



A Tale of Two Laboratories

Binational Cooperation in Mishap Investigation of Safety & Survival Systems

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Agenda

1. Engineer and Scientist Exchange Program
2. Life Sciences Equipment Laboratory
3. Arbeitsgruppe für Technische Untersuchungen
4. Relationship to the industry
5. Recent investigations and current issues
6. Challenges shared and unique
7. Benefits of the Engineer and Scientist Exchange Program





Engineer and Scientist Exchange Program

ESEP is a reciprocal, but not one-for-one, exchange program

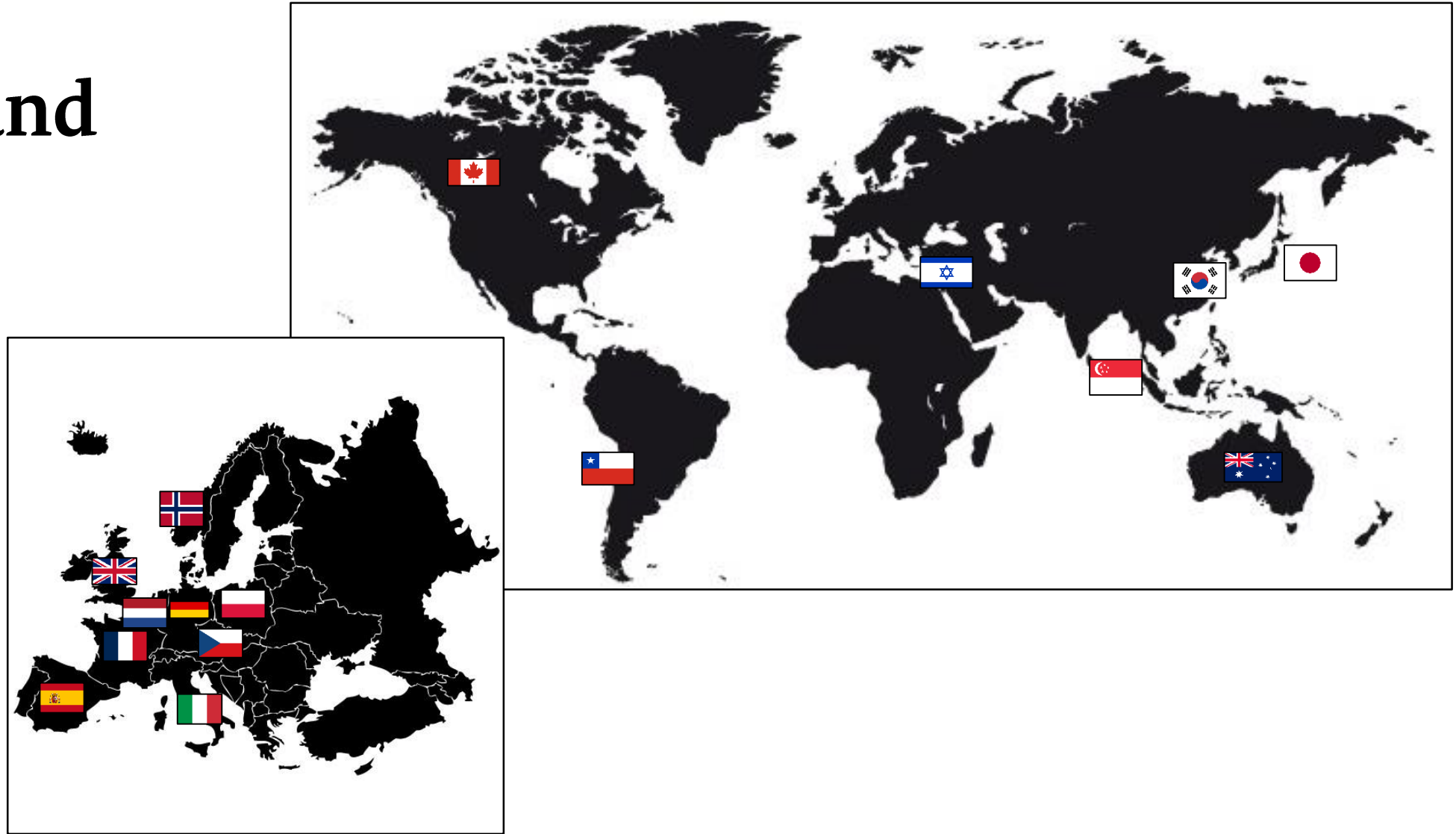
Promotes international cooperation in military research, development, test, and evaluation

