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Dear IFAFRI-members,
dear newsletter readers,

About seven years ago, 14 international government leaders set the cornerstone to the today's IFAFRI network with the noble aim of giving first responders a greater voice. Today IFAFRI is a global network of 16 members who contribute to the fulfilment of the network's goals to assist industry and academia and stimulate and shape the development of solutions.

I am honoured to announce that THW will chair IFAFRI during the next two years which is a privilege, but also very big responsibility at the same time. We are taking over the chairmanship from the European Commission DG HOME who has taken excellent care of this network during the previous three years. Your leadership and development of the network is very much appreciated.

IFAFRI is about connecting organisations with organisations, people with ideas, and people with opportunities. As the chair, THW will focus on creating structures that enable the network members to connect and distill the collective experience and shared expertise. THW will continue the valuable work from the European Commission DG Home setting up an infrastructure that the network members themselves are able to participate and initiate activities, share information and be the creators of a fruitful IFAFRI future.

IFAFRI is a peer-to-peer network with the focus on giving and receiving, the value is created through the member's active participation. This is also a fundamental principle in THW: giving our best, succeeded together. Across the world, the structure of THW is unique: as Germany's operational civil protection organisation, the Federal Agency for Technical Relief is both government authority and a volunteer-based organisation. Distributed across Germany, our operational units' compatibility and our common standards ensure quick and rapid assistance, which can also be provided beyond regional borders. With the recent disastrous floods in Western Germany the THW teams are at the forefront of search and rescue operations, helping clear debris, build bridges and bringing critical infrastructure back online.

Giving our best, succeeding together! I wish you all continuous fruitful co-operation and looking forward to the upcoming IFAFRI events. Stay healthy!

Gerd Friedsam
President of the Federal Agency for Technical Relief

Interview with Mr Andrea de Candido



What was the initial motivation of the European Commission to join the organisation in 2017 and to become the chair?

The European Commission represented by the Directorate-General for Migration and Home Affairs (DG HOME), joined IFAFRI and took over the chair and secretariat of the Forum from the United States Department of Homeland Security (US DHS), during the annual meeting of the Forum held in Tokyo on 14 - 15 November 2017.

Our main purpose for joining the Forum was that we recognised the importance and the strategic value of having an international setting where to collect and discuss user requirements so to be able to drive both research and industrial development. This is key to ensure that state of the art tools can be made available to first responders for them to better perform their daily critical activities.

Additionally, we realised that IFAFRI truly enables global partnerships; when it comes to dealing with first response to events such as natural dis-

asters, be it forest fires, earthquakes or chemical accidents, international collaboration at global level is of paramount importance since many of the challenges that are being faced do not recognise political borders.

We are all well aware of the limitations that research for civil security faces, notably the fragmentation of markets, the long duration between the identification of the requirement and the availability of the final product, as well as the lack of common standards. To the European Commission, joining IFAFRI meant joining in the effort to overcome these limitations.

We also naturally saw a significant potential for the European Commission to be the bridge to other Member States of the European Union that are not yet participating in the forum.

What has IFAFRI managed to accomplish while being chaired by the EC for almost four years?

Please let me start by thanking the German Federal Agency for Technical Relief (THW) for taking over the leadership from 1 September 2021 to 31 August 2023. This is a very important commitment to guarantee the Forum's future. I would like to wish the new chair every success in this new, prominent role and at the same time assure that the European Commission is looking forward to a fruitful collaboration with the new chair and all the IFAFRI member organisations.

I see the chairmanship of the Commission as a continuation of the work of IFAFRI along the lines that were commonly agreed with all partners when initially setting up the Group. Therefore, the achievements we were able to obtain strongly built on the output of the first IFAFRI Chairmanship that was held by the United States. As such, I would especially like to thank the US DHS for having had the initia-

tive to launch this important forum and for having contributed to supporting the work of IFAFRI over the years also (through their contractor First Link, that I also would like to thank for the exceptional contribution they are providing to the work of the Forum)

More in detail, during these past years:

- We continued offering an improved platform for international collaboration on innovative research and development (R&D) initiatives and solutions. In addition to characterising global first responder markets and providing unbiased information about relevant and available first responder technologies, the Forum guided the industry on how to make innovative technology available to the right end user community.
- We finalised a list of Ten Common Global Capability Gaps supported by detailed background documents and technical specifications, which were presented to industry and academia and.
- New methods of communicating the capability gaps have been introduced, not only through the more traditional ways like the internet and social media, but more importantly, by a database of near-to-market solutions, put in place by the US member DHS, and a database for research projects, which is now ready to be widely publicised.
- We produced together a list of funding mechanisms and research programmes from all IFAFRI member countries to allow interested research and industry organisations to find funding opportunities in case they would like to launch new R&D projects that address IFAFRI capability gaps.
- Industry events have been organised in the US and in Europe to

further attract the attention of the private sector to the activities of IFAFRI and incentivise them to develop and present tools that could satisfy the identified gaps.

