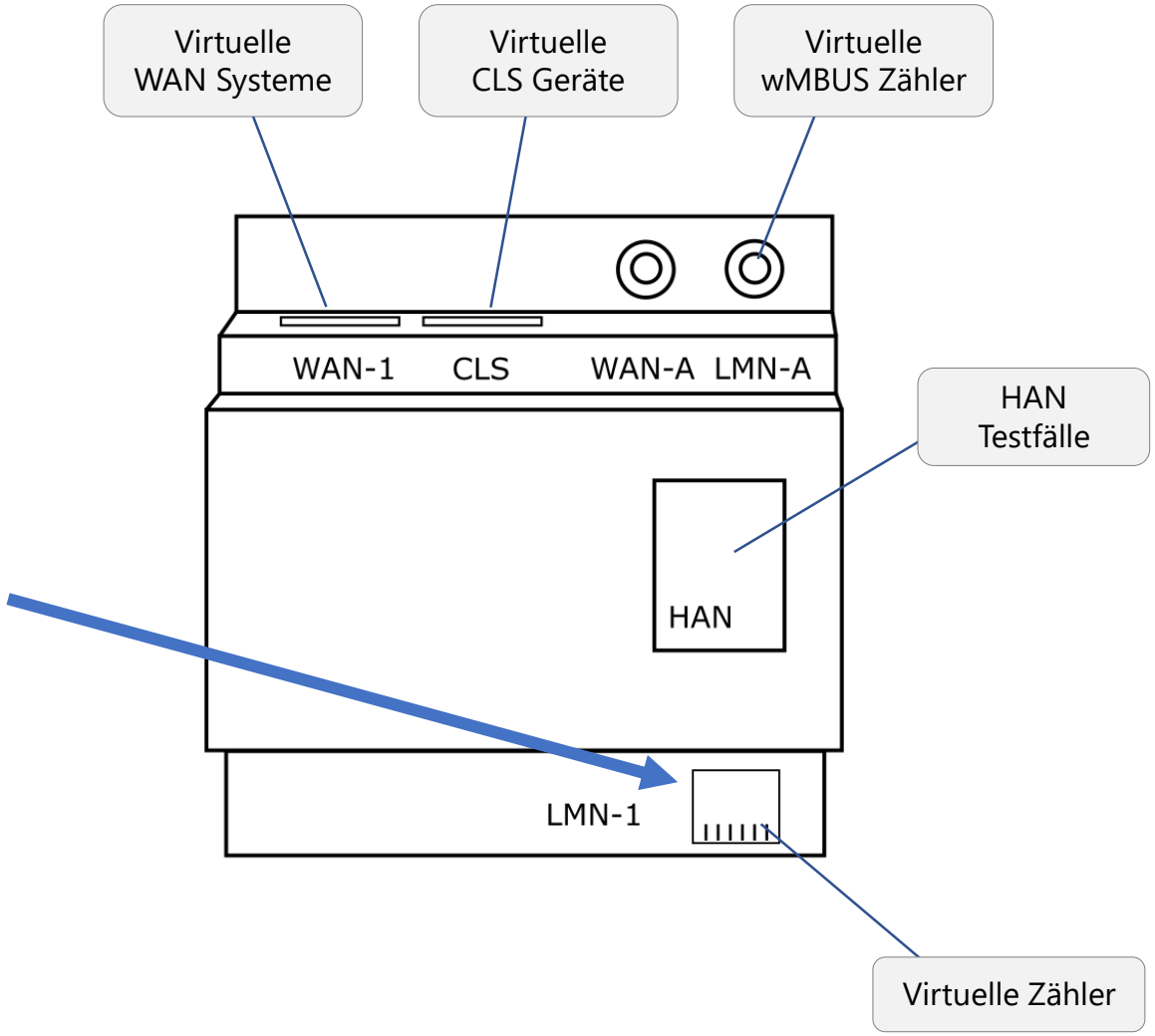

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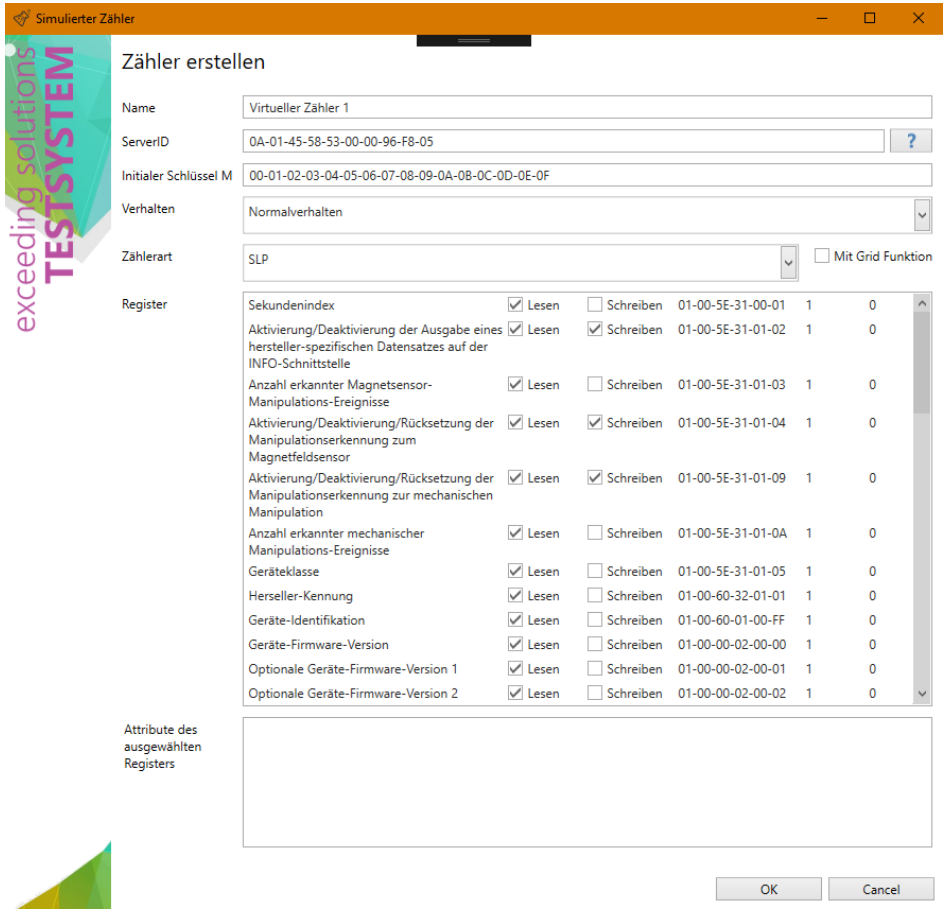
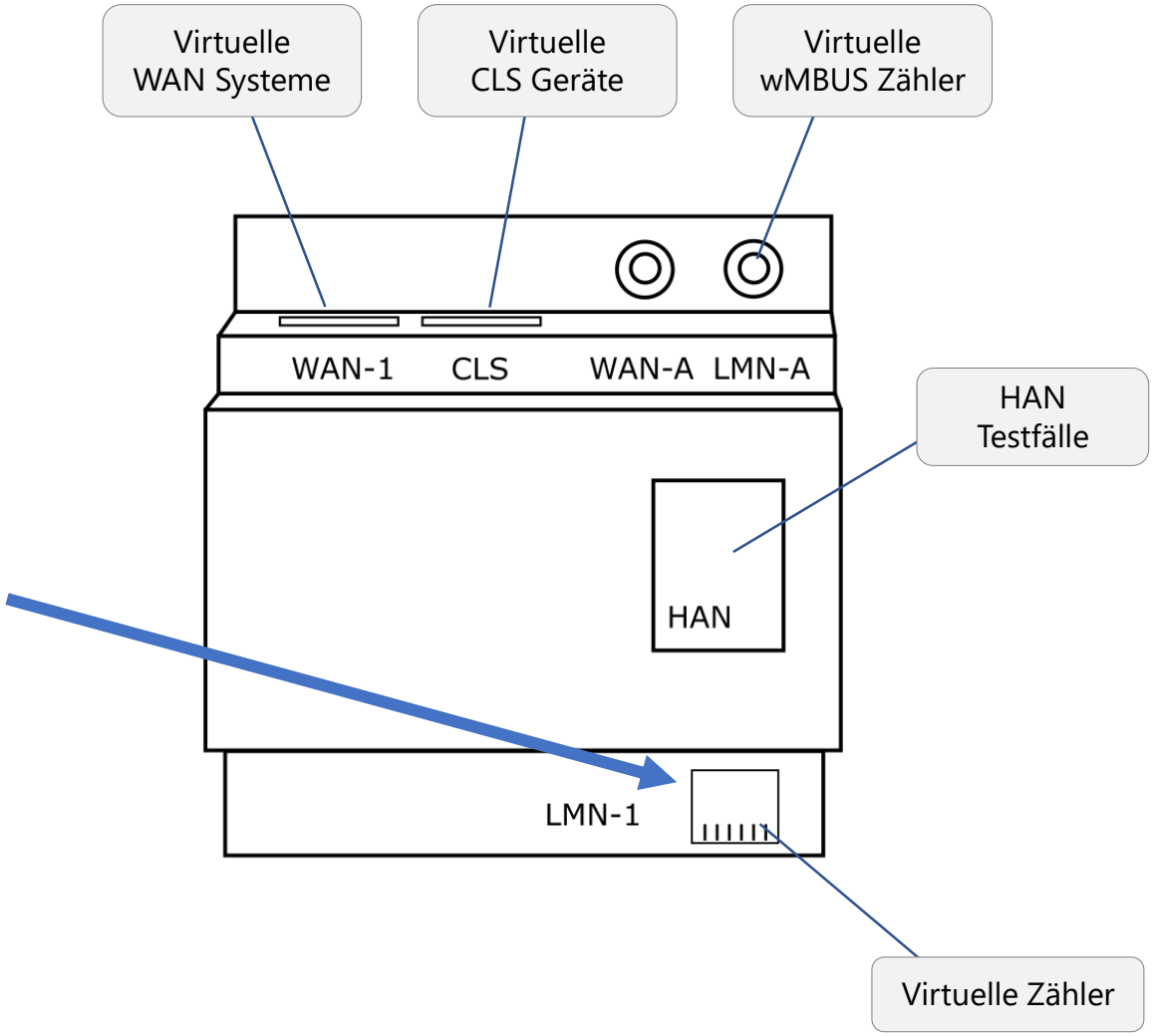
Smart Meter Gateway





