




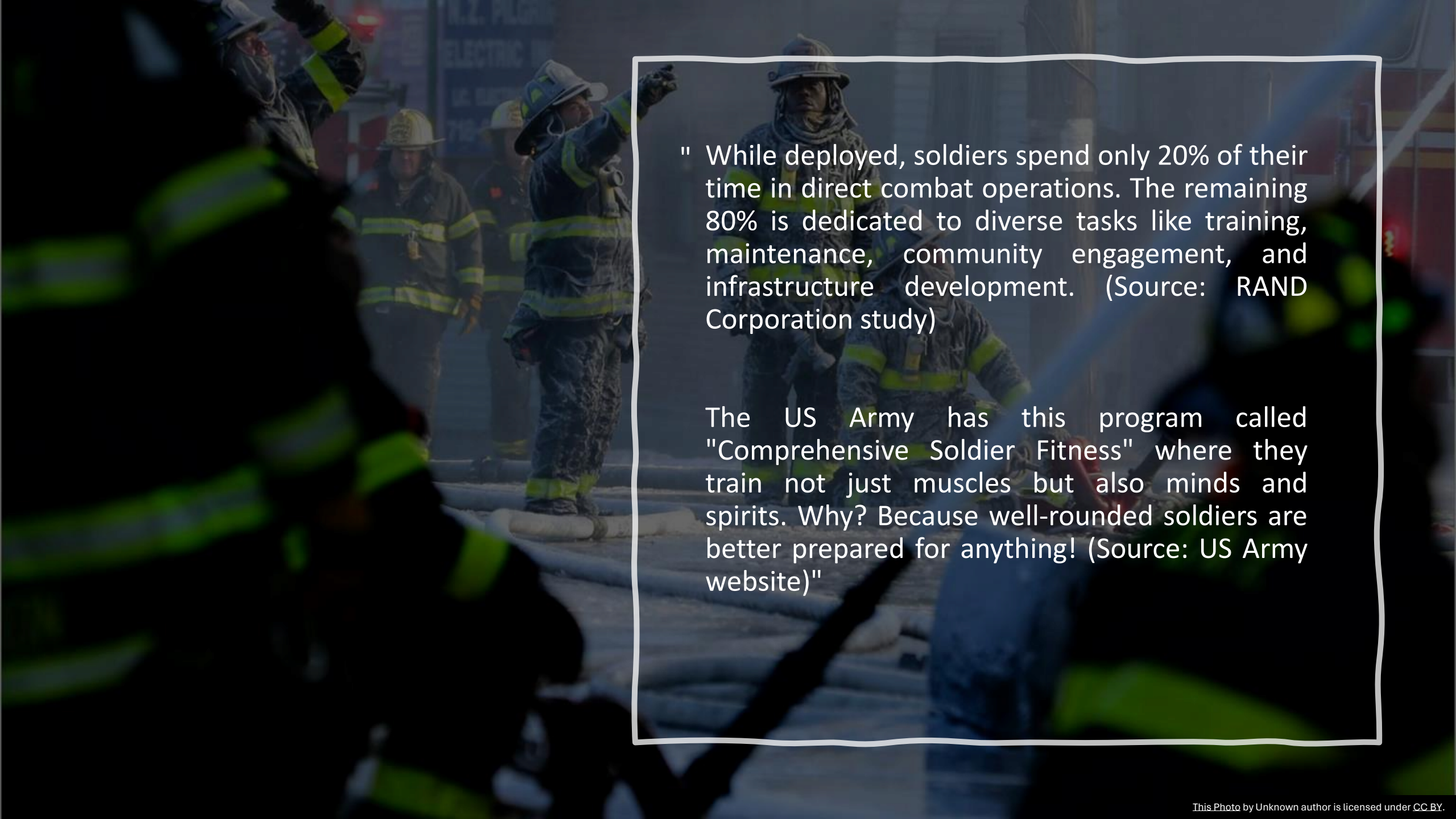
Maximising Core Function Efficiency

The Power of Multi-role ARFF Teams

A group of four soldiers in military uniforms are smiling and looking towards the camera. The image is slightly blurred and has a dark overlay, making the text stand out.