- It also is important to mention that the European Commission has translated the activities of IFAFRI at European level. For example, the outputs of the Forum have been used for the formulation of the first security research work programme of Horizon Europe, with a dedicated topic on international cooperation in the Disaster-Resilient Society (DRS) area.
- We can also be proud that during our chairmanship, Belgium and Greece joined the Forum as new Members and Italy as observer.

I can also confirm that our effort does not stop here. The European Commission will further integrate IFAFRI in the overall European security innovation landscape, notably establishing synergies with the Community of European Research and Innovation for Security (CERIS) and with the EU-funded Networks of Practitioners.

What are your prospects and recommendations for future IFAFRI developments?

IFAFRI's main goal – to assist First Responders across the globe in conducting their missions more safely and efficiently by expanding the development of affordable and innovative technology – is very much based on collaborative approach.

International cooperation on research and innovation with key partners has the potential to identify common solutions and increase the relevance of outcomes. I do hope that we will be able to expand further the IFAFRI community and involve more and more countries in both the Forum and in dedicated research projects.

We need to continue highlighting the benefits and longer-term gains from working together through IFAFRI. In this way, IFAFRI can become a more recognised international collaborative group with shared interests.

Leveraging information, knowledge and expertise is going to help first responders everywhere by strengthening their capacities in all operational phases related to any kind of (natural and man-caused) disasters. As such, emergency teams can better prepare their operations, have access to enhanced situational awareness, have means to respond to events in a faster, safer and more efficient way.

The COVID-19 crisis has highlighted the need for international cooperation and the significant work of first responders worldwide. It also demonstrated that by cooperating internationally and exchanging information, we can all be prepared in a better way at a national level.

From a more practical perspective, I think the Forum should focus now on the activities of the R&D committee to further discuss research co-operation by looking at opportunities for teaming up, joint testing, commonly validating solutions and establishing national innovation labs. It would be also very useful to examine which countries are in a position to launch acquisition programmes or other uptake actions in relation to new tools that might be stemming from the discussions in IFAFRI.

I cannot end without thanking all IFAFRI partners for the commitment and involvement they regularly demonstrated. Without their proactive engagement, IFAFRI would not have managed to progress along the path as it has effectively done since its initial establishment.

Mr Andrea DE CANDIDO works for the Directorate General for Migration and Home Affairs of the European Commission where he is the Acting Head of the "Innovation and Security Research" Unit that is responsible for ensuring full exploitation of the possibilities offered by research in the internal security domain.

Among the tasks of the Unit is the drafting of the security research part of the overall EU Research & Innovation Framework Programme (Horizon Europe) that enables cross border funding of research projects in different security related dimensions such as Fighting Crime and Terrorism, Border Management and Disaster Resilient Societies.

Before joining DG HOME Mr De Candido had been briefly working for the Research & Innovation Directorate General of the European Commission and, before that, had spent 25 years in the Italian Army where he retired from in 2013 with the rank of Lt. Colonel.

Interview with Mr Klaus-Dieter Büttgen



Can you tell us something about your professional background and how you got involved in IFAFRI?

My name is Klaus-Dieter Büttgen. I joined the Federal Agency for Technical Relief (THW) in 2008 on state level as Deputy Head of Operations. At the same time, I am a volunteer firefighter. In 2014, I became the leader of the newly established research unit in the THW headquarter in Bonn. In my new job, I had the opportunity to represent Germany at the IFAFRI founding ceremony in the American embassy in London in 2014. Since then, I have been representing Germany in IFAFRI. I am proud to say, that since September 2021 I have been chairing this innovative network. Now I am looking forward to collaborate with partners around the world in the upcoming years.

What were the main reasons for the German government to join IFAFRI?

Germany wants to equip its first responders with modern and innovative technology. The aim is to improve the effectiveness, safety, and efficiency

of German first responders. As everybody knows, disasters do not stop at any border; just have a look at the Covid-19 pandemic. Why should then innovations in national disaster authorities be restricted to national territories? We need to establish a network, exchange best practices and learn from each other. Knowledge about cutting-edge innovations is key to support first responders worldwide. At the same time, a systematic survey on research needs based on capability gaps must be the fundament of every security research agenda worldwide. Unfortunately, research programming is often driven by a political agenda. Germany aims to influence national as well as international research programs based on first responder capability gaps.

How would you describe the German First Responder system and community? What are the main focal points and challenges in Germany?

