

The background image shows a close-up of an aircraft's landing gear assembly. Two ground crew members, wearing bright yellow high-visibility vests and dark blue uniforms, are working on the landing gear. One person is leaning over a large black tire, while the other is standing nearby. The aircraft's fuselage and engine are visible in the background.

Bidirectional MINT – GEMS Interface

Automated examination transfer process

Annette de Witt, Lufthansa Technical Training GmbH

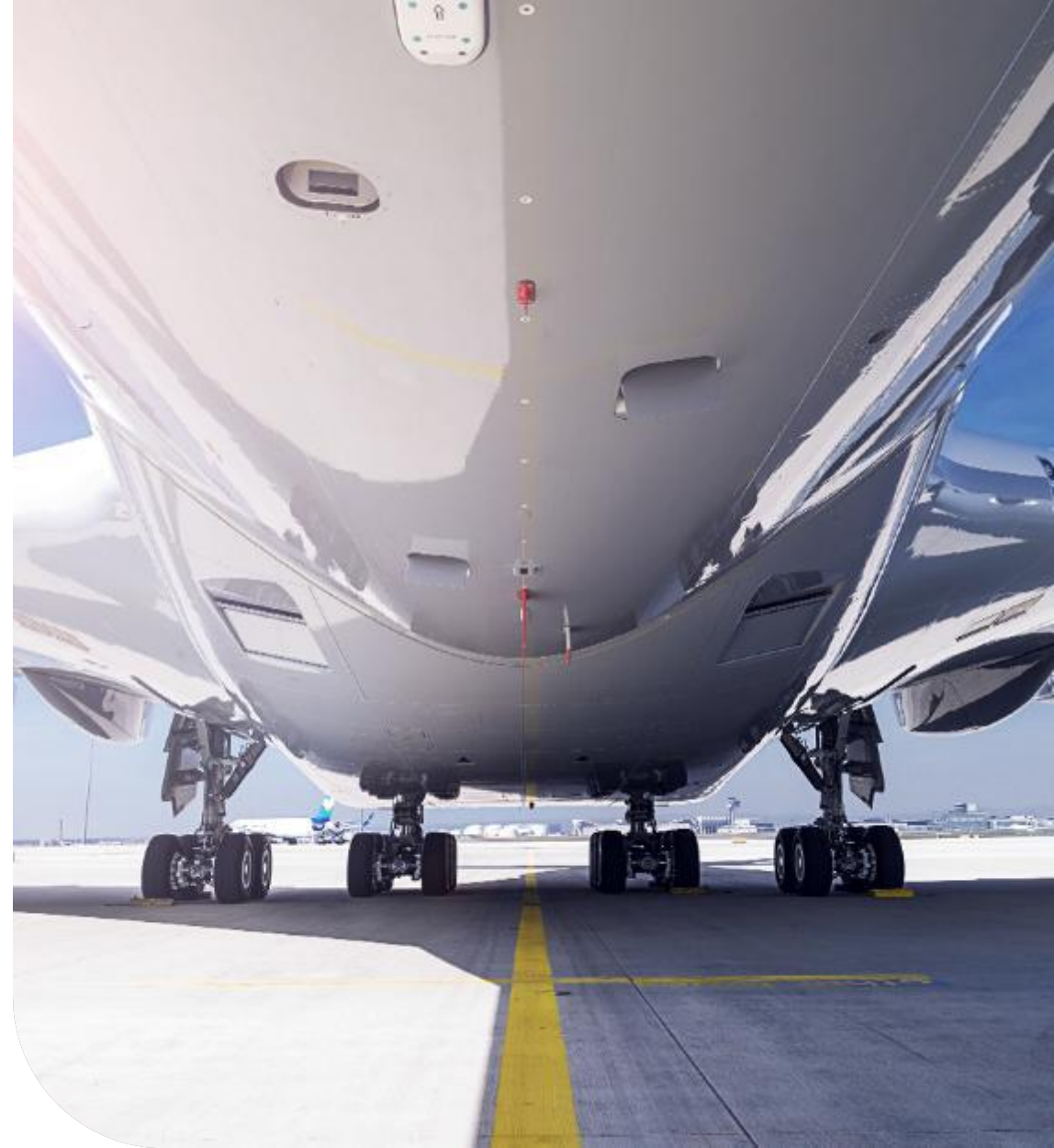
MINT UCON
Orlando FL, November 17 - 21, 2025



**Lufthansa
Technical Training**

Agenda

- 01 Company overview
- 02 Initial situation
- 03 Bidirectional MINT-GEMS interface
- 04 Additional functions
- 05 Q&A session





01

Company overview



Lufthansa
Technical Training

Market leader for technical MRO training



Quality &
competence
since 1995



The origin of our expertise

500

Customers
worldwide



Multi-certified training
organization

with training centers in
Germany and abroad



14.000

p.a. training days



28 Type Training
instructors

25 Basic & Vocational
Training instructors



2 Boeing 737

as well as engines and
landing gears



100%

Subsidiary of
Lufthansa Technik AG



L_02

Initial situation

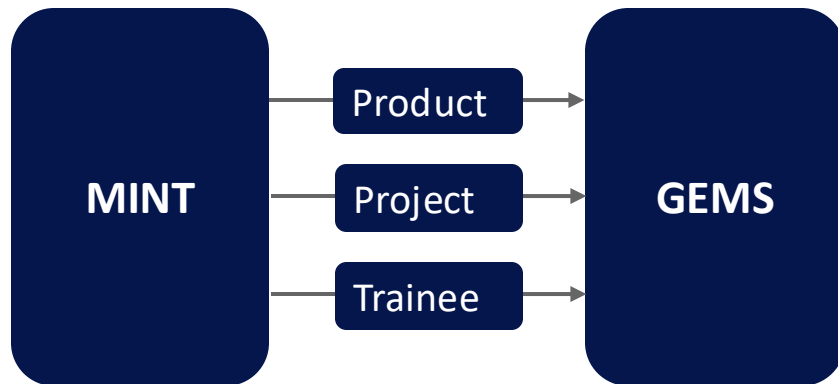
Where do we come from?