"Keeping soldiers engaged in meaningful activities beyond combat enhances their resilience and effectiveness "

says General Mark Milley, Chairman of the Joint Chiefs of Staff. (Source: News conference transcript, 2022)



" While deployed, soldiers spend only 20% of their time in direct combat operations. The remaining 80% is dedicated to diverse tasks like training, maintenance, community engagement, and infrastructure development. (Source: RAND Corporation study)

The US Army has this program called "Comprehensive Soldier Fitness" where they train not just muscles but also minds and spirits. Why? Because well-rounded soldiers are better prepared for anything! (Source: US Army website)"



THE SILENT GUARDIANS OF AIRPORTS

ARFF

- **Critical Role:** Saving lives during incidents is vital, but often leaves them underutilized
- **Negative Impacts:**
- This underutilization can lead to:
 - Skill degradation
 - Increased risk of errors
 - Decreased morale
 - Suboptimal use of their expertise

Evolving roles of ARFF

- **Evolving Expertise:** ARFF teams, like highly trained soldiers, possess skills beyond firefighting. Their rigorous training equips them for diverse situations.
- **Are daily routines keeping pace with their evolution?** Current tasks (checks, drills, maintenance) are essential, but could lead to monotony.
- **Breaking the Monotony:** Explore expanded roles! Think cross-training, community outreach, and more.



The Detrimental Effects of Monotony

"The opposite of job satisfaction is not job dissatisfaction, but job indifference." Frederick Herzberg, a renowned management theorist:



- A study published in the Journal of Applied Psychology found that employees performing repetitive tasks reported higher levels of boredom, fatigue, and stress, leading to a 21% decrease in productivity.
- Neuroscientists at MIT discovered that repetitive tasks activate the brain's "autopiloting" systems, reducing cognitive engagement and hindering learning.

Continuous exposure to repetitive tasks

1

Boredom

2

Contribute to
mental fatigue &
increased stress
level

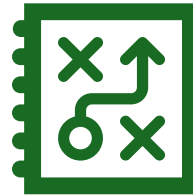
3

Reduce job
satisfaction

Musts for a vibrant and dynamic work environment



Introducing the team to more opportunities and challenges.



Create a platform for skill development.



Fostering a sense of purpose and contribution

Outcomes



BOOSTS MORALE AND
ENGAGEMENT.



DEVELOPS NEW SKILL SETS



ENHANCES OVERALL AIRPORT
SAFETY AND RESILIENCE



Beyond Firefighting: A Holistic Vision for ARFF's Expanded Impact"

Regulatory Framework

Full-time Rescue and Fire Fighting (RFF) personnel can be assigned additional duties under specific conditions:

- **Suitable Duties:** Additional tasks should leverage their existing skills and equipment.
- **Emergency Mobilization:** Procedures must ensure their immediate availability in case of an emergency.
- **Travel and Communication:** Ideally, personnel assigned additional duties should travel in their designated RFF vehicle and maintain constant radio contact with the fire station.

As per ICAO doc 9137, Part 1, Chapter 10.3.1,

"Full-time RFF personnel, where provided, may be assigned other duties, provided that the performance of these duties does not impair their ability to respond immediately to an emergency, or restrict their performance of essential training, inspections and equipment maintenance. These subsidiary duties could include fire prevention inspections, fire guard duties or other functions for which their equipment and training make them particularly suitable. Arrangements must exist for their immediate mobilisation in the event of an emergency and, wherever possible, a crew assigned to subsidiary duties should travel in the RFF vehicle to which they are appointed, maintaining constant contact with the fire station by radio.."