Germany consists of 16 federated states which are legally responsible for operating emergency services and disaster management. The states delegate their responsibility to the district level (cities and smaller communities). Cities and communities either operate their own emergency services or use contractors such as the German Red Cross or St. John Ambulance. THW is a federal agency and has no mandate for emergency management. However, in cases of large disasters or accidents the states can request civil protection assistance from other states, or federal agencies such as the THW. Many German organizations active in civil protection rely on volunteers. Our modern live style which includes working and studying abroad, relocating several times due to work, and moving to city centers puts a lot of pressure on civil protection volunteer organizations because long trainings are needed before volunteers can go into action. To develop a sustainable staff manage-

ment for upcoming decades will be the major challenge for us volunteer based organizations.

In many countries, we saw a lot of praise given to first responders in the medical sector. In your view, what is the long-term impact of COVID-19 on the work of first responders?

I wish the recognition would last for a long time, but the past has shown that people quickly forget about the tremendous work of first responders after an emergency or disaster mission. Therefore, I am a little bit pessimistic. Nevertheless, I expect, that governments will increase their expenditure on disaster management and resilient society approaches in the following years.

How are you currently involved in the COVID-19 crisis, working on different projects and in different places?

Since the Covid-19 pandemic has started, the THW has been steadily active in different missions. The agency has a wide range of tasks such as establishing test centers, building temporary hospitals, illuminating border control points as well as organizing logistics for personal protective equipment. In 2021, the THW supported the logistics of vaccine distribution and the equipping of vaccination centers. Moreover, the THW arranged the logistics for more than 150 respirators and the training of medical staff in Eastern European countries. Last month we have already started to dismantle the temporary vaccination centers, which will keep us busy in the coming weeks. Our volunteers have accumulated more than 800.000 working hours in the Covid-19 mission.

The flood crisis in Germany has recently dominated the news. Have you identified new first responder capability gaps in this mission? Does the flood crisis have an impact on your IFAFRI presidency?

The disastrous storm “Bernd” and the accompanying floods caused the largest and most complex operation in the history of the THW. Over 14,000 volunteers worked more than 2.2 million hours to support the local communities in North Rhine-Westphalia and Rhineland-Palatinate. Even twelve weeks after the storm we are still busy with activities such as planning and building new bridges as well as clearing debris. We have not identified any new capability gaps, but IFAFRI gaps such as Responder Health, Interoperable Communication, and Integration of Information have been a challenge for this mission. To give an example: It was not possible to integrate information from multiple sources into command operations that allow all first responder organisations to work with the same data set.

What are the main topics/areas IFAFRI should/would like to focus on during German presidency?

Our aim is to re-strengthen IFAFRI and to reactivate passive IFAFRI participants. We plan to establish an “Ad-Hoc” working group which develops an IAFRI strategy for the upcoming four years. In the past, the forum was EU and US centered. We would like to balance the forum and give our Asian participants a greater voice. Under the American and EU presidencies many valuable documents were produced and published such as the analysis of the common capability gaps or the deep dive analysis. Under the German chairmanship we will disseminate our findings and lobby for first responders worldwide. As part of this overall goal we would like to fit the rather political driven and theoretic research agendas with the needs of first responders.



Technisches Hilfswerk

What is THW?

THW (Bundesanstalt Technisches Hilfswerk) is the Federal Agency for Technical Relief of the Federal Republic of Germany. It is a governmental non-profit organization belonging to the Federal Ministry of the Interior, Building and Community.

Established as the German governmental disaster relief organization in 1950; its tasks are defined by federal law within the framework of civil protection, disaster control, public emergencies, and large-scale accidents. The organization provides technical relief and assistance in Germany and abroad.

80,000 volunteers are members of THW today — among them about 15,000 kids and teens-, who spend their free time preparing to help others in need. The membership is organized under 668 local sections. Only about 2 percent of the staff is employed full-time at the headquarters in Bonn, in the 8 federal offices, 66 regional offices, the three schools and the two logistic centers.

Provided with modern equipment and well-trained relief workers,

THW assists at the local, regional, national and international level by a wide range of tasks. Search and rescue, flood protection, electricity supply, technical support of infrastructure, drinking water supply, command and communication, and logistics support are some of THW's operational capacities. The diversity of its units reflects its range of operations.

THW has been active in more than 130 disaster relief operations abroad and has its own international logistics center including highly qualified personnel. To mention the recent international operations then THW teams were deployed after the devastating explosion in Lebanon, and after the cyclone Ida in Mozambique 2019.

To ensure security solutions that meet the requirements on the ground, THW also conducts its own research in cooperation with research consortia on a national level or within the framework of Horizon Europe. The aim is to explore innovative solutions that increase public security and concentrate on both - prevention of damage and on crisis response measures.