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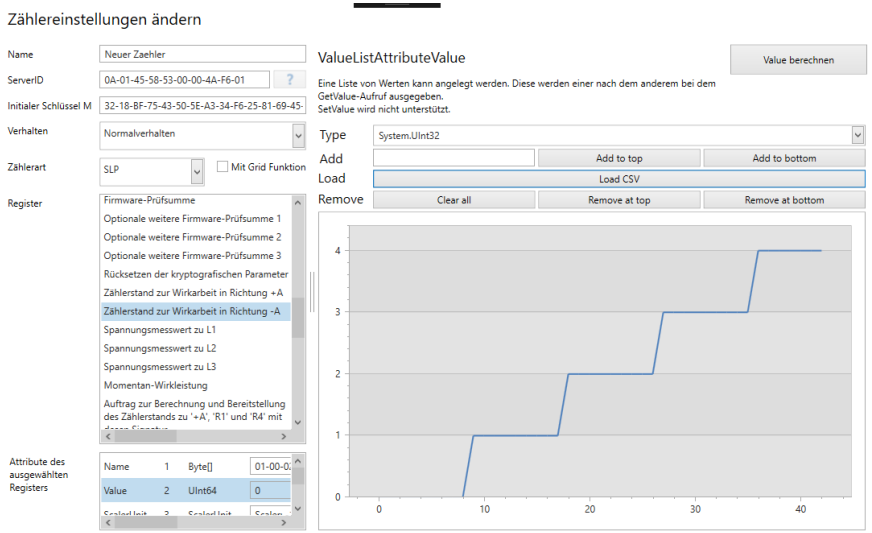
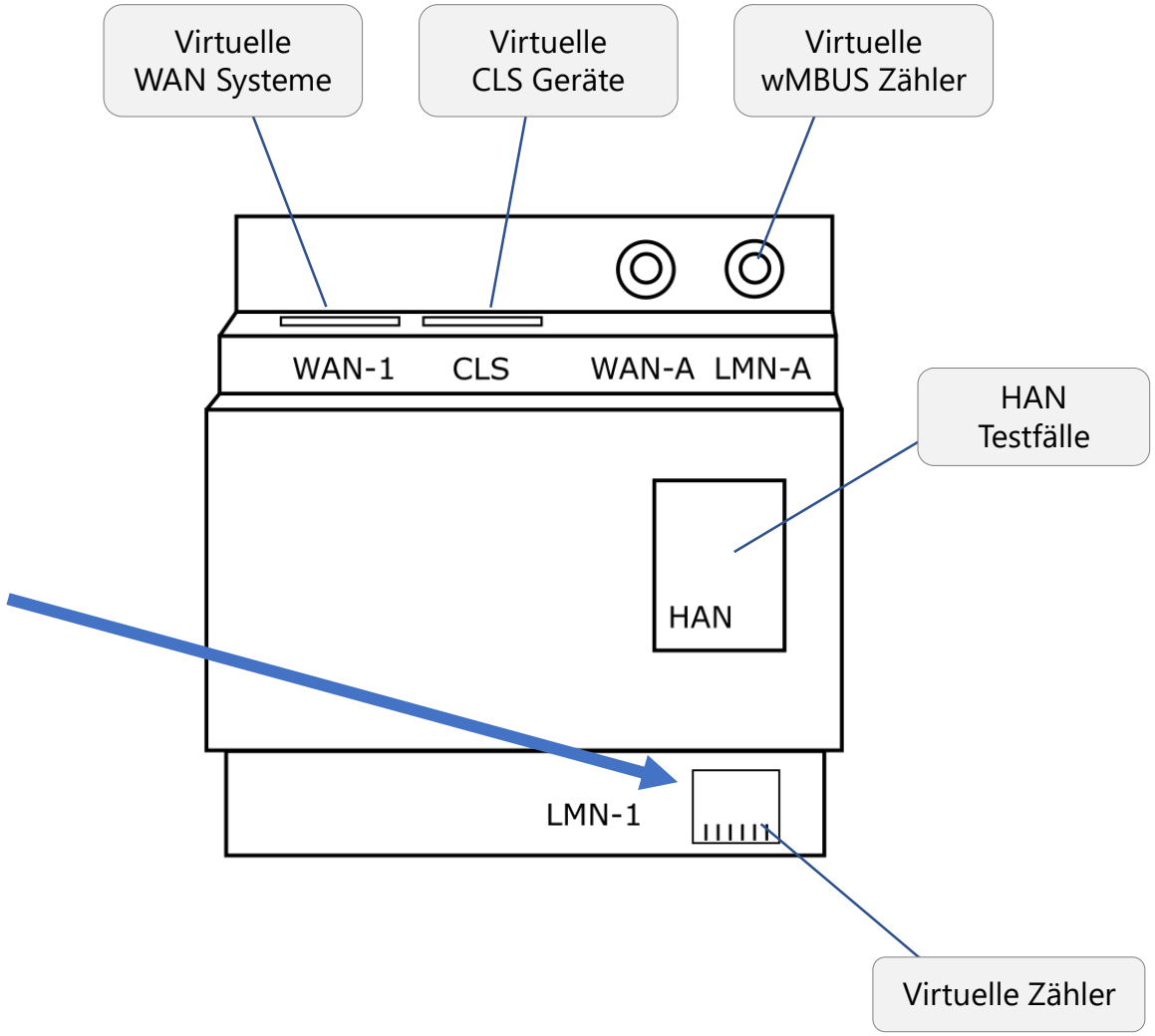
Smart Meter Gateway

- Zählersimulation für „Gut“-Verhalten
- Einstellung von virtuellen Lastkurven zur Prüfung der Tarifierung im Smart Meter Gateway





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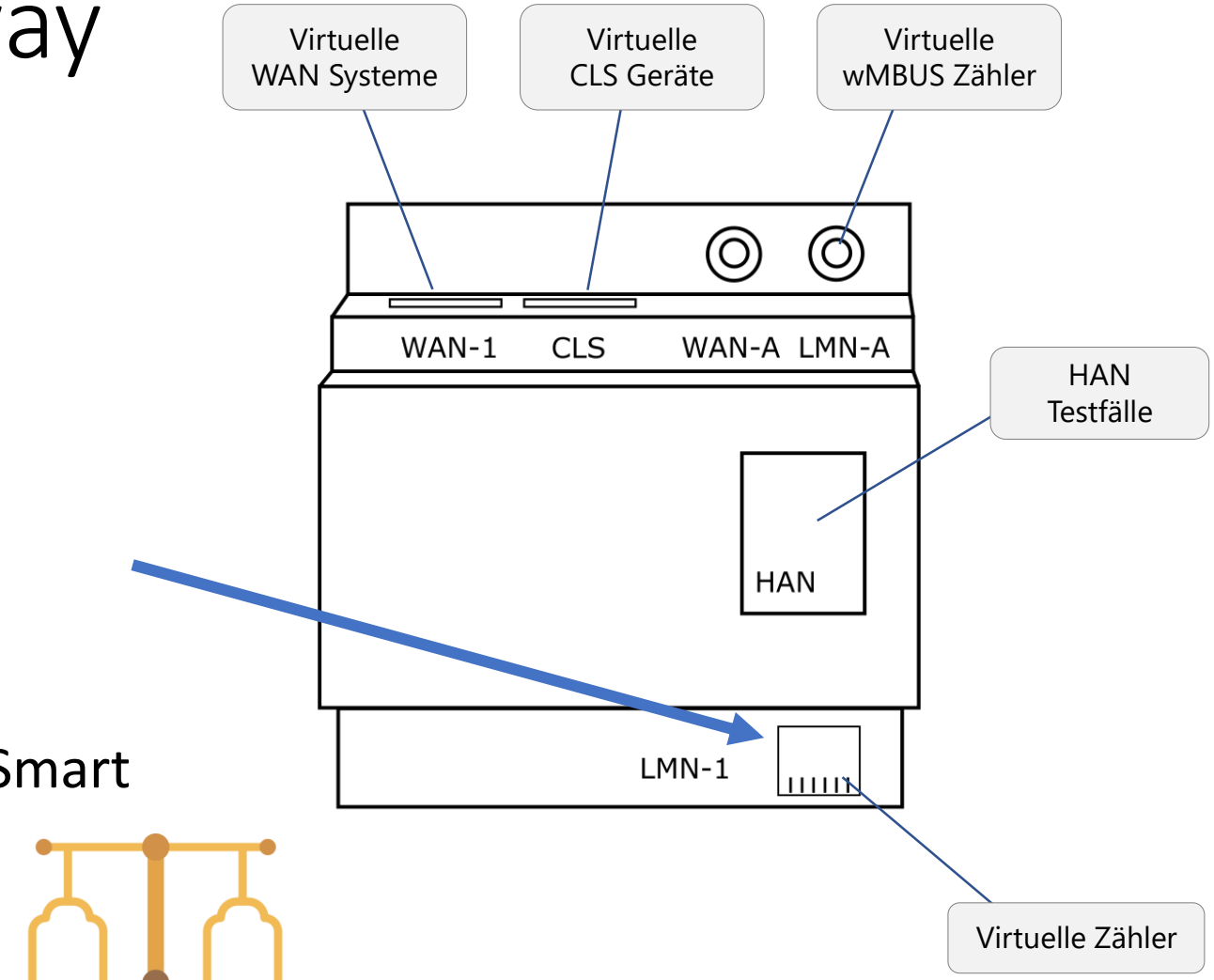
Smart Meter Gateway