Global Perspectives: Multi-role of ARFF

Beyond Core Function

- **Fraport Airport (Germany):**
 - Aircraft recovery operations
 - Supporting other fire departments
 - Recovery training
- **Salzburg International Airports (Austria):**
 - Snow removal
 - Follow-me activities
 - Medical emergencies
- **Linz Blue Danube airport (Austria)**
 - Baggage handling
 - Maintenance activities
- **Cochin International Airport (India)**



RECOVERY OF AIR INDIA EXPRESS BOEING 737-800

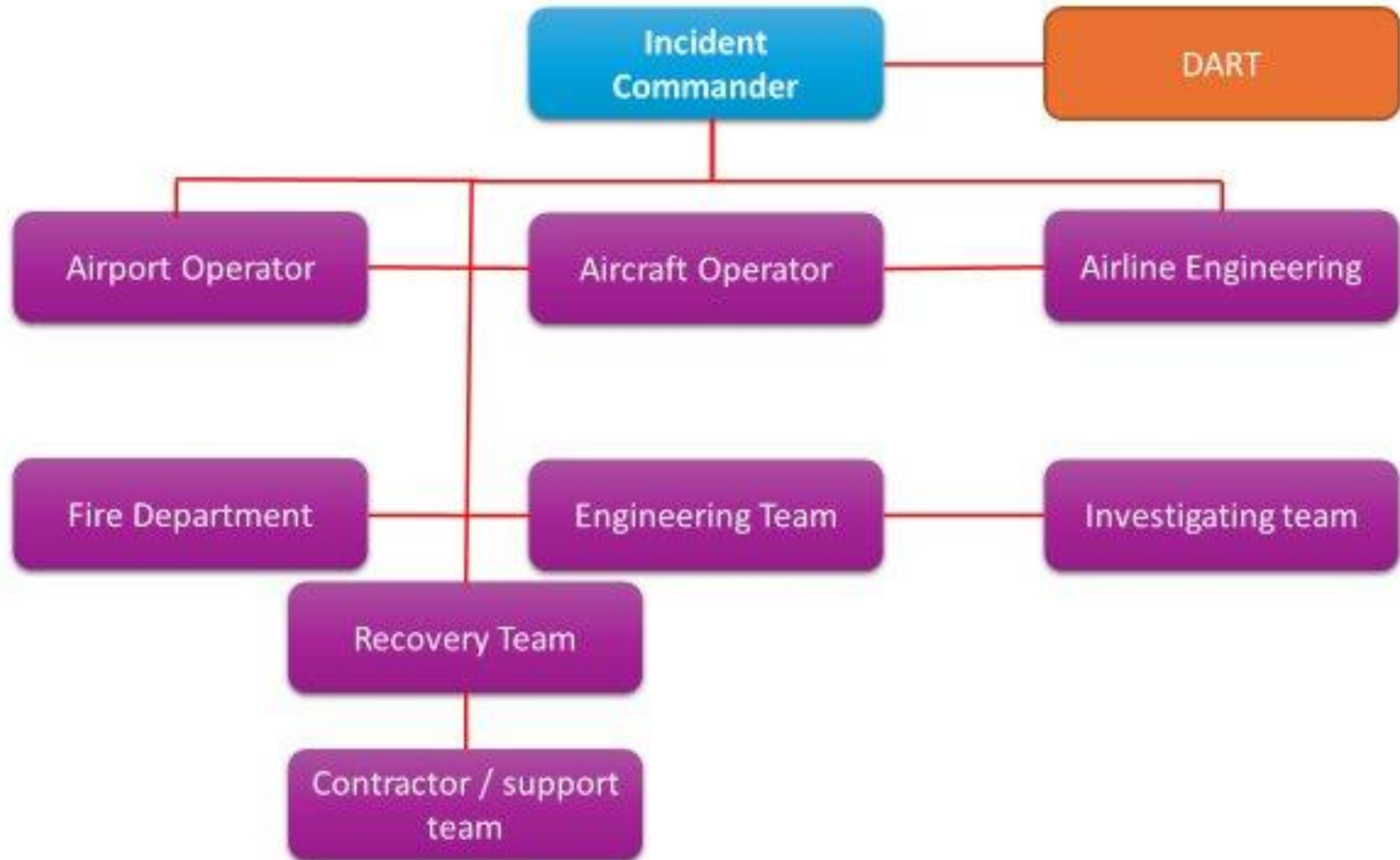
Aircraft Recovery

- Aircraft Recovery is done for an aircraft with partially or totally inoperable landing gear
- ARFF teams can specialize in aircraft recovery with proper training and equipment.
 - Efficient and safe recovery is crucial.