Military and civilian engineers and scientists

On-site working assignments



Engineer and Scientist Exchange Program

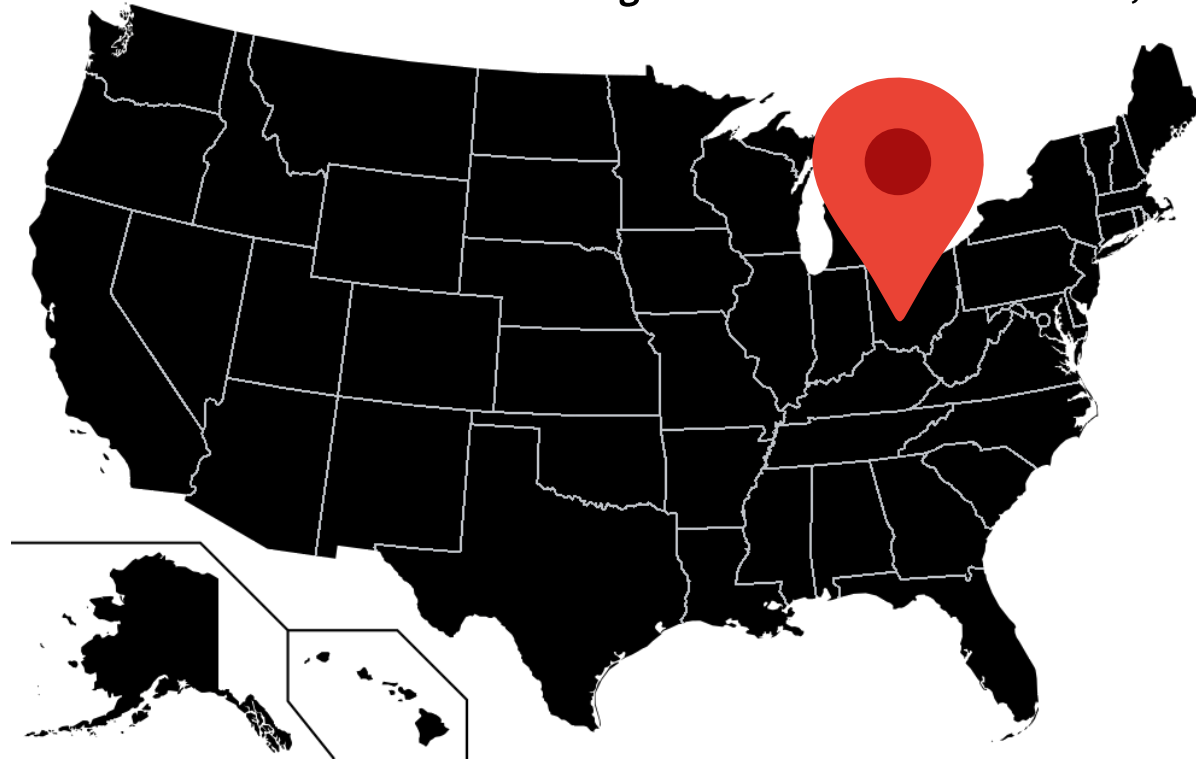




Life Sciences Equipment Laboratory

**Life
Sciences
Equipment
Laboratory**

Wright-Patterson Air Force Base, Ohio



Life Sciences Equipment Laboratory



Established

1969 unofficially
1983 officially



Task

Ensures performance of
USAF Escape Systems and
Aircrew Flight Equipment