- Einstellung eines Verhaltens, welches ein „echter“ Zähler in der Regel nicht aufweisen wird
- z.B. Brechung der Signaturen im SML

Eintrag im Eichlog des Smart Meter Gateways



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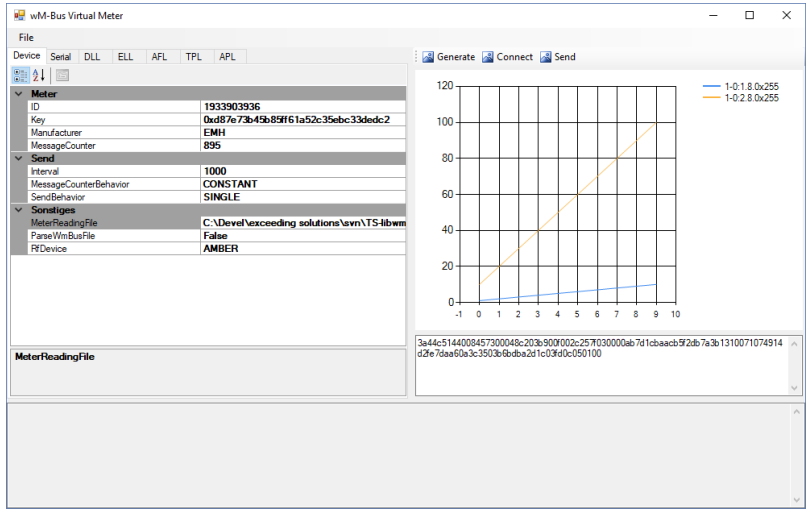
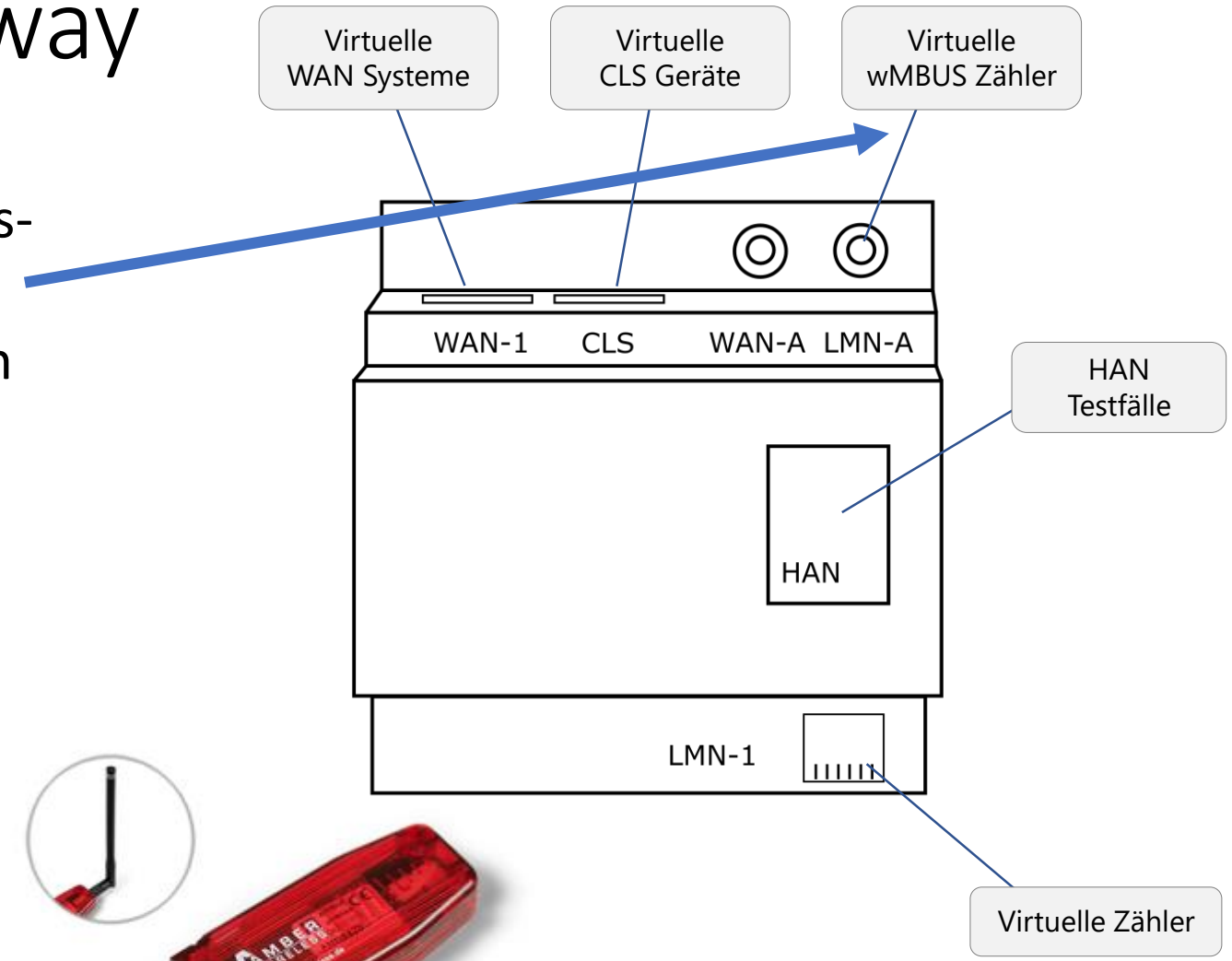
Smart Meter Gateway

- Hinterlegung von Zählerstands-/Lastgängen per CSV Datei
- Positiv- und Negativ-Verhalten