Advantages of ARFF teams engaged in this role

- **Specialized knowledge**
- **Familiarity with the airport & aircraft layout**
- **Situation risk assessment expertise**
- **Minimizing secondary damage**
- **Teamwork and communication**

INCIDENT COMMAND FLOW CHART / AIRCRAFT RECOVERY



Vehicle Maintenance

- ARFF teams can enhance their proficiency in minor vehicle maintenance and repair.
- This includes:
 - ACFT diagnosis training provided by Original Equipment Manufacturers (OEMs).
 - On-site resolution of mechanical or technical glitches.
- Benefits of ARFF-conducted vehicle maintenance:
 - Uninterrupted firefighting and rescue operations.
 - Proactive approach to vehicle-related challenges.
 - Enhanced operational efficiency and high standards of service.



Runway Inspection



- ARFF teams can be entrusted with runway inspections to ensure safety.
- Tasks include:
 - Identifying and reporting Foreign Object Debris (FOD) to Air Traffic Control (ATC).
 - Generating Runway Condition Reports (RCRs) for pilots.
- Benefits of ARFF-conducted inspections:
 - Dual purpose: runway safety and emergency preparedness.
 - Regular communication with ATC builds confidence for emergencies.
 - Familiarity with the runway and taxiways aids in swift navigation during emergencies.
 - Expertise in identifying aircraft parts for swift FOD reporting.

Follow Me Service

- ARFF teams can provide Follow Me services to unfamiliar vehicles on the airside.
- This ensures the safety of both the follower and other vehicles.
- Benefits of ARFF-conducted Follow Me services:
 - Operator gains in-depth understanding of the airside layout.
 - Improved communication skills through RT set usage.
 - Enhanced response time in emergencies due to familiarity with the movement area.