State overview

Data transfer

→ One data dump per day without any modifications in GEMS



Execute sign offs after examination in GEMS

→ Manual entry of examination results and success rate

The screenshot shows the 'Lufthansa Technical Training' GEMS interface. The top navigation bar includes 'Products', 'Projects', 'Resources', 'Forms', 'WBTs', 'Reports', 'SignOffs', and 'Dashboards'. Below this, a row of buttons includes 'Back', 'SignOff', 'Save', 'Reset', and 'Store offline'. The main content area displays 'Examination Results 1' for 'AFAT0A30A-02/014-25 [AFAT0A30A-02] - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical'. It shows 'RFT Number: 25-2609' and 'Exam Date: 19.09.2025 15:00'. Below this, a form for 'Mustermann, Max (123456)' is shown. The 'Success' field has radio buttons for 'passed' (selected), 'not passed', and 'not examined'. The 'Result' field shows '86'. The 'Cancel sign off' field has radio buttons for 'No' (selected) and 'Yes'. The 'Date' field shows '19.09.2025 15:00'. The 'GEMS Online' field has radio buttons for 'No' (selected) and 'Yes'. The 'Content' field shows 'Examination Block 1 of 1'. At the bottom, another row of buttons includes 'Back', 'SignOff', 'Save', 'Reset', and 'Store offline'.

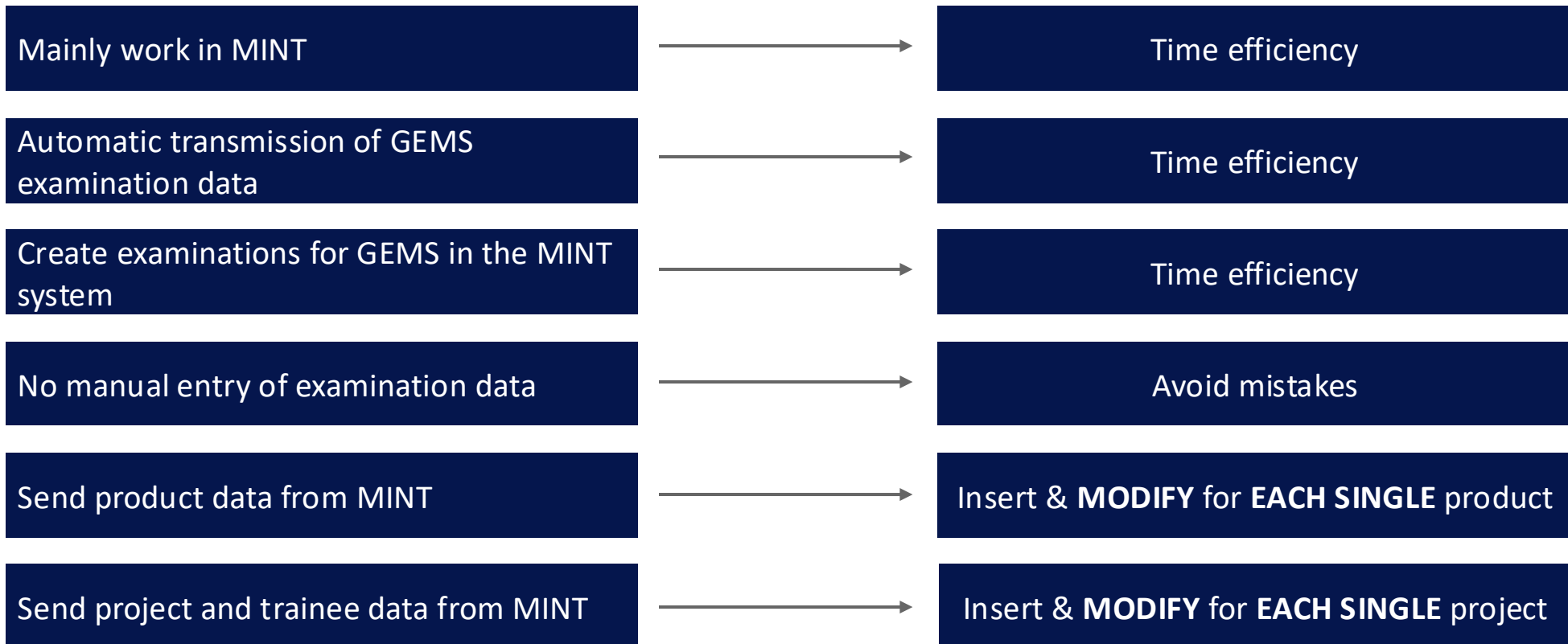
L_03

Bidirectional MINT-GEMS Interface

What do we want to achieve?