Mishap investigations and
special projects



Location

Field and Lab Analysis

Crash site can be anywhere in
the world



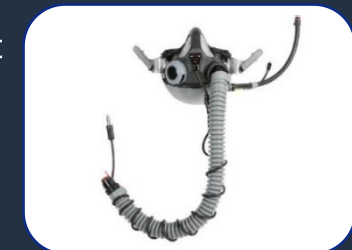
Employees

2x journeyman engineers
1x junior engineer

Life Sciences Equipment Laboratory



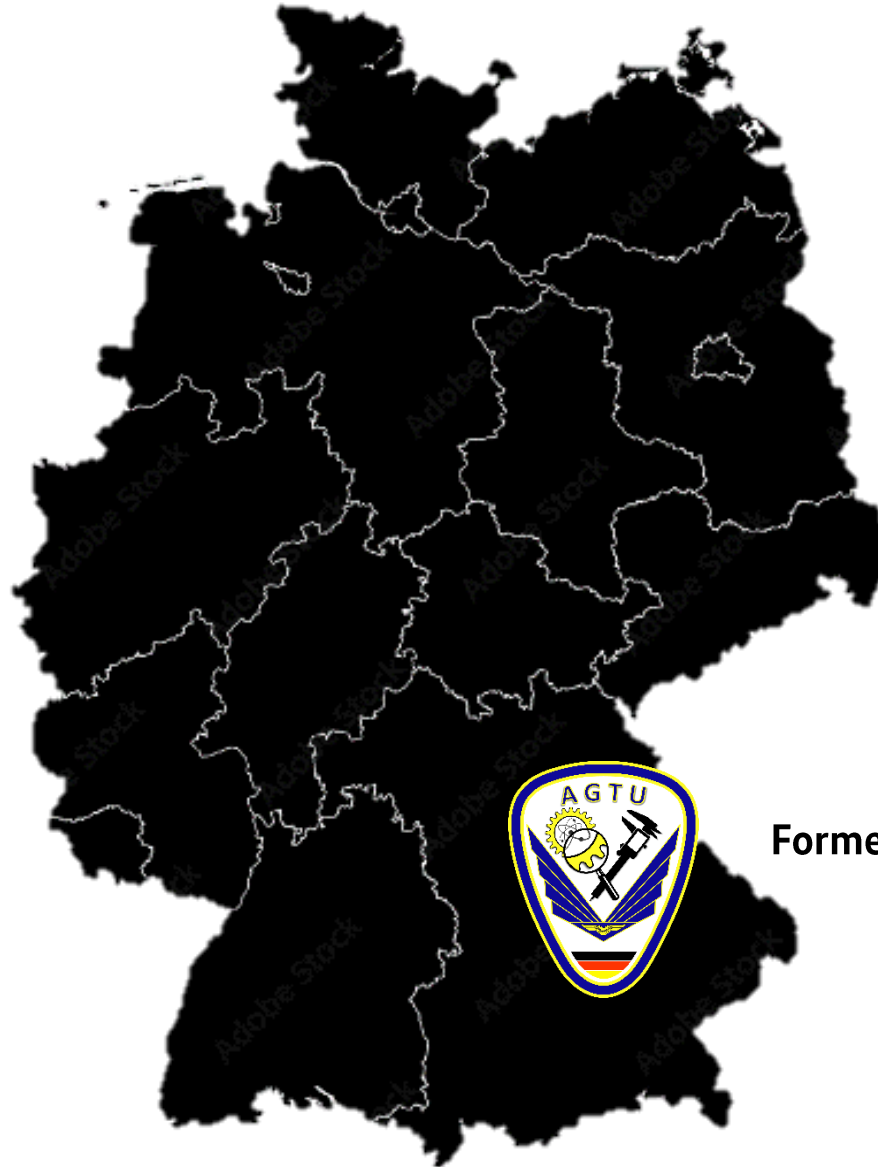
- Only USAF
- Only safety and survival systems
- Not responsible for CAD/PAD
- Only certain life cycle stages; not responsible for manufacturing