Leader Service

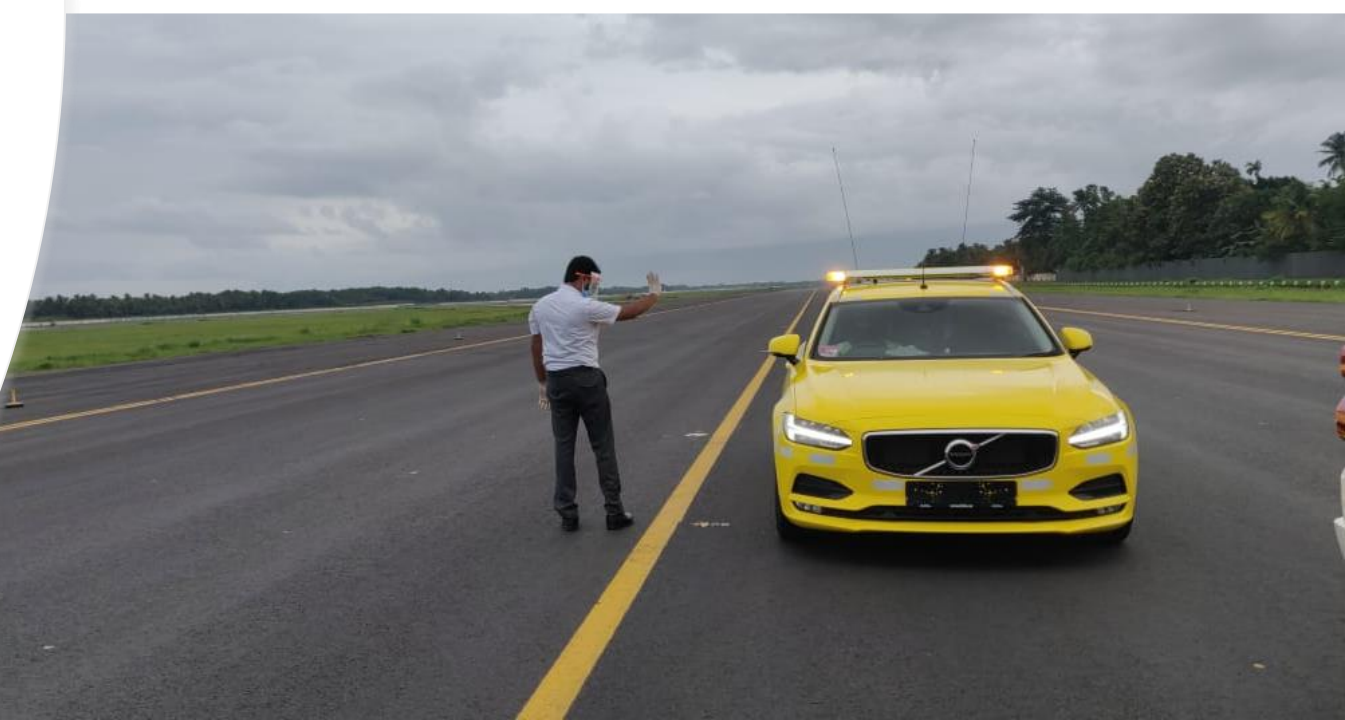
- ARFF teams can provide leader services to other departments entering the movement area.
- This requires a deep understanding of the airside and exceptional observational skills.
- Benefits of ARFF-conducted leader services:
 - Familiarity with the airside reduces confusion in emergencies.
 - Seamless coordination with ATC for safe operations.
 - Refined communication skills and deepened awareness of airport operations.

Medical Emergency Response

- ARFF teams can play a vital role in providing medical support.
- They are equipped with:
 - Extensive first-aid training
 - Specialized medical equipment
 - Ambulances for stretcher transport
- Benefits of ARFF-provided medical support:
 - Swift and efficient medical assistance within the airport and on aircraft.
 - Elimination of potential security breaches through integrated medical support.
 - Seamless coordination with external medical agencies in aircraft crash scenarios.