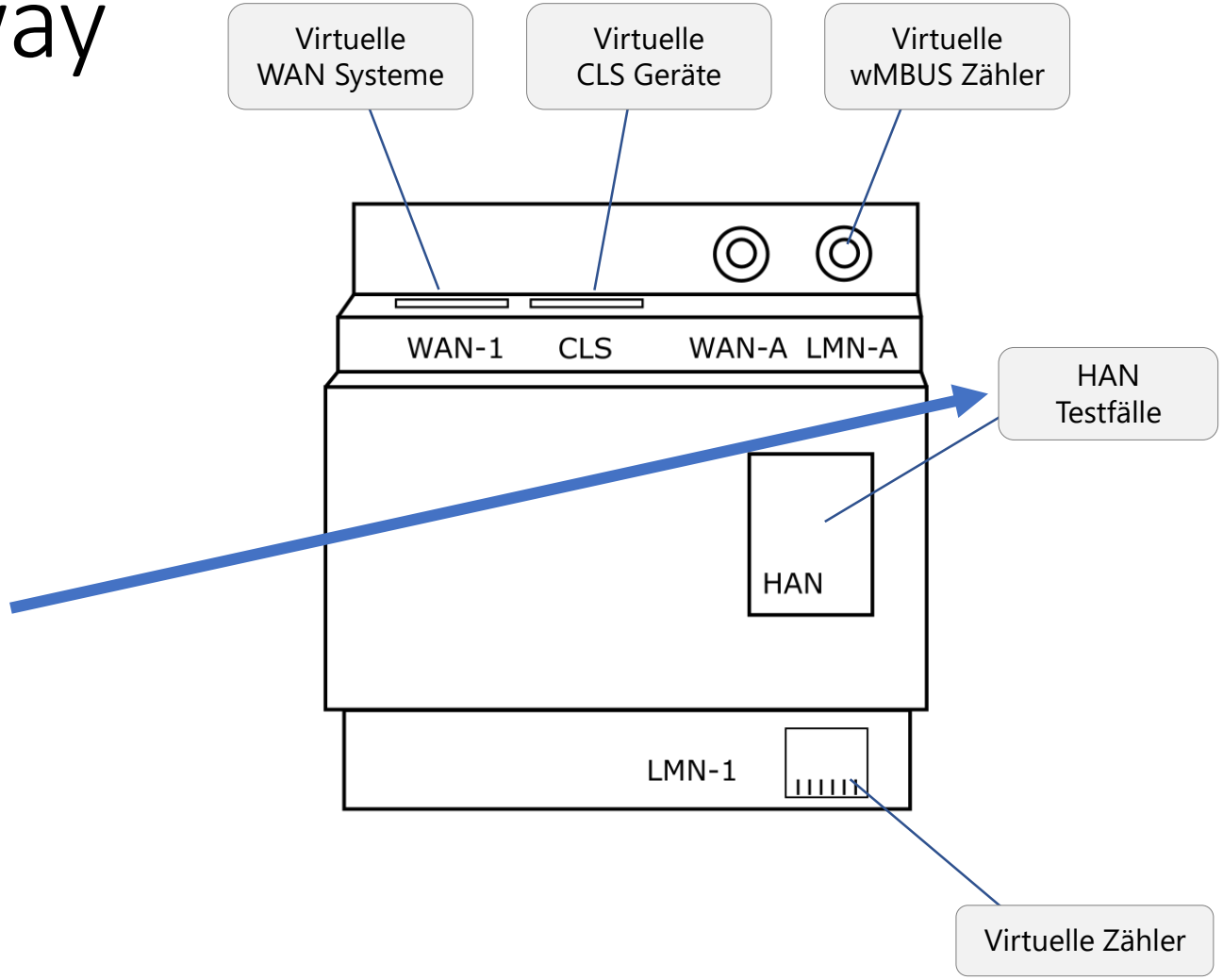




Smart Meter Gateway

Letztverbraucher Profile

Service Techniker



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Smart Meter Gateway

Letztverbraucher Profile

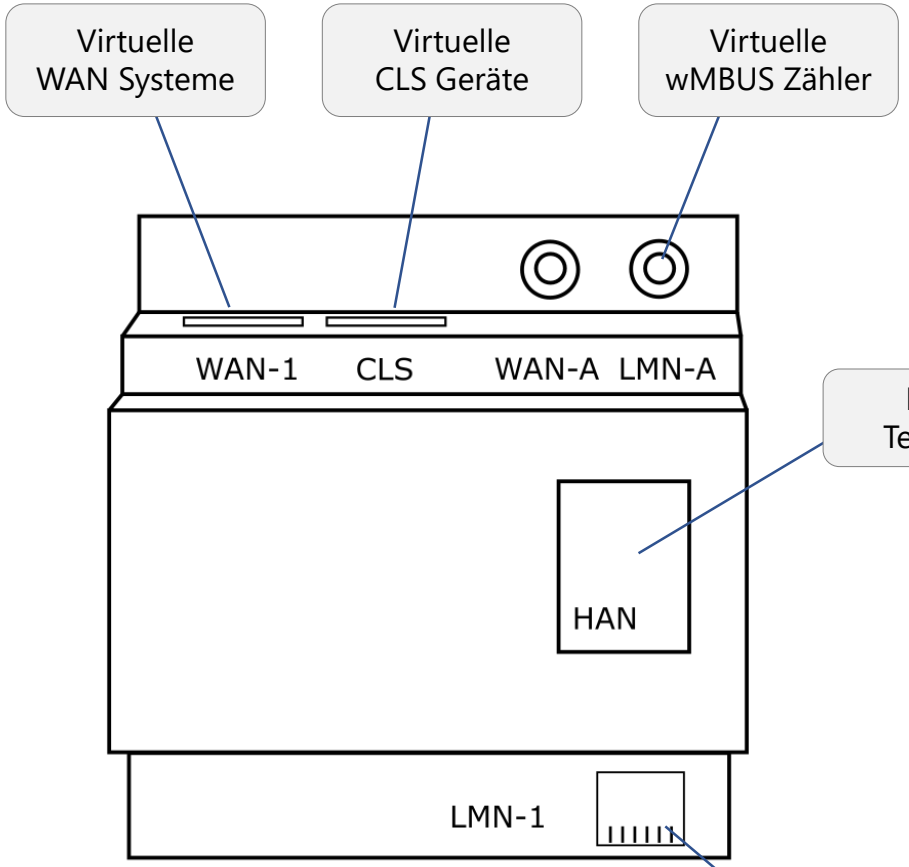
Service Techniker

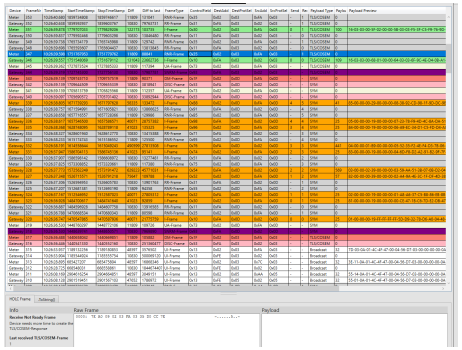
Smart Meter Gateway Administrator

Public Key Infrastructure

Externer Marktteilnehmer

Zeitdienst





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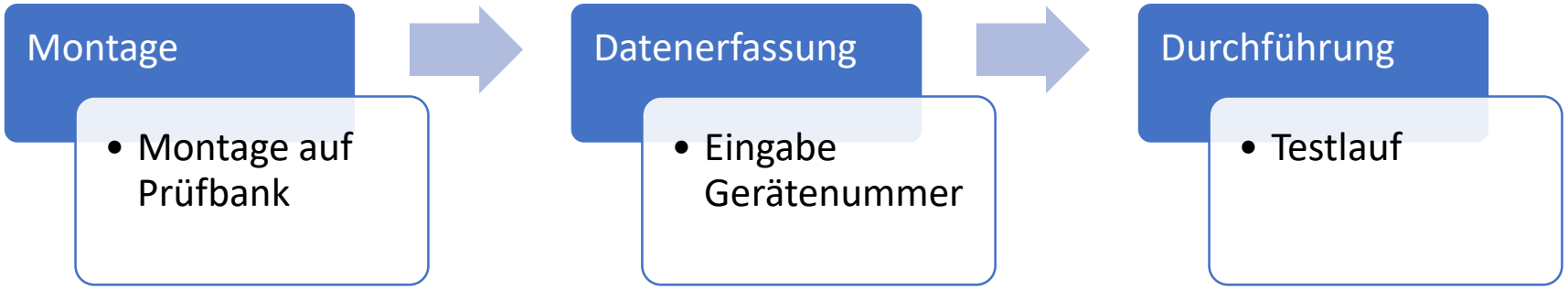
Durchführung Prüfung / MME



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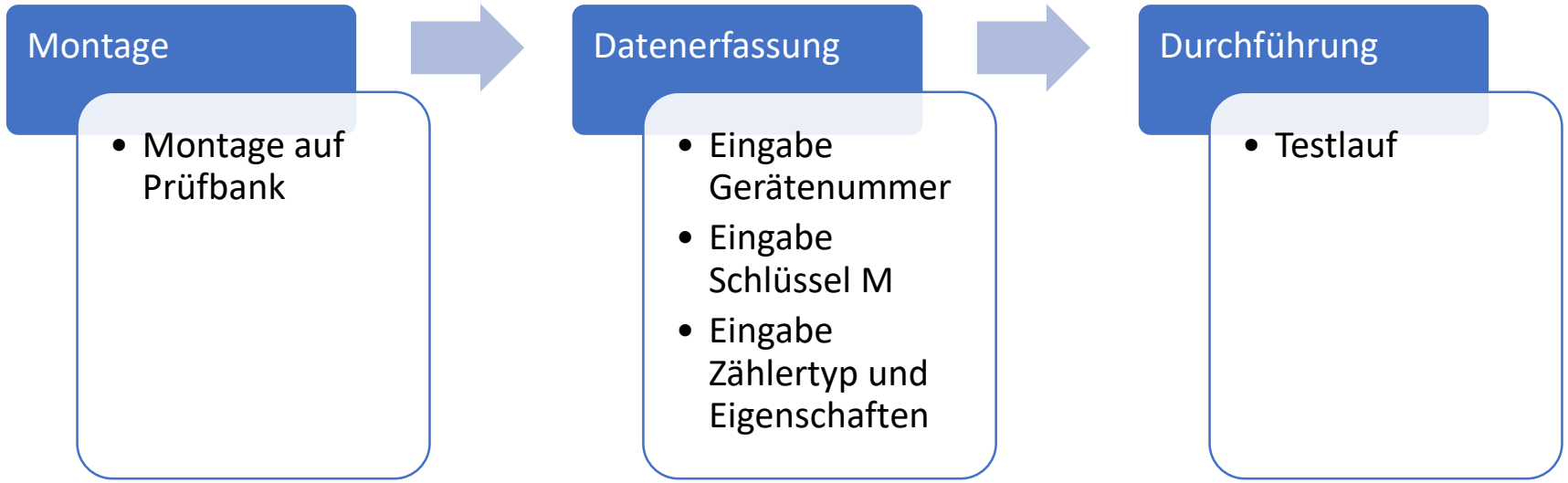
Durchführung Prüfung / Basiszähler