Arbeitsgruppe für Technische Untersuchungen

Arbeitsgruppe für Technische Untersuchungen



Former Air Base Erding, Bavaria

Arbeitsgruppe für Technische Untersuchungen



Established

1964 unofficially
1965 officially



Task

Ensures performance of all
flying weapon systems of the
German Armed Forces



Location

Mostly Lab Analysis
Crash site can be anywhere in
the world



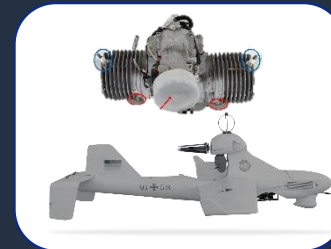
Employees

3x CIV Mech. Eng.
2x MIL Mech. Eng.
1x MIL Elec. Tech.
1x CIV Admin.

Arbeitsgruppe für Technische Untersuchungen



- Air Force, Army and Navy
- All aircraft types
- Mostly at component level
- Safety and survival systems are only a subset of the AGTU's portfolio





Capabilities related to Safety and Survival

	AGTU	LSEL
Failure Analysis	✓	✓
Forensic Engineering	✓	✓
Accident Reconstruction	✓	✓
Metrology	✗	✓
Material Verification	✗	✓
Physical Property Testing	✗	✓
Microscopy and Photography	✓	✓
Electrical Analysis	✓	✗
Reference Equipment	✗	✓



Relationship to the S&S Industry

Relationship to the S&S Industry

Where is equipment manufactured?



Who owns the technical data rights?