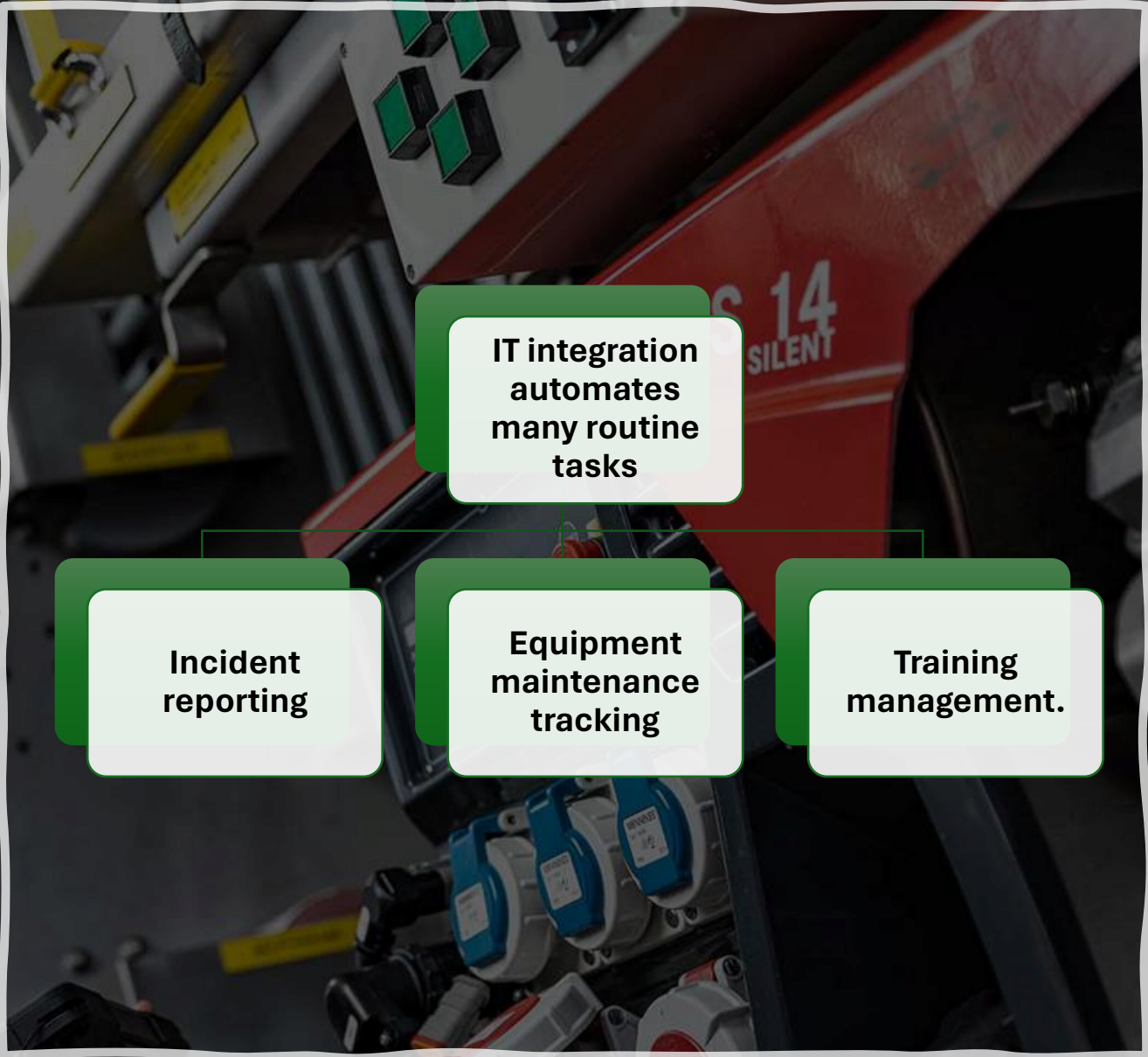
OTHER ROLES

- Friction testing
- Rubber removal operation
- Sweeping machine operation
- Snow removal operation
- Drone Surveillance
- Disaster relief operation