Goals



3 Steps for a functional interface

Step 1: Fill the properties

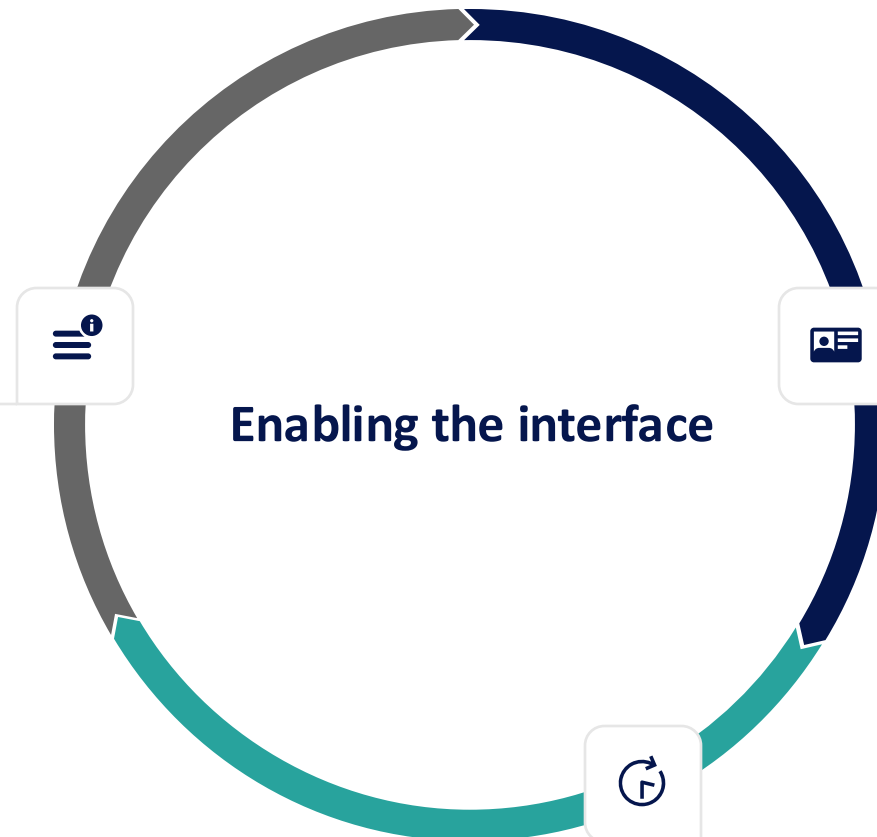
- GEMS Relevant
- GEMS Database
- GEMS Last Transfer

Step 2: Entering the template Id

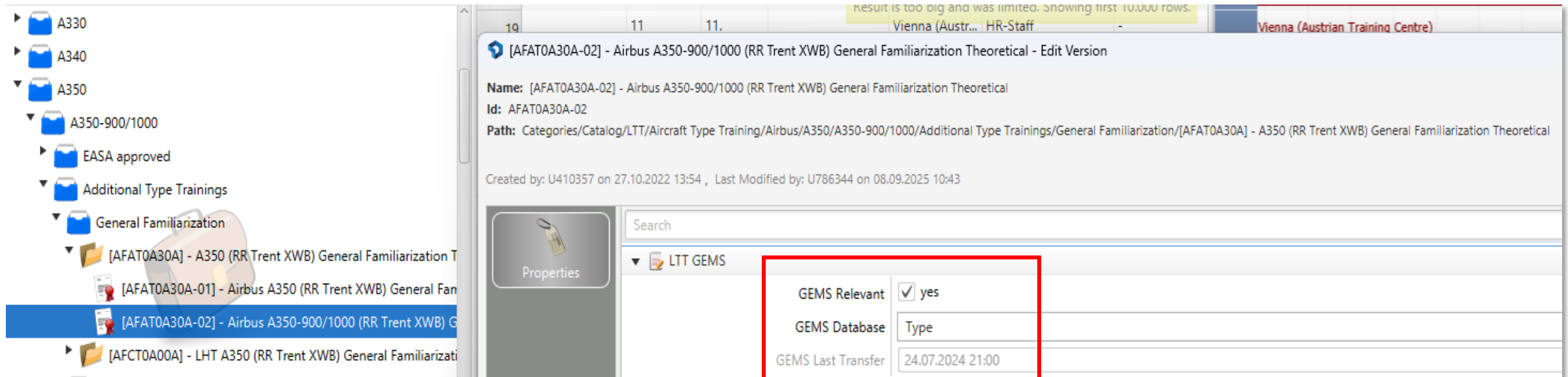
A unique Id must be provided

Step 3: Set examination availability 14 days in advance

Sign off must be available beforehand



Step 1: Fill the properties in the product



19 11 11. result is too big and was limited. showing first 10.000 rows. Vienna (Austr... HR-Staff - Vienna (Austrian Training Centre)

[AFAT0A30A-02] - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical - Edit Version

Name: [AFAT0A30A-02] - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical
Id: AFAT0A30A-02
Path: Categories/Catalog/LTT/Aircraft Type Training/Airbus/A350/A350-900/1000/Additional Type Trainings/General Familiarization/[AFAT0A30A] - A350 (RR Trent XWB) General Familiarization Theoretical

Created by: U410357 on 27.10.2022 13:54 , Last Modified by: U786344 on 08.09.2025 10:43

Properties

Search

▼ LTT GEMS

GEMS Relevant	☒ yes
GEMS Database	Type
GEMS Last Transfer	24.07.2024 21:00

Step 2: Entering the template Id in the examination event

The screenshot displays the 'Examination Block 1 of 1 - Edit Event' dialog box in the Bidirectional MINT - GEMS Interface. The dialog box is open over a calendar view showing a weekly schedule. The 'LTT Examination for GEMS' section is expanded, and the 'LTT Event Examination Template ID' field is highlighted with a red box, containing the value '4971'. Other fields in the dialog include 'LTT Event Examination Scheduled for CS' (set to '<not set>'), 'LTT Event Examination Template Remark', 'LTT Event Examination ID', 'LTT Event Examination Type', 'LTT Event Examination GEMS Start Date' (with a date picker), 'LTT Event Examination Created Status', 'LTT Event Essay Examination Template ID', 'LTT Event Essay Examination ID', 'LTT Event Essay Examination Created Status', and 'LTT Event Examination Remark'.

Step 3: Set examination availability 14 days in advance

Examination Block 1 of 1 - Edit Event

Name: Examination Block 1 of 1
Category: Categories/Catalog/LTT/Aircraft Type Training/Airbus/A350/A350-900/1000/NON approved/General Familiarization/[AFAT0A30A] - A350 (RR Trent XWB) General Familiarization Theoretical/[AFAT0A30A-02] - Airbus A35...
Location: World/Training Locations/Europe/Germany/Hessen/Frankfurt/Frankfurt (LTTG)

Record Items Grading SignOff Groups

Selected Record Item

Name	Path
LTT Examination	Record Items/LTT/Forms/Certificate For...