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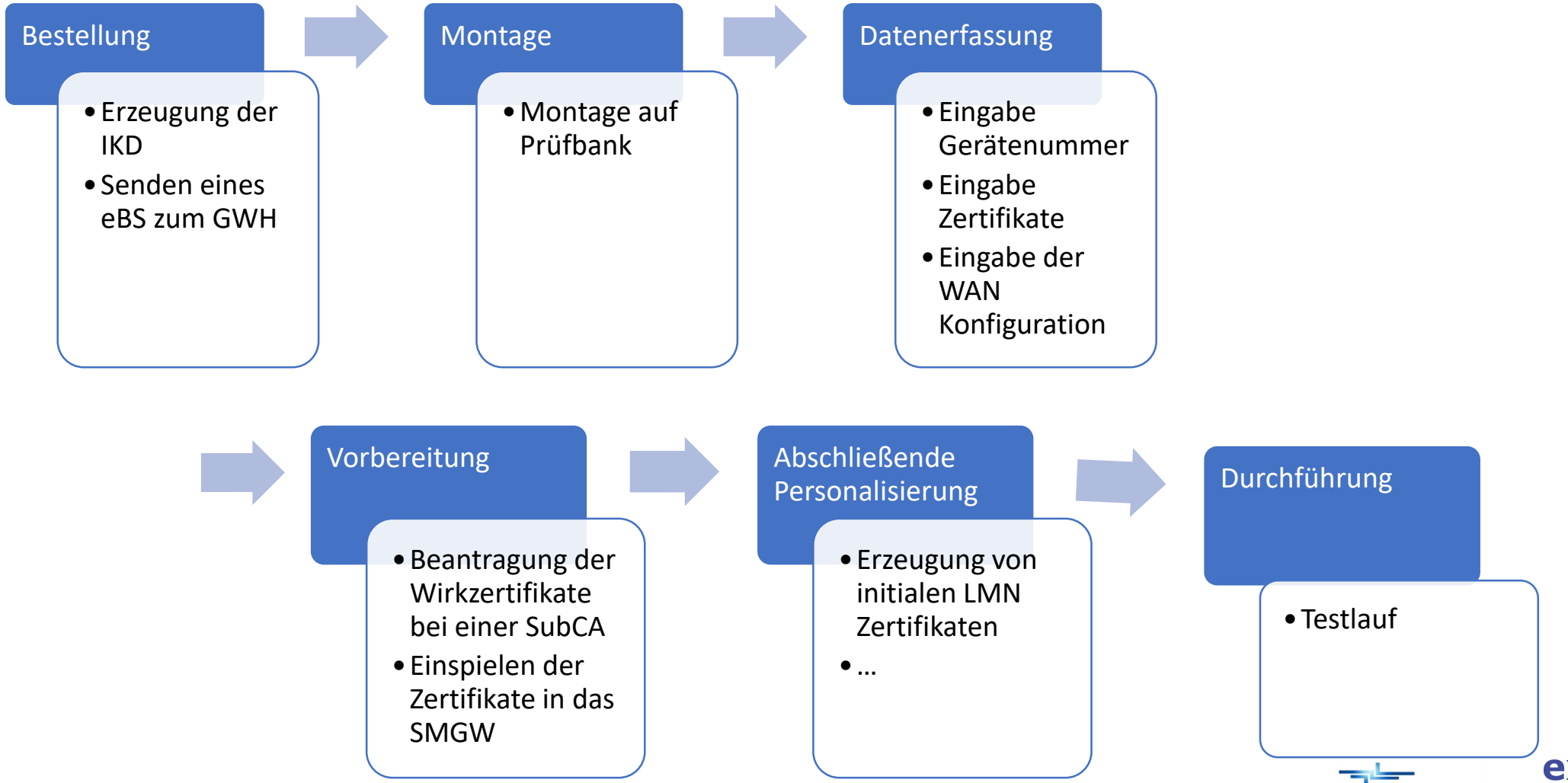
Durchführung Prüfung / SMGW



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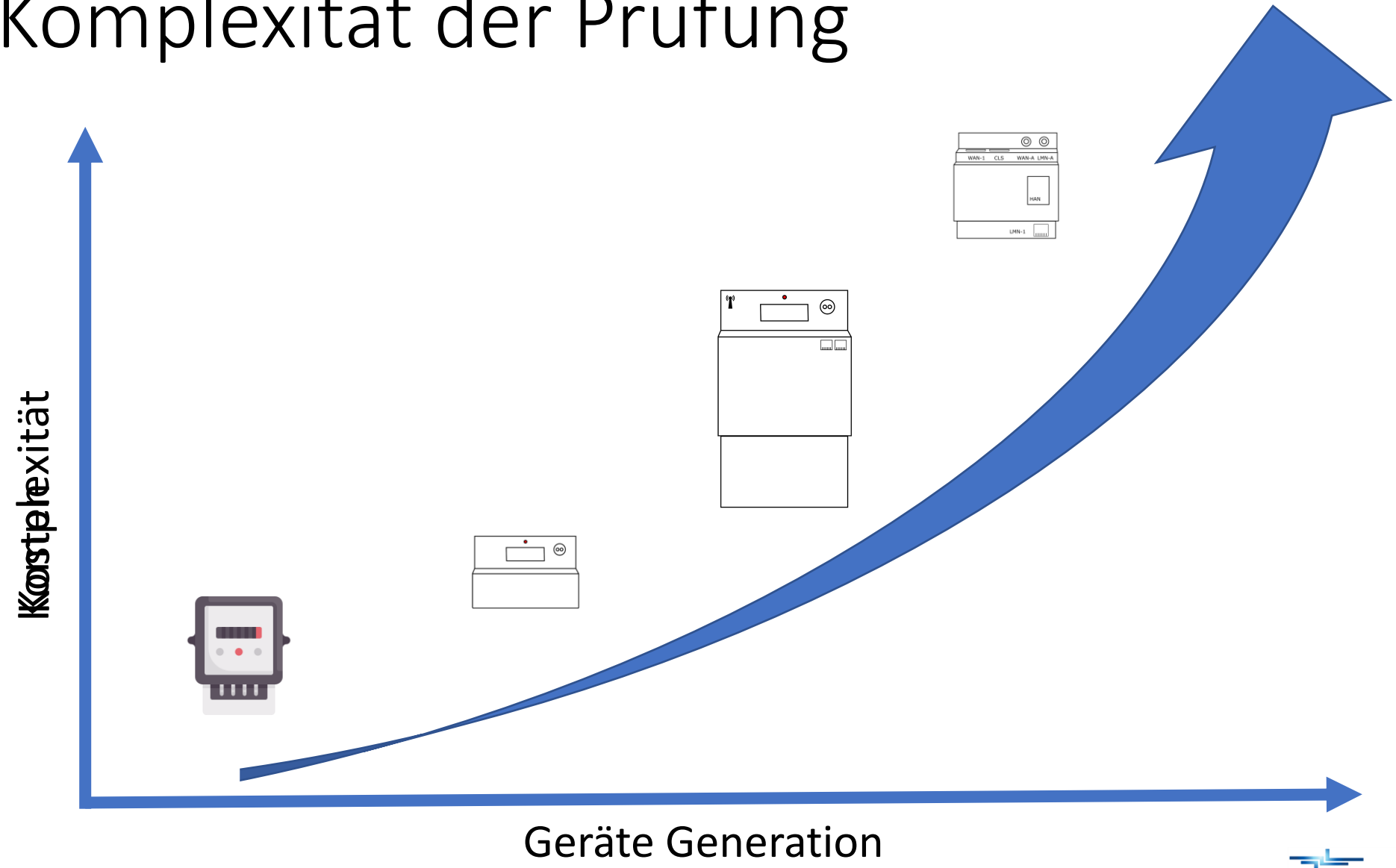
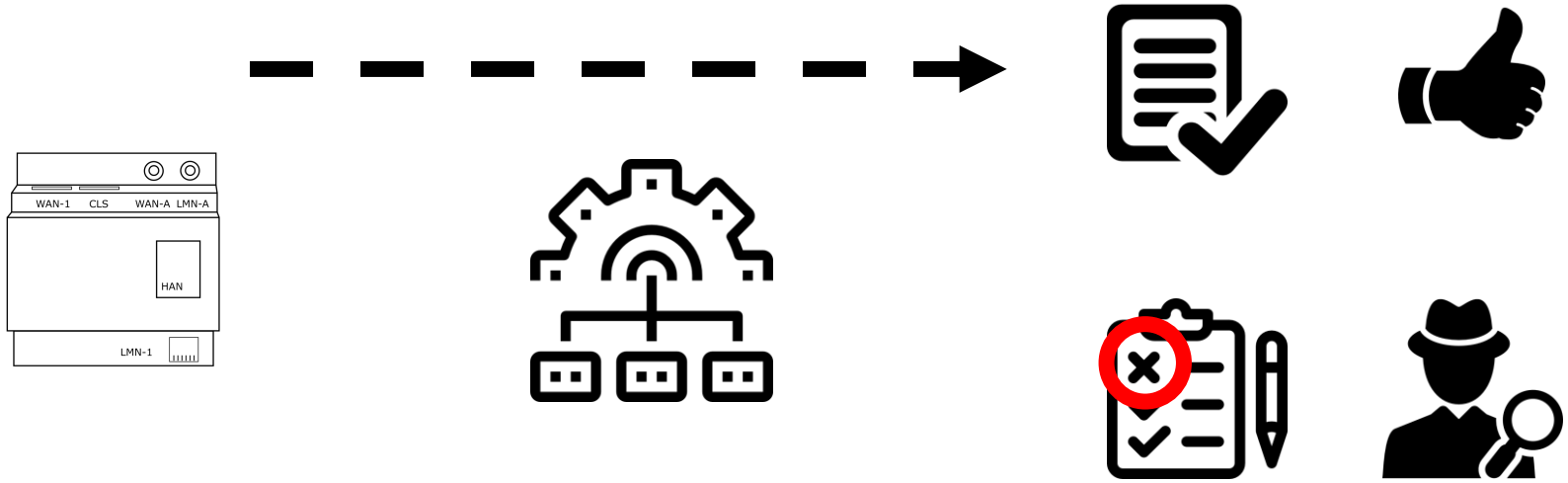
Komplexität der Prüfung



Aufbau Testsystem / Prüfanlage für iMSys

- Herausforderung ist:
  - die Bedienung des Testsystems durch das Prüfpersonal
  - die Bewertung der Testergebnisse durch das Prüfpersonal



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Aufbau Testsystem / Prüfanlage für iMSys