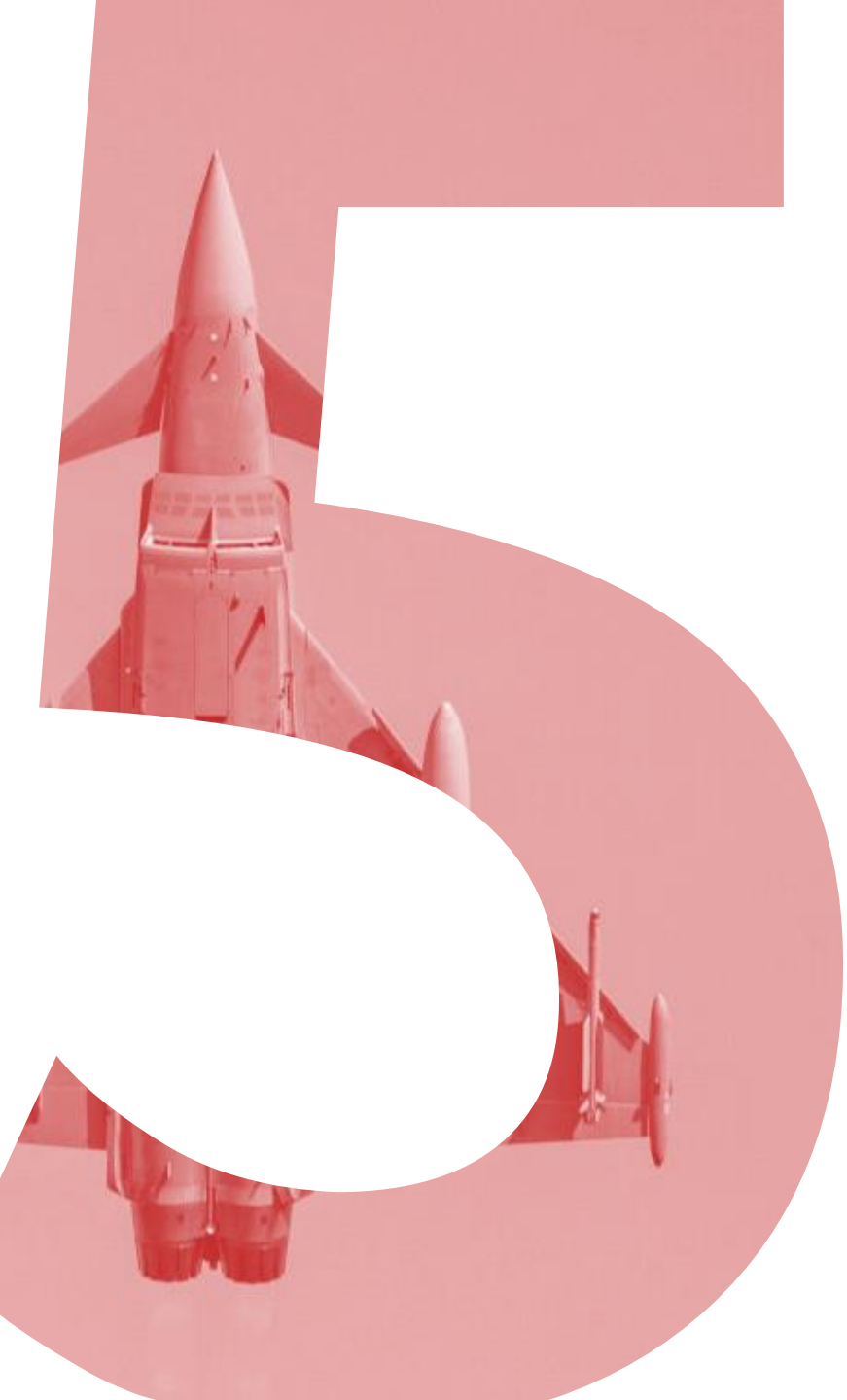


Who is responsible for maintenance and repairs?



Who is the contractor focal point?





Recent Investigations & Current Issues

Recent Investigations & Current Issues

Service Life Evaluation



Loadbearing Textiles

Weapon System: various

Description: Develop a handbook with guidance for new service life evaluations



CO2-Disposable Pressure Cylinders

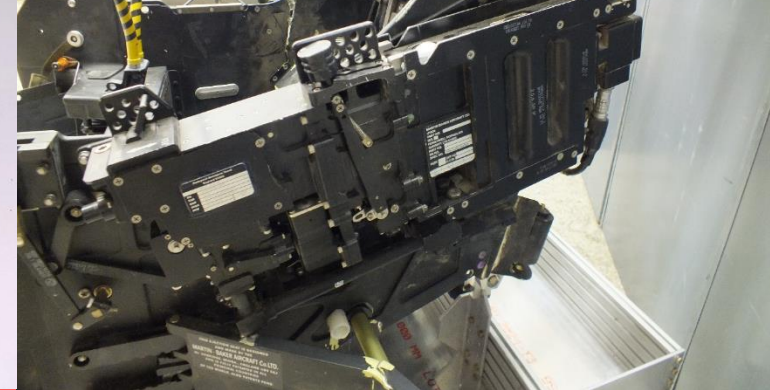
Weapon System: PA-200

Description: Review life extension for four years



Recent Investigations & Current Issues

Life Support Systems



Simplified Combined Oxygen Tester (SCOT)

Weapon System: various

Description: OEM is discontinuing support of the analog tester, leaving no single source of replacement components



Aircrew Service Package (ASP)

Weapon System: Eurofighter

Description: Anti-G-Trousers failing to deflate



Recent Investigations & Current Issues

Material Failure



T-11 Parachute

Weapon System: T-11

Description: USAF T-11 chutes have been failing inspection due to tears in the canopy sooner than US Army T-11 chutes



Personal Survival Package (PSP)

Weapon System: NH 90

Description: Breakage of the locking mechanism



Recent Investigations & Current Issues

Mishap Investigation



ACES II Mishap

Weapon System: F-15

Description: Low-altitude, over-water ejection leading to significant injuries



Mk 16 A Mid-Air-Collision

Weapon System: Eurofighter

Description: Diagnosis and review of two ejection seats





Challenges

Shared and Unique



Challenges

Shared and Unique

- Limited equipment; very reliant on outside labs
- Fewer and fewer data rights (e.g. F-35)
- Safety and survival systems is a subset of the work

- Limited background information
- When it rains, it pours
- System complexity increasing

- OPS tempo
- Timeline pressure
- Manpower
- Turnover
- Limited mentorship



Benefits of ESEP

Improving insight into foreign military RDT&E techniques and acquisition processes

Facilitating the exchange of ideas and new techniques within the RDT&E community

Enabling the USAF to incorporate best practices that are developed offshore

Enhancing the professional stature and effectiveness of participants strengthening USAF research and development programs