Classroom [x1]
Customer Service (Customer Service Employee) [x1]
Instructor (General Familiarization) (Airbus A350 (RR Trent XWB) C EL Theoretical) [x1]
Trainee [x18]

LTT Examination

First/Any

Customer Service (1 Qs) [x1]

Trainee [x18]

Options: Default grading

Available 14 days before the start of the event.
Assignable 14 days before the start of the event.
Available/assignable until 90 days after the end of the event.

OK Cancel Apply

Pathway to the updated sign-off form

Step 1: Fill the properties

- GEMS Relevant
- GEMS Database
- GEMS Last Transfer



Step 2: Input the template Id

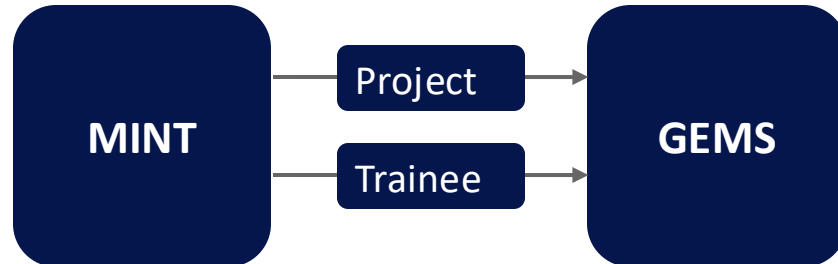
A unique Id must be provided

Step 3: Set examination availability 14 days in advance

Sign off must be available beforehand

Introducing the updated sign off form

New: Possibility to create an online or cloud-based exam
→ Examination results will be **automatically** transmitted to MINT



The screenshot displays the Lufthansa Technical Training sign-off form. The form is titled 'Examination' and contains the following fields:

- Title: AFAT0A30A-02/014-25 [AFAT0A30A-02] - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical
- Exam Title: Examination Block 1 of 1
- Template Id: 4071
- RFT Number: 25-2609
- Exam Date: 12.03.2026 16:30
- Name: Mustermann, Max (112345D)

The form is divided into two main sections: 'Automatic Examination results (GEMS)' and 'Manual Examination results'.

Automatic Examination results (GEMS):

- Exam Type: ☐ Online ☐ Cloud

Manual Examination results:

- Success: ☐ passed ☐ not passed ☐ not examined
- Result:
- Location: Frankfurt (LTTG)
- Date: 12.03.2026 16:30
- Remark:
- Cancel sign-off: ☒ No ☐ Yes
- For Practical Assessments only!
- Content: Examination Block 1 of 1
- Exam Type: ☐ Paper

The form includes buttons for 'Back', 'SignOff', 'Save', 'Reset', and 'Store offline' at the bottom.

Data transmission after sign off examination from MINT to GEMS

LT Examination - Edit Resource Record Item

Resource Name: Mustermann, Max
Resource ID: 112345D
Record Item: Record Items/LTT/Forms/Certificate Forms/Examinations/Examination Results/LTT Examination

Assigned by: de Witt on 11.11.2025 11:16, Last Modified by: U786344 on 11.11.2025 11:16

Search

General

Issue Date: 11.11.2025

LTT Certificate/Examination Properties

(M) LTT Examination Title: Examination Block 1 of 1

LTT Assessment Content: Examination Block 1 of 1

LTT RFT-Number: 25-2609

(U) LTT Examination Assignment ID: 120318

LTT Cancel Sign-off: ☐ no

LTT Cancel Sign-off Reason:

LTT Examination Scheduled Event Name: Examination Block 1 of 1

(M) LTT Examination Type: online

(M) LTT Examination Date: 12.03.2026 16:30

(P) LTT Examination Result:

LTT Examination Location: Frankfurt (LTTC)

(P) LTT Examination Success:

LTT RE-Examination Date 1: dd.MM.yyyy HH:mm

LTT RE-Examination ID 1:

(P) LTT RE-Examination Result 1:

LTT RE-Examination Location 1:

(P) LTT RE-Examination Success 1:

LTT RE-Examination Date 2: dd.MM.yyyy HH:mm

LTT RE-Examination ID 2:

(P) LTT RE-Examination Result 2:

LTT RE-Examination Location 2:

(P) LTT RE-Examination Success 2:

OK Close Apply



```
{
  "exam": {
    "start": "2025-09-19T11:40:00.000Z",
    "author": {
      "firstName": "Annette",
      "surname": "de Witt",
      "email": "annette.de-witt@lth.dlh.de",
      "customIdentifier": {
        "key": "resource object key",
        "value": "90764"
      }
    }
  },
  "type": "online",
  "examiners": [
    {
      "firstName": "",
      "surname": "",
      "email": "",
      "customIdentifier": {
        "key": "resource object key",
        "value": "null"
      }
    }
  ],
  "location": {
    "name": "Frankfurt (LTTC)",
    "customIdentifier": {
      "key": "location object key",

```



Data transmission after examination creation from GEMS to MINT

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:objects xmlns:ns2="http://www.mint-online.com/MintXmlGenericSchema">
  <object key="24311512" type="event" action="update">
    <property name="LTT Event Examination ID">17552</property>
    <property name="LTT Event Examination Type">online</property>
  </object>
</ns2:objects>
```



Examination Block 1 of 1 - Edit Event

Name: Examination Block 1 of 1
Category: Categories/Catalog/LTT/Aircraft Type Training/Airbus/A350-900/1000/NON approved/General Familiarization/(AFATO30A) - A350 (RR Trent XWB) General Familiarization Theoretical/(AFATO30A-02) - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical
Location: World/Training Locations/Europe/Germany/Hessen/Frankfurt/Frankfurt (LTC)

Search

Properties

Record Items

Administration

Assignments

General

LTT Examination for GEMS

LTT Event Examination Scheduled for CS ☒ yes

LTT Event Examination GEMS Database

LTT Event Examination Template ID

LTT Event Examination Template Remark

LTT Event Examination ID

LTT Event Examination Type

LTT Event Examination GEMS Start Date

LTT Event Examination Created Status

LTT Event Essay Examination Template ID

LTT Event Essay Examination ID

LTT Event Essay Examination Created Status

LTT Event Examination Remark

Property	Old Value	New Value	Modified by	Modified date
LTT Event Examination ID		17552	GEMS_LTT	11.11.2025 11:17
LTT Event Examination Type		online	GEMS_LTT	11.11.2025 11:17

Reason Code:
Event:
Slot Group:

OK Close Apply



Data transmission of examination results from GEMS to MINT

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:objects xmlns:ns2="http://www.mint-online.com/MintXmlGenericSchema">
  <object key="5247021" type="resource_record_item" action="update">
    <property name="LTT Examination Date">19.09.2025 13:40</property>
    <property name="LTT Examination Result">50</property>
    <property name="LTT Examination Success">not passed</property>
  </object>
</ns2:objects>
```