- Größtmögliche Automatisierung der Prozesse durch IT basierte Unterstützung

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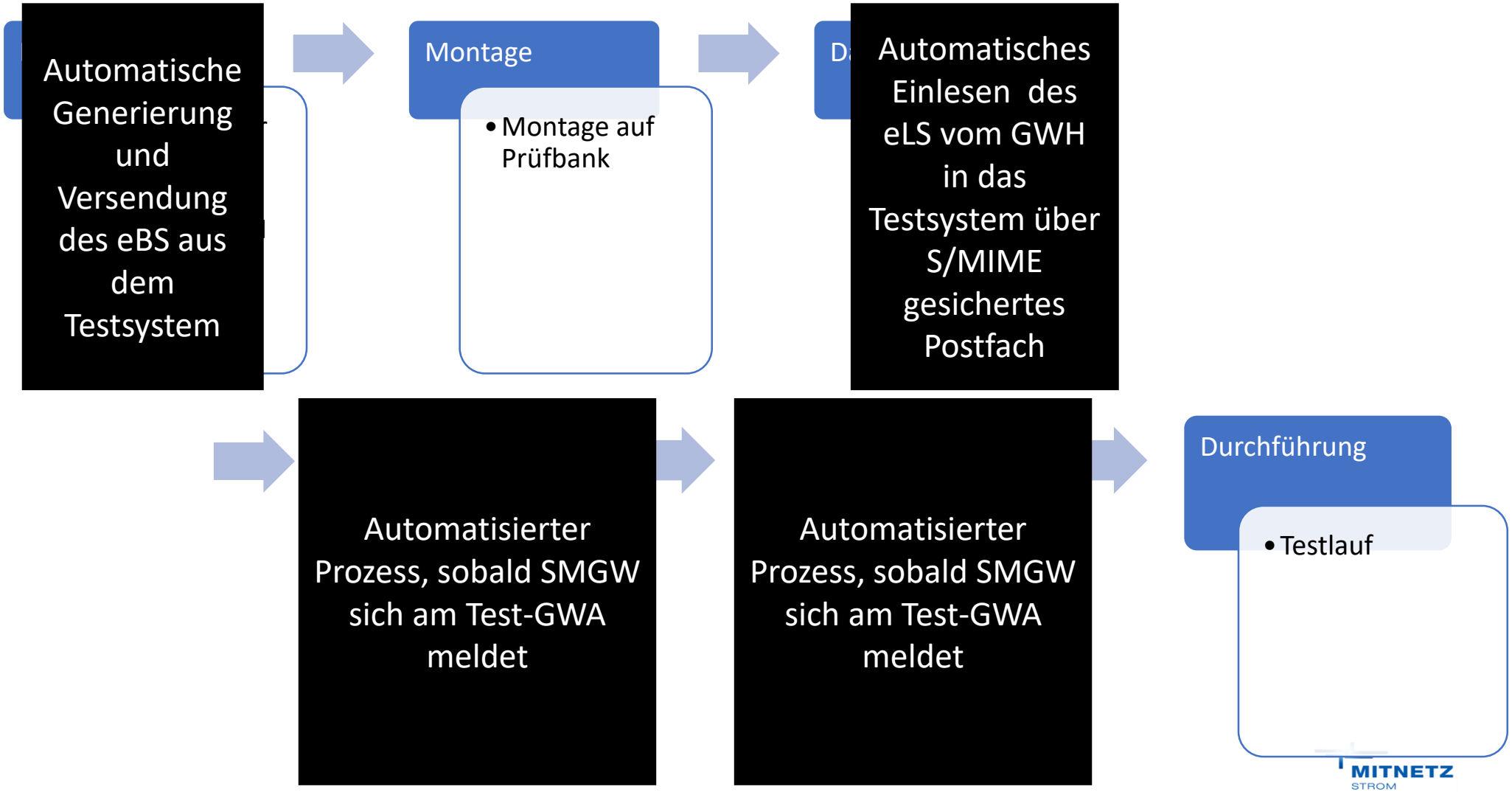
Automatisierung Prüfung / SMGW



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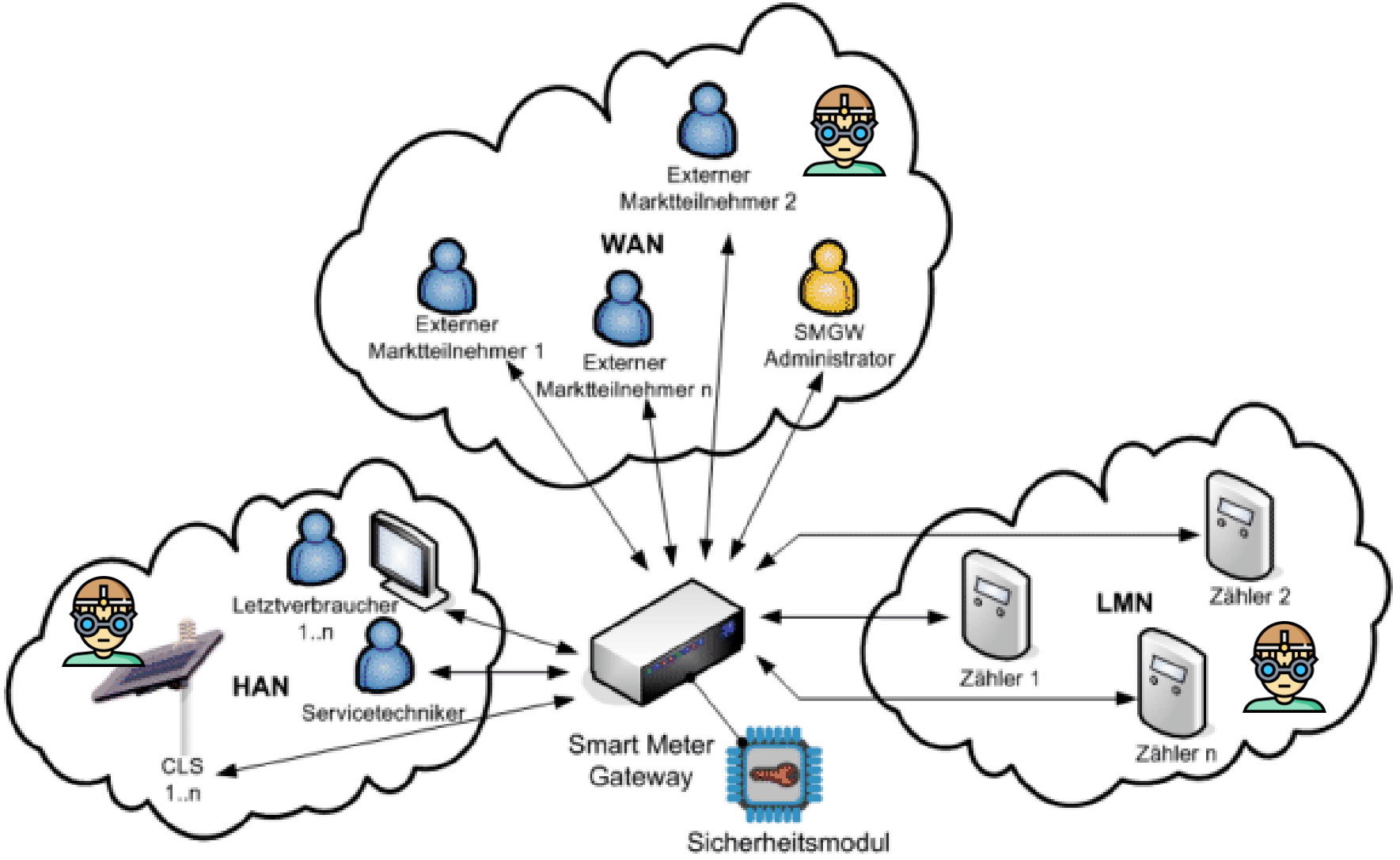
Automatisierung Prüfung / SMGW



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Aufbau Testsystem / Prüfanlage für iMSys

- Größtmögliche Automatisierung der Prozesse durch IT basierte Unterstützung

- Unterstützung des Personals bei der Bewertung der Ergebnisse durch Erhebung von Synergieeffekten