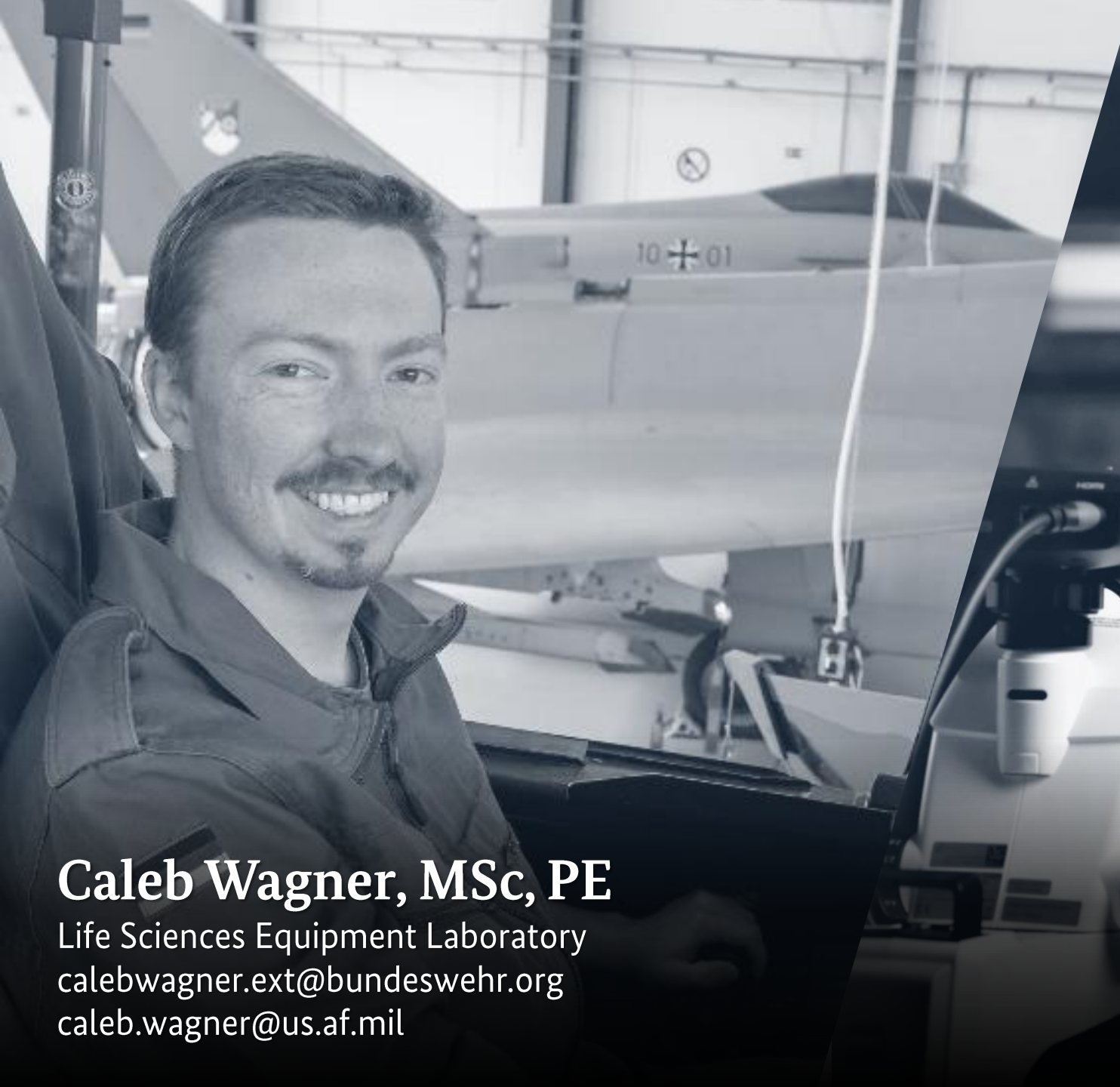
Identifying and cultivating new areas of technical cooperation