LTT Examination Test - Edit Resource Record Item

Resource Name: Mustermann, Max
Resource ID: 123456
Record Item: Record Items/Z-Archive/Testfolder/Examination Test/LTT Examination Test
Assigned by: de Witt on 08.09.2025 10:46, Last Modified by: GEMS_LTT on 08.09.2025 13:20

Search

▼ General

Issue Date: 08.09.2025

▼ LTT Certificate/Examination Properties

LTT Examination Title: Examination Block 1 of 1
LTT Assessment Content: Examination Block 1 of 1
LTT RFT-Number: 25-2009
(U) LTT Examination Assignment ID: 115102
LTT Cancel Sign-off: ☐ no
LTT Cancel Sign-off Reason:
LTT Examination Scheduled Event Name: Examination Block 1 of 1
(M) LTT Examination Type: online
LTT Examination Date: 19.09.2025 13:40
LTT Examination Result: 50
LTT Examination Location: Frankfurt (LITC)
LTT Examination Success: not passed

Property	Old Value	New Value	Modified date
LTT Examination...		50	08.09.2025 13:16
LTT Examination...	10.09.2025 15:00	10.09.2025 13:40	08.09.2025 13:16
LTT Examination...		not passed	08.09.2025 13:16



Data transmission of re-examination results from GEMS to MINT

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns2:objects xmlns:ns2="http://www.mint-online.com/MintXmlGenericSchema">
  <object key="5247021" type="resource_record_item" action="update">
    <property name="LTT RE-Examination ID 1">17069</property>
    <property name="LTT RE-Examination Date 1">20.09.2025 13:18</property>
    <property name="LTT RE-Examination Result 1">25</property>
    <property name="LTT RE-Examination Success 1">not passed</property>
    <property name="LTT RE-Examination Location 1">1</property>
  </object>
</ns2:objects>
```



LTT Examination Test - Edit Resource Record Item

Resource Name: Madermann, Max
Resource ID: 123456
Record Item: Record Items/2-Archive/Testfolder/Examination Test/LTT Examination Test

Assigned by: de Wlt on 08.09.2025 10:46, Last Modified by: GEMS_LTT on 08.09.2025 13:20

Search

General

Issue Date: 08.09.2025

LTT Certificate/Examination Properties

LTT Examination Title: Examination Block 1 of 1
LTT Assessment Content: Examination Block 1 of 1
LTT RFT-Number: 25-2609
(U) LTT Examination Assignment ID: 115102
LTT Cancel Sign-off: ☐ no
LTT Cancel Sign-off Reason:
LTT Examination Scheduled Event Name: Examination Block 1 of 1
(M) LTT Examination Type: online
LTT Examination Date: 19.09.2025 13:40
LTT Examination Result: 50
LTT Examination Location: Frankfurt (LTT) ...
LTT Examination Success: not passed

LTT RE-Examination Date 1: 20.09.2025 13:18
LTT RE-Examination ID 1: 17069
LTT RE-Examination Result 1: 25
LTT RE-Examination Location 1: World ...
LTT RE-Examination Success 1: not passed

Property	Old Value	New Value	Modified date
LTT Examination...		50	08.09.2025 13:16
LTT Examination...	19.09.2025 15:00	19.09.2025 13:40	08.09.2025 13:16
LTT Examination...		not passed	08.09.2025 13:16
LTT RE-Examina...		not passed	08.09.2025 13:20
LTT RE-Examina...		25	08.09.2025 13:20
LTT RE-Examina...		20.09.2025 13:18	08.09.2025 13:20
LTT RE-Examina...		17069	08.09.2025 13:20
LTT RE-Examina...		World	08.09.2025 13:20



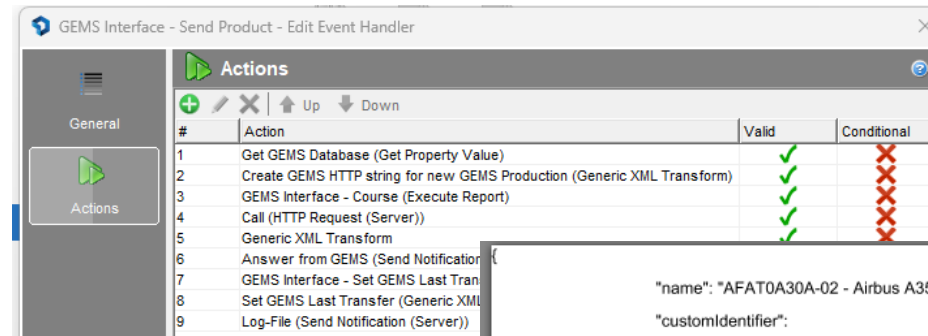
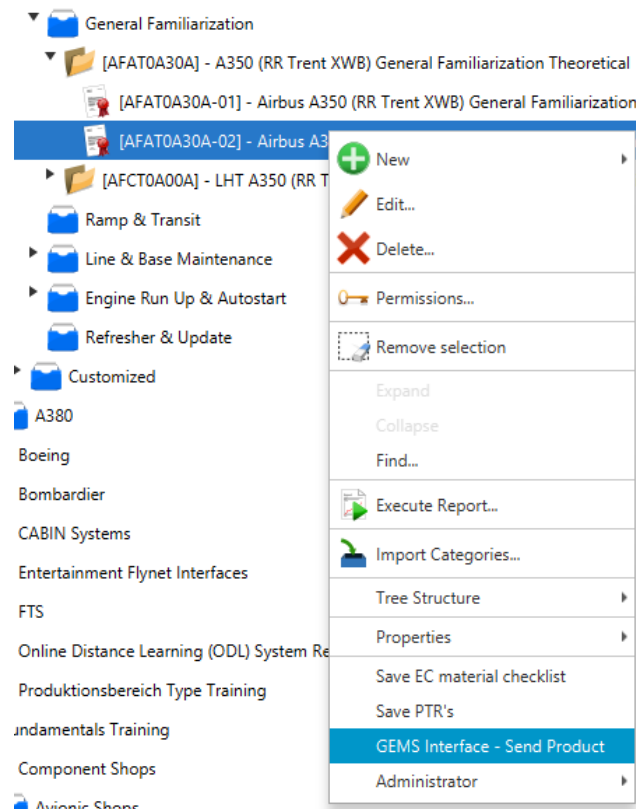
L_04

Additional functions

What else do we need ?



Data transmission of product data from MINT to GEMS