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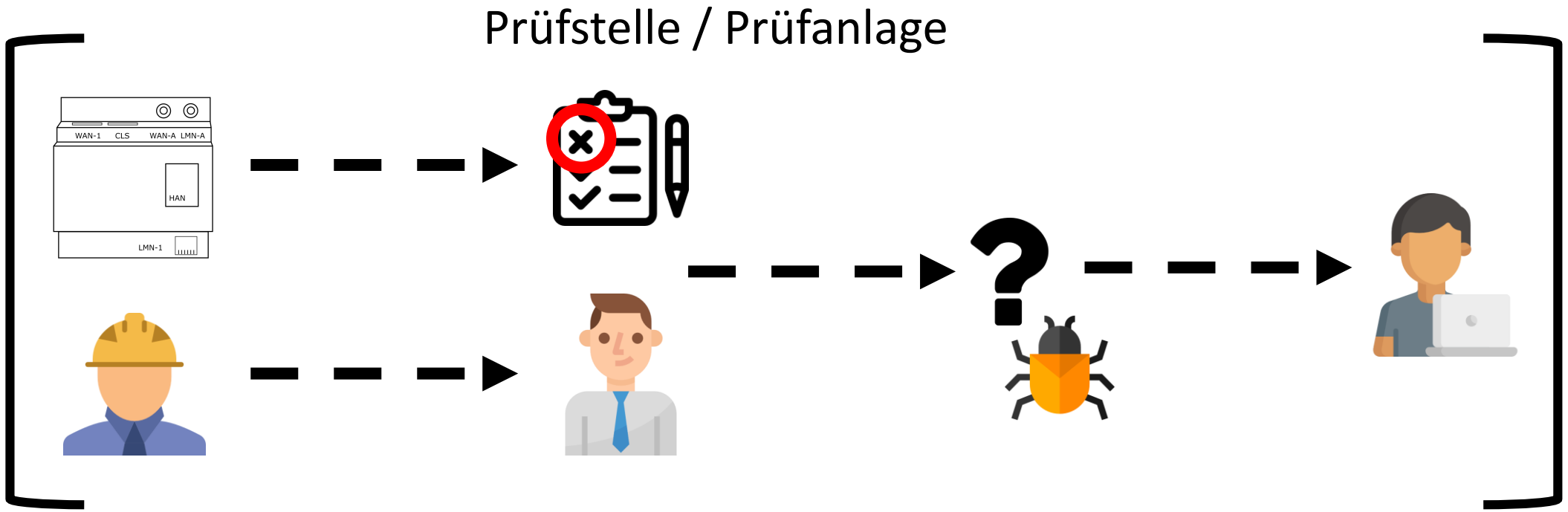
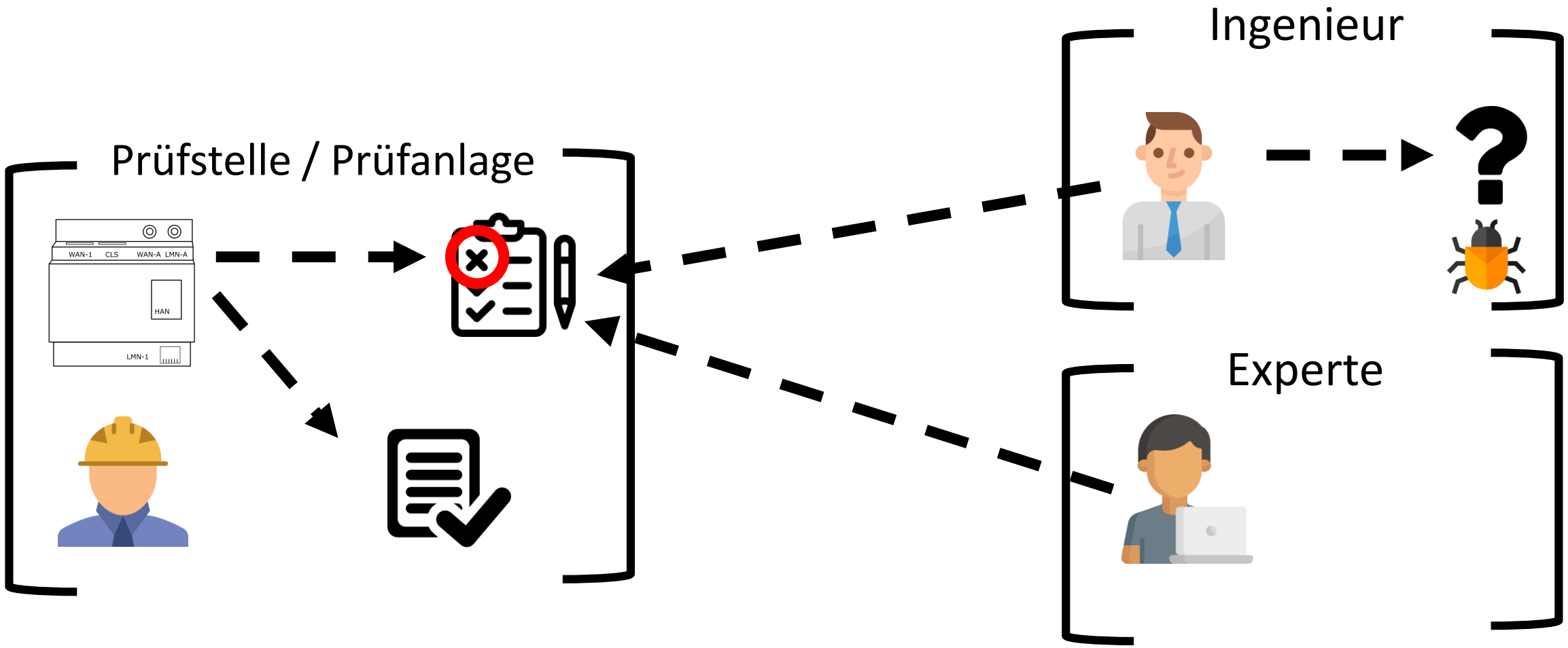
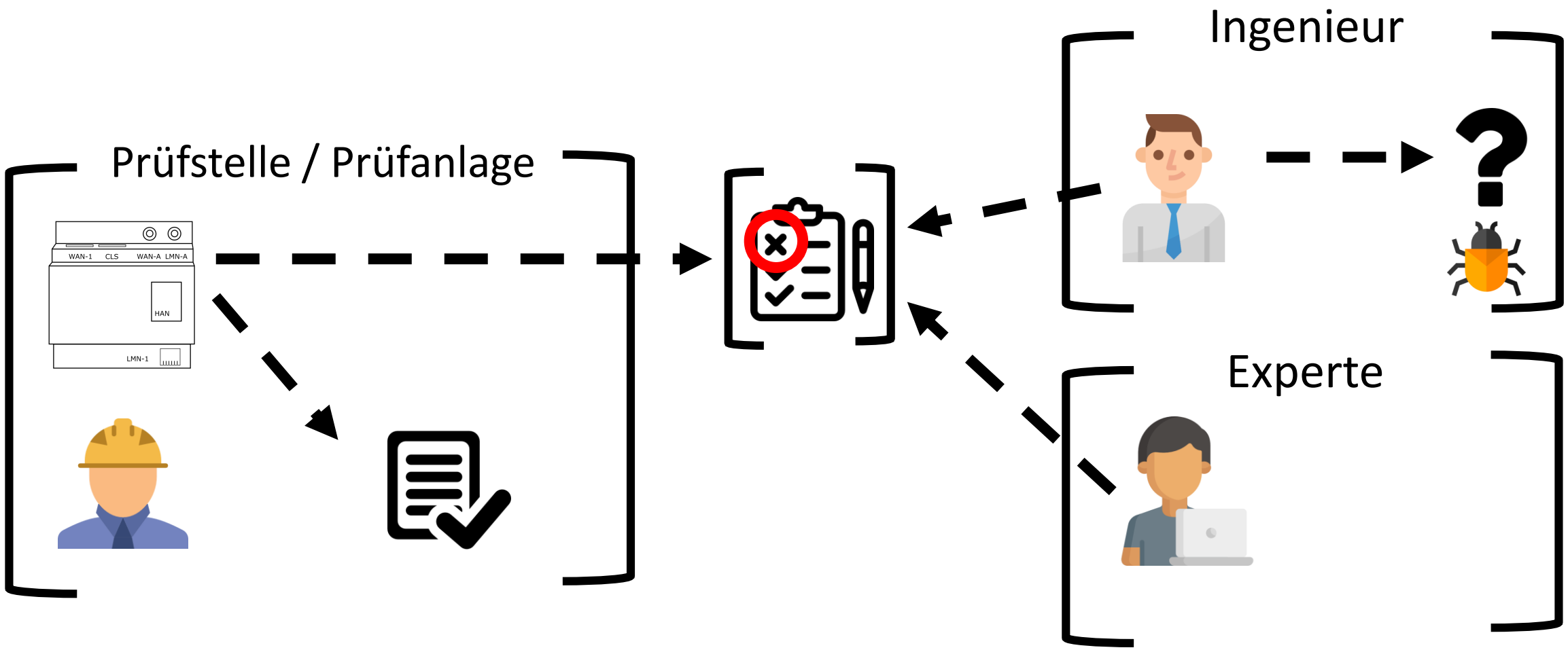
Aufbau Testsystem / Prüfanlage für iMSys