Lab Contact Information

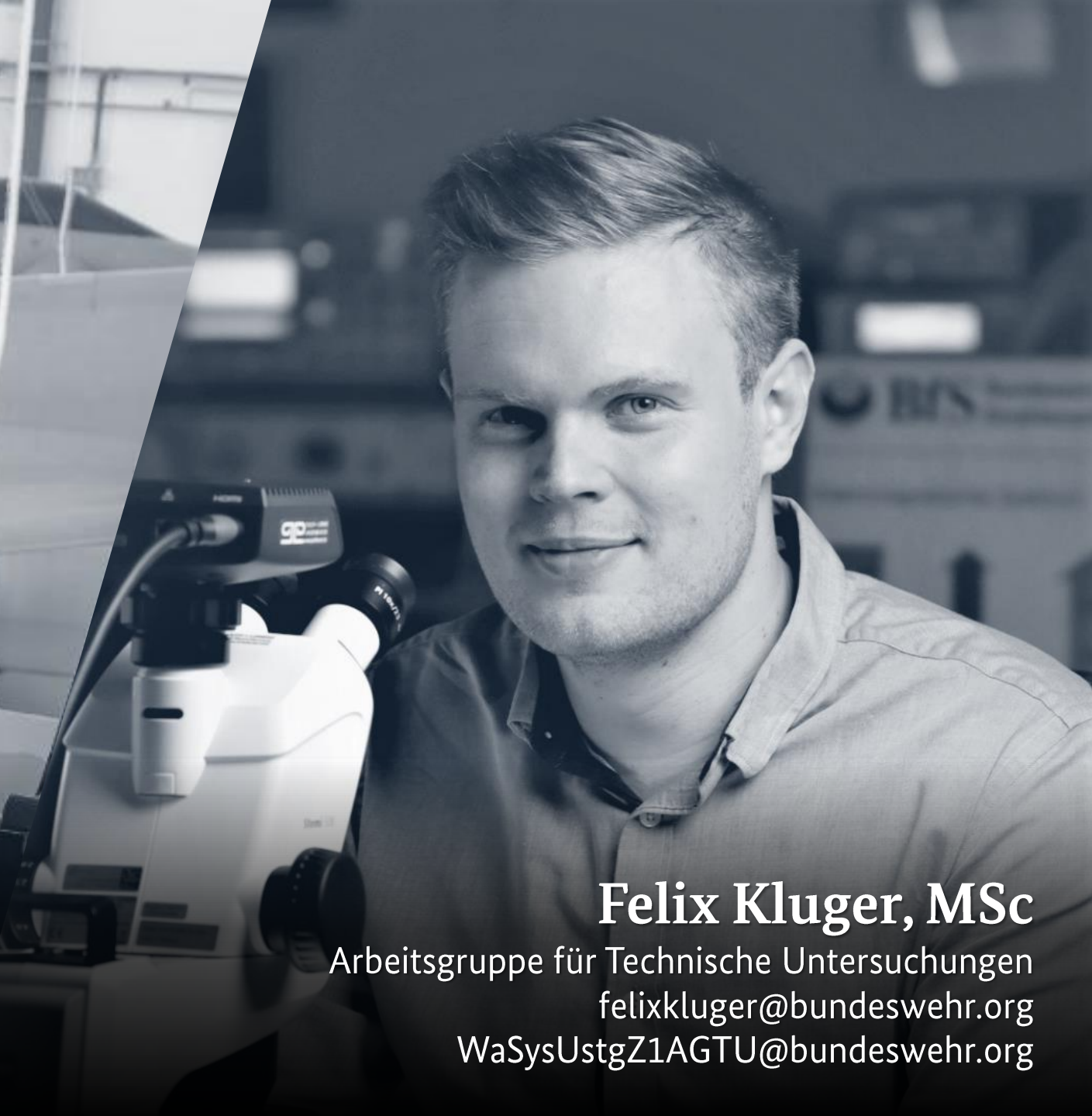
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Current AGTU Lead: Capt Joss Becker, WaSysUstgZ1AGTU@bundeswehr.org



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