```
"name": "AFAT0A30A-02 - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical",  
"customIdentifier":  
  {  
    "key": "category object key",  
    "value": "149236"  
  }  
}
```

```
Code: 200 || Content: <?xml version="1.0" encoding="UTF-8" standalone="yes"?>  
<root>  
  <message>course imported successfully</message>  
  <Course>  
    <new_id>38375</new_id>  
    <action>Created</action>  
  </Course>  
</root>
```



[illegible]

Create paper examination in GEMS

Paper examination can be created via a link and the Sign-Off's can be used for manual entry after the examination

Examination - Overview													
AFAT0A30A-02/014-25 [AFAT0A30A-02] - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical (25-2609)													
RFT Number	Sched. for CS	Name	Start	End	Location	Examiner	Trainee No.	GEMS Database	Template Id	Exam Id MC	Exam Id Essay	Examination Remark	Exam Status
25-2609 (AFAT0A30A-02/014-25 [AFAT0A30A-02] - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical)													
	yes	Examination Block 1 of 1	12.03.26 15:10	12.03.26 16:30	Frankfurt (LTTC)	Thorsten Hinz	3	Type	4971				Create Paper - Examination in GEMS
													Restore Sign Off's not possible for the Exam

Restore sign off's for trainees

Restore sign-off's for **all** trainees



Examination - Overview														
AFAT0A30A-02/014-25 [AFAT0A30A-02] - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical (25-2609)														
RFT Number	Sched. for CS	Name	Start	End	Location	Examiner	Trainee No.	GEMS Database	Template Id	Exam Id MC	Exam Id Essay	Examination Remark	Exam Status	Restore Sign-Off's (only for online/cloud sign off's without any exam results)
25-2609 (AFAT0A30A-02/014-25 [AFAT0A30A-02] - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical)														
	yes	Examination Block 1 of 1	12.03.26 15:10	12.03.26 16:30	Frankfurt (LTTC)	Thorsten Hinz	3	Type	4971	17552			Exam already available	Restore Sign Off's

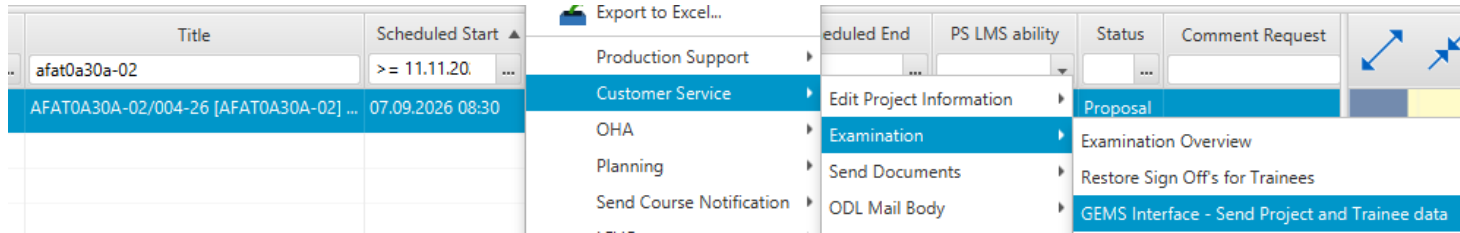