Aufbau Testsystem / Prüfanlage für iMSys



Aufbau Testsystem / Prüfanlage für iMSys



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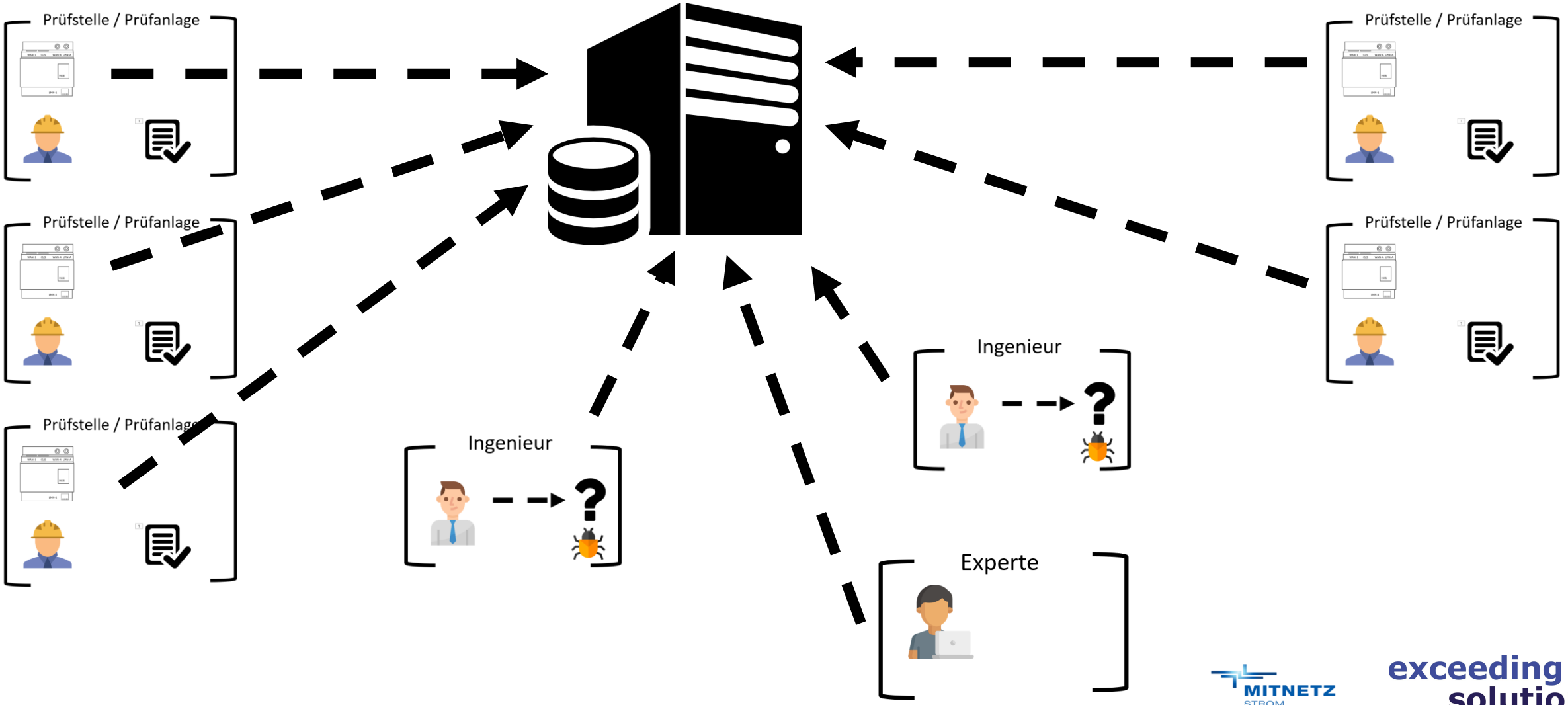
Aufbau Testsystem / Prüfanlage für iMSys



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Pilot Projekt „Taucha“

Lackmann
Zähler + Systemtechnik

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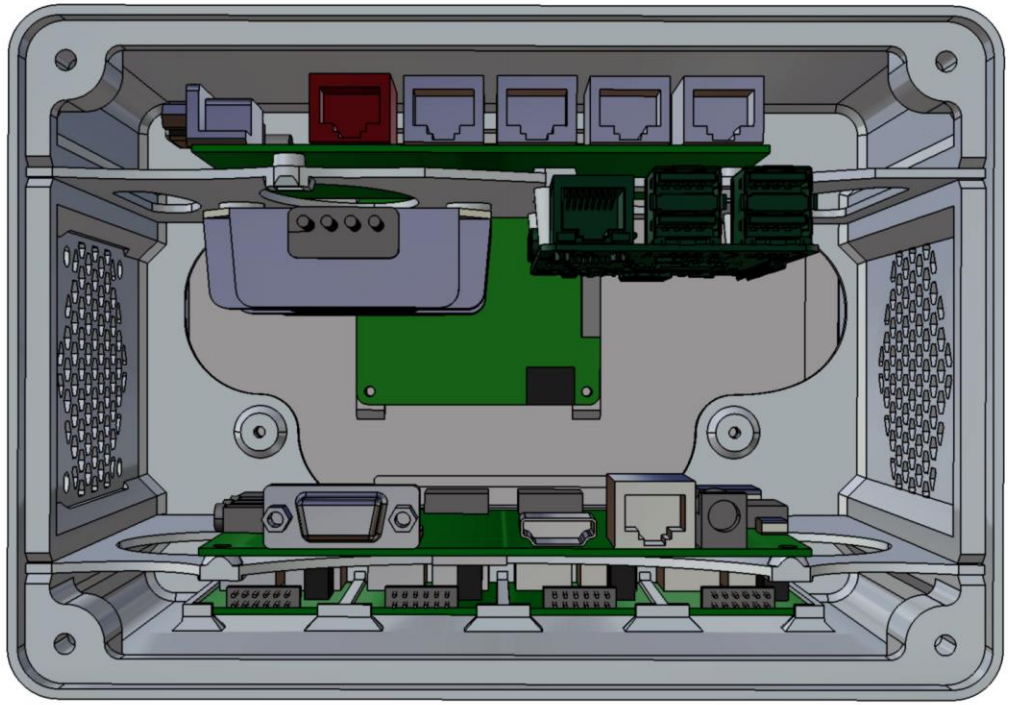
Aufbau Erweiterung Mehrplatz-Prüfanlage

- Komponente zur Erweiterung einer vorhandenen Prüfanlage
- LMN Kommunikation für Basis-Zähler und Smart Meter Gateway
- Anbindung von INFO DSS und Puls-LED an Echtzeithardware
- Kamera-System für automatische Erfassung des Displays
- Netzwerkswitch zur Separierung der HAN, WAN und CLS Netze am Smart Meter Gateway



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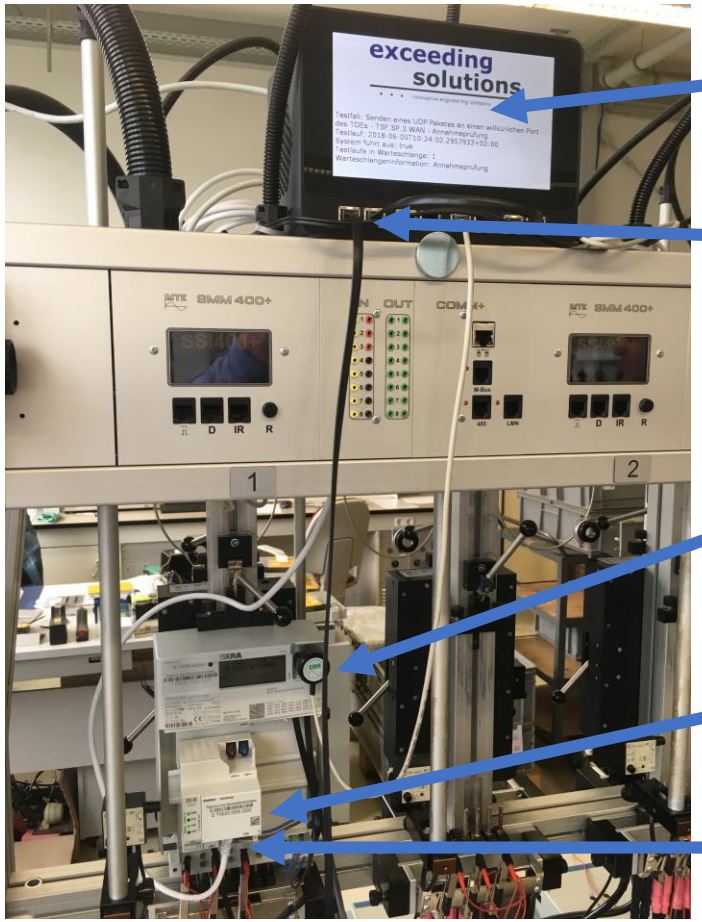
Aufbau Erweiterung Mehrplatz-Prüfanlage



Visualisierung des aktuellen Testlaufes

Anbindung LMN SMGW

Info / DSS

Gateway / LMN Anbindung

Gateway / WAN Anbindung

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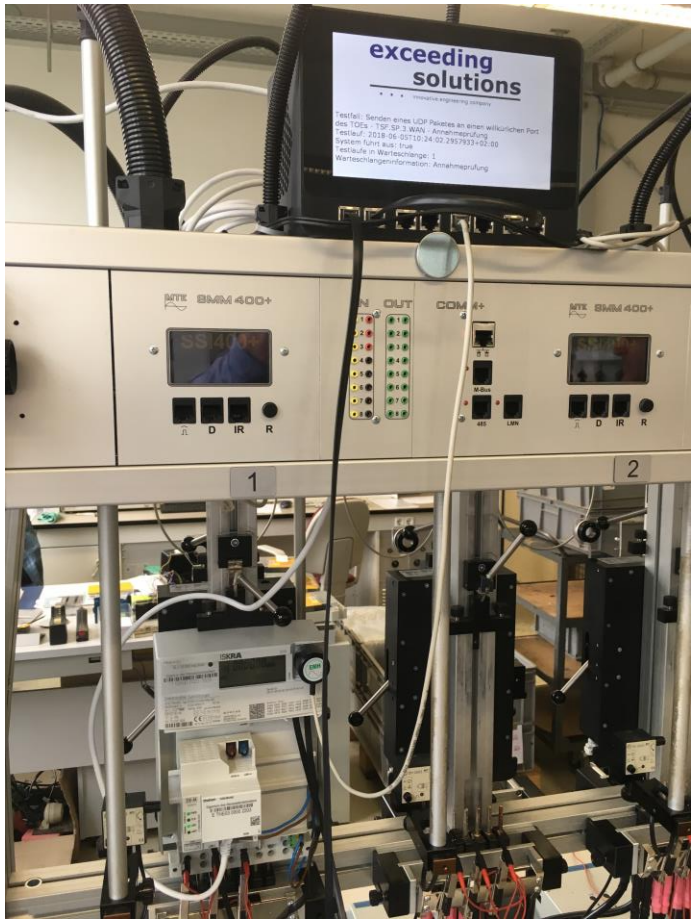
Aufbau Erweiterung Mehrplatz-Prüfanlage



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Vielen Dank für Ihre Aufmerksamkeit

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