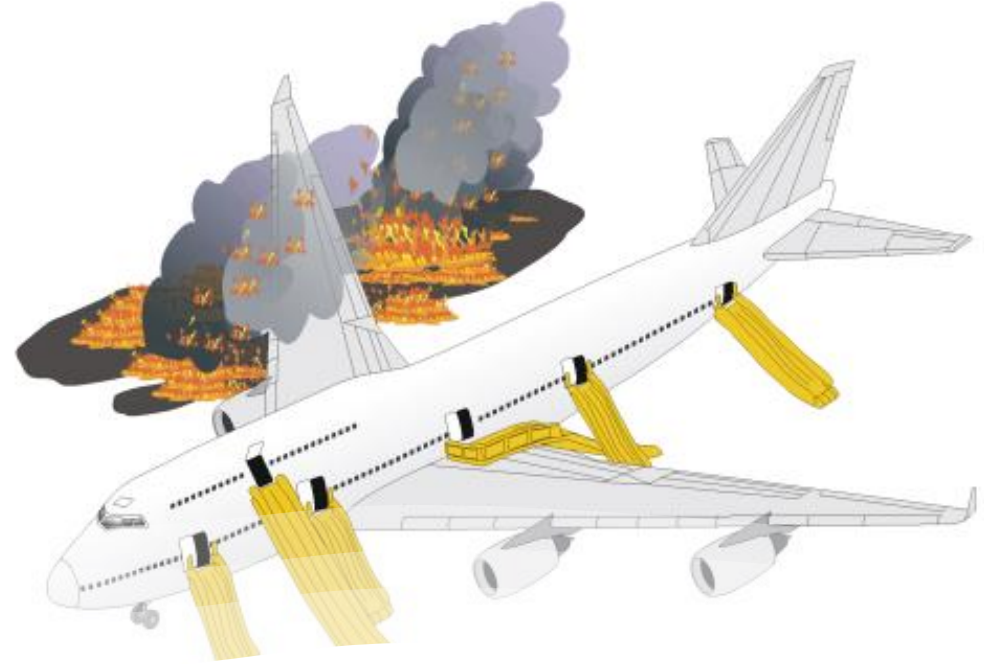
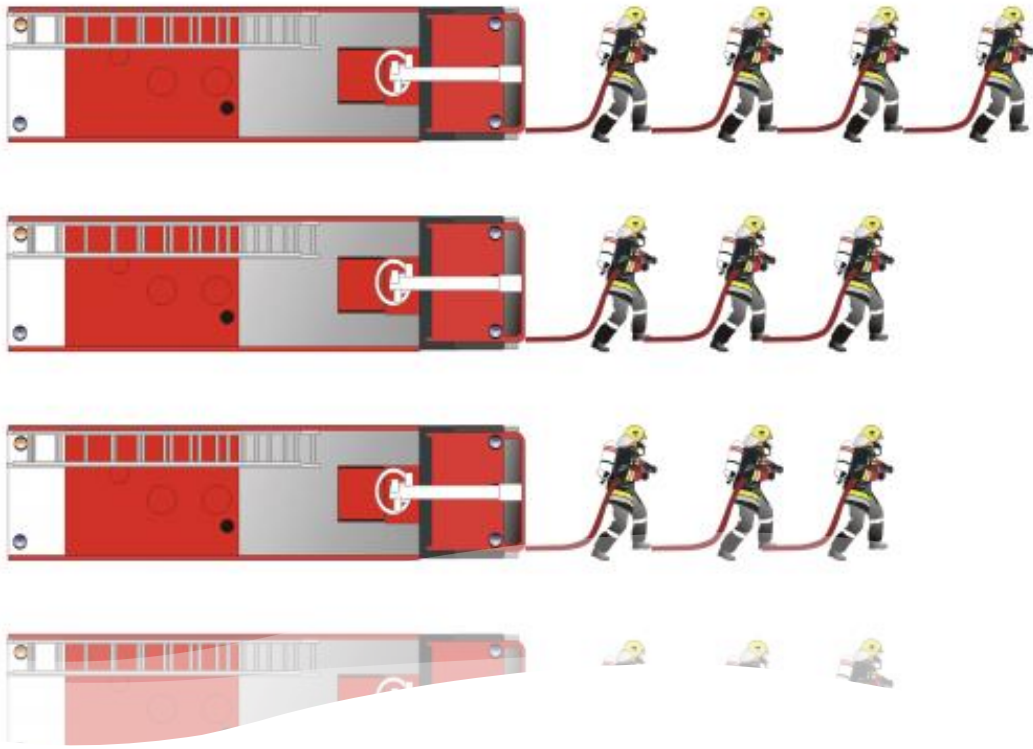


The Driver of Change

Information Technology



This result in ARFF teams with more time to focus on core function efficiency.