Restore sign-off's for **selected** trainees



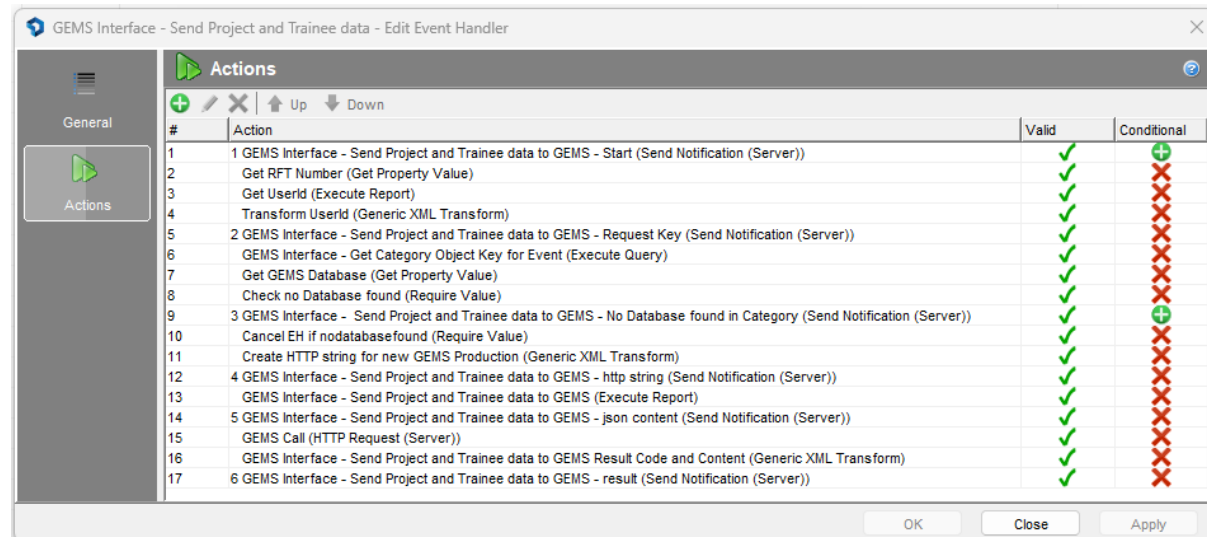
Restore Sign Off's for Trainees										
AFAT0A30A-02/014-25 [AFAT0A30A-02] - Airbus A350-900/1000 (RR Trent XWB) General Familiarization Theoretical (25-2609)										
RFT Number	Name	Start	End	Location	Trainee	Trainee No.	Examination Id MC	Examination Id Essay	Examination Sign-Off's (only allowed for sign off's for online/cloud and without any examination results)	
25-2609										
	Examination Block 1 of 1	12.03.26 15:10	12.03.26 16:30	Frankfurt (LTTC)						
					de Witt, Annette (786344D)	1	17552		no Restore Sign Off available	
					Kobayashi, Hiyori (487945C)	2	17552		no Restore Sign Off available	
					Mustermann, Max (112345D)	3	17552		Restore Sign Off	

Data transmission of project and trainee data from MINT to GEMS

Send project and trainee data

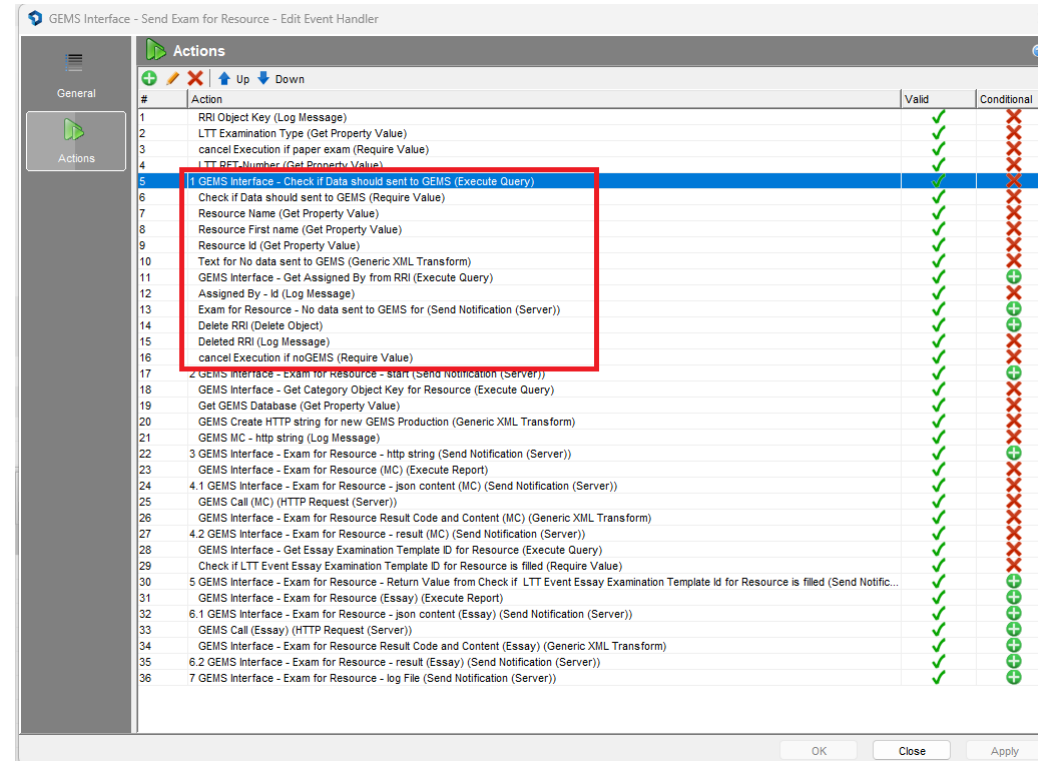


without any
examination
information



Automatic Restore sign off

Checking whether data are complete in MINT to create an examination in GEMS



#	Action	Valid	Conditional
1	RRI Object Key (Log Message)	✓	✗
2	LTT Examination Type (Get Property Value)	✓	✗
3	cancel Execution if paper exam (Require Value)	✓	✗
4	LTT GET - Number of Data Browsers (Query)	✓	✗
5	1 GEMS Interface - Check if Data should sent to GEMS (Execute Query)	✓	✗
6	Check if Data should sent to GEMS (Require Value)	✓	✗
7	Resource Name (Get Property Value)	✓	✗
8	Resource First name (Get Property Value)	✓	✗
9	Resource Id (Get Property Value)	✓	✗
10	Text for No data sent to GEMS (Generic XML Transform)	✓	✗
11	GEMS Interface - Get Assigned By from RRI (Execute Query)	✓	✗
12	Assigned By - Id (Log Message)	✓	✗
13	Exam for Resource - No data sent to GEMS for (Send Notification (Server))	✓	✗
14	Delete RRI (Delete Object)	✓	✗
15	Deleted RRI (Log Message)	✓	✗
16	cancel Execution if noGEMS (Require Value)	✓	✗
17	2 GEMS Interface - Exam for Resource - start (Send Notification (Server))	✓	✗