TRA (Task Resource Analysis) - CIAL

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TIME	TASKS	RESOURCES	COMMENTS
00:00	Crash bell activated. Call received from ATC as aircraft accident near Taxiway Charlie 1, B 747-400	ATC	Achieved
00:04	Mobilisation of ARFF	Fire station Watch Tower (FWT)	Achieved
00:10	ARFF supervisors utilise appropriate communications (RTF) to enter manoeuvring area	CFT1.1 (FO) , CFT2.1, CFT3.1, CFT4.1	Achieved
00:12	Call made to operate the Airport Emergency Plan	ATC	Achieved
00:30	All appliances mobile and route to Taxiway Charlie 1	CFT1, CFT2, CFT3, CFT4	Achieved
00:30	Personnel donning PPE	CFT1.3, 1.4 CFT2.3, 2.4 CFT3.3, 3.4 CFT4.3	Achieved
01:37	First appliance reach site and in position: Extinguishment of ground pool fire	CFT 1	Achieved
01:40	Second appliance reached site, positioned and joins firefighting	CFT 2	Achieved
01:55	All appliances in position: Priority identified by FO to extinguish ground pool fire and fire in landing gear that is impinging on fuselage	FO & Supervisors CFT 1, CFT 2 CFT 3, CFT 4	Achieved CFT1, CFT2, CFT3 CFT 4 deployed monitors.

02:10	FO instigates Incident Command System	CFT1.1	Achieved
02:12	Leader vehicles reached the site and started donning PPE.	L1, L2	Achieved
02:25	Create and maintain survivable conditions for the passengers to reach a place of safety.	CFT 1.1,1.2,1.3 CFT 2.1,2.2,2.3 CFT 3.1,3.2,3.3 CFT 4.1,4.2	Achieved
02:25	Complimentary agent requirement (DCP, Halotron)	CFT 1.4, CFT 2.4, CFT 4.3	Achieved
03:00	All external fires extinguished	CFT 2, CFT 3 & CFT 4	Achieved
03:10	Established Triage	AB 1, AB 2, AB 3	Achieved
03:30	BA procedure for rescue and assist self-evacuation. Crew prepares to enter aircraft in PPE	CFT 2.1, 2.3, 2.4, L1, L2 CFT 3.3	Achieved
03:50	Crew prepares appropriate entry point and hand line.	CFT 4.1, 4.2, 4.3	Achieved

03:50	CFT 1 maintain post fire control	CFT 1.1, 1.2, 1.3, 1.4	Achieved
04:00	Crew enters aircraft in PPE with hand line.	CFT 2.3, 2.4 CFT 3.3, L2	Achieved
04:00	Ladder made safe for internal crew	L1	Achieved
04:00	Crew assist with hand line for BA entry team	CFT 4.1, CFT 4.3	Achieved
04:10	Following the self-evacuation of aircraft, provides assistance with mustering passengers and crew to a place of safety	CFT 1.1, CFT 3.1	Achieved
04:15	Escape route protection using roof turrets	CFT 1.2 CFT 2.2	Achieved
05:15	FO liaises with FWT and ATC to ensure appropriate resources are brought forward to the accident site.	FO, FWT, ATC	Achieved

<p>06:45</p>	<p>FO coordinates with Mobile Command Post (MCP) in containing existing passengers and crew and obtaining a head count of survivors</p>	<p>FO, MCP</p>	<p>Achieved</p>
<p>06:50</p>	<p>CFT 2.1 reports 38 survivors are still on-board require medical aid and assistance. There is no smoke in the cabin or flight deck areas and survivors are not having difficulty for breathing</p>	<p>FO, CFT2.1</p>	<p>Achieved</p>
<p>07:15</p>	<p>Other external emergency services are brought forward to the accident site with additional equipment to support the removal of remaining survivors and transport them to safe place.</p>	<p>FO and External Commanders: CISF Coast Guard Local Police Medical Kerala Fire and Rescue Services Ambulance services Indian Navy</p>	<p>Practiced</p>



"Innovation comes from a willingness to challenge the status quo, unlearn old ways of thinking, and embrace new ideas."

Ray conner Boeing

Former CEO of Boeing Commercial
Airplanes



Conclusion

- Improves safety, resilience, and community well-being
- Demonstrates adaptability in different emergencies.
- Enhances reliability in the aviation ecosystem.
- Streamlines operations with IT integration, saving time and costs.
- Builds diverse skill sets for ARFF personnel, maximizing efficiency.
- Promotes professionalism and excellence through communication and coordination