18	GEMS Interface - Get Category Object Key for Resource (Execute Query)	✓	✗
19	Get GEMS Database (Get Property Value)	✓	✗
20	GEMS Create HTTP string for new GEMS Production (Generic XML Transform)	✓	✗
21	GEMS MIC - http string (Log Message)	✓	✗
22	3 GEMS Interface - Exam for Resource - http string (Send Notification (Server))	✓	✗
23	GEMS Interface - Exam for Resource (MC) (Execute Report)	✓	✗
24	4.1 GEMS Interface - Exam for Resource - json content (MC) (Send Notification (Server))	✓	✗
25	GEMS Call (MC) (HTTP Request (Server))	✓	✗
26	GEMS Interface - Exam for Resource Result Code and Content (MC) (Generic XML Transform)	✓	✗
27	4.2 GEMS Interface - Exam for Resource - result (MC) (Send Notification (Server))	✓	✗
28	GEMS Interface - Get Essay Examination Template ID for Resource (Execute Query)	✓	✗
29	Check if LTT Event Essay Examination Template ID for Resource is filled (Require Value)	✓	✗
30	5 GEMS Interface - Exam for Resource - Return Value from Check if LTT Event Essay Examination Template Id for Resource is filled (Send Notific...	✓	✗
31	GEMS Interface - Exam for Resource (Essay) (Execute Report)	✓	✗
32	6.1 GEMS Interface - Exam for Resource - json content (Essay) (Send Notification (Server))	✓	✗
33	GEMS Call (Essay) (HTTP Request (Server))	✓	✗
34	GEMS Interface - Exam for Resource Result Code and Content (Essay) (Generic XML Transform)	✓	✗
35	6.2 GEMS Interface - Exam for Resource - result (Essay) (Send Notification (Server))	✓	✗
36	7 GEMS Interface - Exam for Resource - log File (Send Notification (Server))	✓	✗

➔ RRI delete and error mail for customer service team

L_05

Open session

If you have any questions, please let me know.

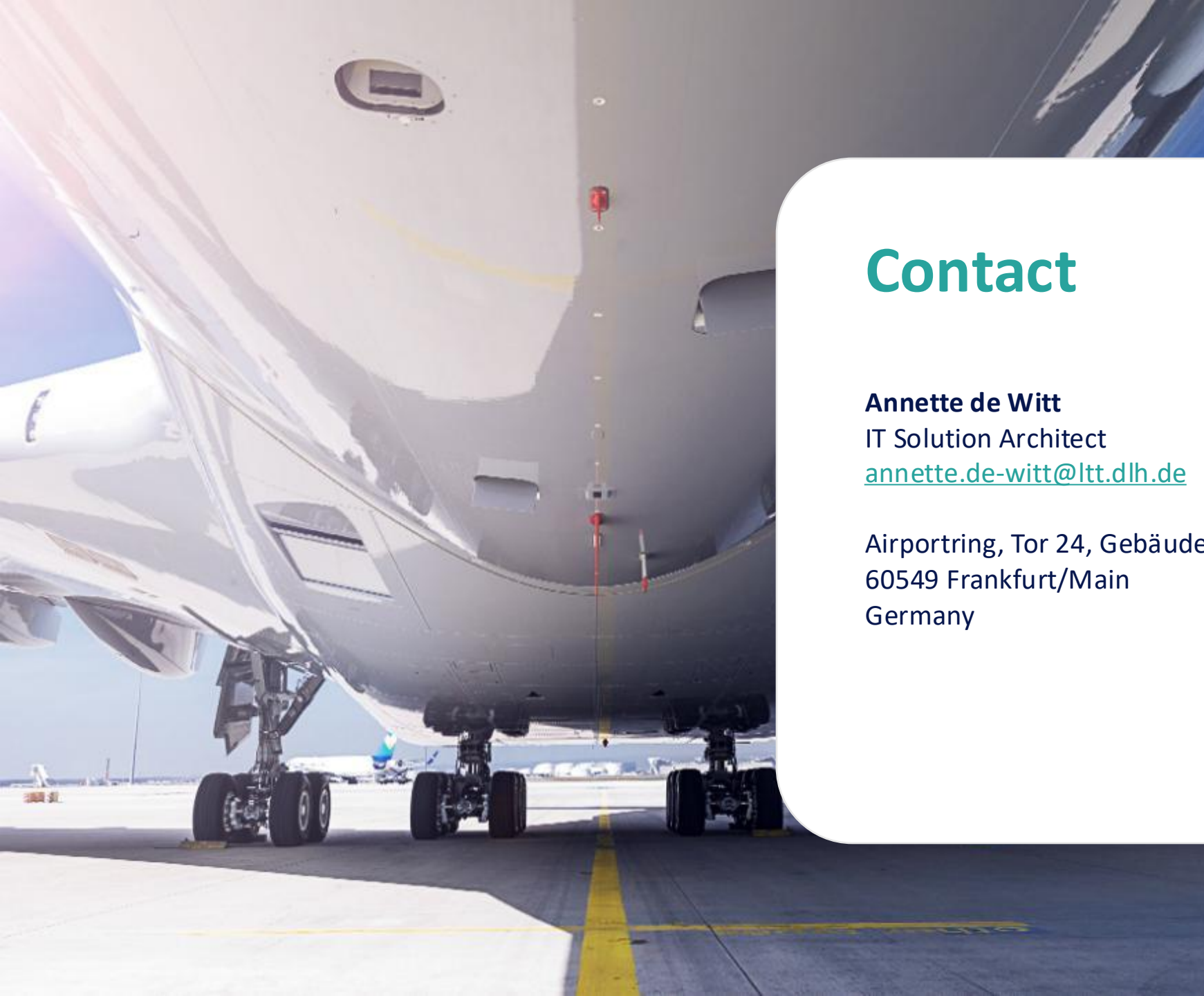


Thank you for your attention !

The successful implementation of the interface would not have been possible without the support of **ASTech** – thank you for an excellent collaboration.



Lufthansa
Technical Training



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Germany



Lufthansa
Technical Training