Capability gaps update – what is new in the field of interoperable communications?

IFAFRI members have reached consensus on ten Common Global Capability Gaps. To arrive at this set of gaps, IFAFRI members conducted analyses of first responder capability gaps in their respective countries. IFAFRI then assessed those gaps to identify which were common across multiple member nations. The gaps with the highest commonality amongst member nations were presented to all IFAFRI members for consensus consideration and vote. The fifth Common Global Capability Gap is: “[t]he ability to maintain interoperable communications with responders in any environmental conditions.”

Some environments are conducive to sending and receiving communications, however, others pose significant challenges. For example, communications can be difficult inside buildings, tunnels or underground spaces. Communications may also be degraded if equipment and infrastructure have been damaged by the incident or overwhelmed by call volume. Regardless of the operating environment, emergency responders must be able to seamlessly send or receive orders and information, provide tactical updates, request help and receive warnings about hazardous or changing conditions. Therefore, the need to ensure verbal and digital communication through all physical and electronic environments is essential. Despite a high level of public and private funding to advance technology for interoperable communications, the lack thereof continues to remain a significant factor hindering emergency response operations across IFAFRI member nations. Elements such as country size and degree of centralization of response functions have an impact on this capability. However, a comprehensive, affordable solution is not yet available.





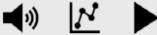
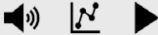






Emergency responders from the IFAFRI member countries met to discuss and develop operational requirements to address this gap. One of the target objectives of this gap is the ability for responders to maintain Interoperable communication of voice, audio, video and data among authorized responders and command, regardless of agency, service, and/or jurisdiction. This may be achieved through advances in devices, networks, and/or infrastructure. The list of IFAFRI's responder-validated operational requirements for this gap can be found [here](#).

Public safety broadband networks (PSBN) provide a secure, dedicated, and reliable platform for responder communications. Multiple countries are developing such systems and this article provides an overview of several. Currently, cellular networks can be quickly overwhelmed during large-scale incidents, preventing responders from sharing critical information via voice, text, or video. However, a PSBN provides emergency responders with prioritized access to cellular networks during public safety or disaster response operations. Some countries allocated dedicated spectrum (often in the 700MHz band), while others have worked with private industry to offer prioritized access to commercial spectrum during times of network overload. Authorized devices use a SIM card or integrated applications to access the network. The table below highlights several of the PSBN systems currently in use and in development.

In the absence of a dedicated broadband network, responders use land-mobile radios (LMR) or commercial cellular networks to communicate. However, each of these has notable operational challenges. A PSBN, such as those described above, will allow responders to share voice, text, video and/or data -- regardless of agency, region, (or country) -- without concern that the public traffic will degrade the mission-critical communications.

According to the Global mobile Suppliers Association (GSA), 40 countries/territories have private networks based on 4G LTE or 5G. Within IFAFRI, several other countries are also developing PSBN systems of note. Australia, Canada, Japan, New Zealand, Spain, and Sweden all have systems or capabilities in development. Other systems are in use and in development across the globe. Examples include a dedicated LTE network developed by the Royal Thai Police that is currently operating for law enforcement officers across Bangkok, and a public-safety LTE network in Kenya that currently covers Nairobi and Mombasa. While not all of these systems choose the same design and development criteria (e.g., dedicated spectrum versus prioritized access on commercial bands), the end result should be a significant increase in interoperable and reliable communications for responders in those areas covered by a PSBN.

Capability gaps update – what is new in the field of interoperable communications?

Country	 European Union	 United States	 South Korea	 United Kingdom
Network Name	BroadWay Project/ BroadNet	First Responder Network Authority (FirstNet)	Safe-Net	Emergency Services Network
Description	An interoperable and cross-border communications public safety broadband network that allows responders from countries across Europe to talk and share/access information.	A high-speed, nationwide wireless broadband network dedicated to public safety	Nation-wide public safety LTE network using mission-critical push-to-X (MCPTX) to ensure a reliable communication path with complete coverage over South Korea	Fast, safe and secure voice, video and data across a dedicated 4G network giving responders immediate access to life-saving data, images and information
Data Types ¹				
Access	Designed for security practitioners and responders across Europe	Responders across all 50 states, 5 territories, and the District of Columbia 2 million connected devices as of 02/21	Responders in over 330 public safety organizations and agencies Estimated to be 240,000 users when fully implemented	Estimated to be 300,000 frontline emergency service users
Carrier Type	Public/Private No dedicated carrier – Pan-European governance while allowing countries to establish and follow their own roadmaps and deployment model	Public/Private (AT&T)	Public/Private (Samsung, SK Telecom, KT)	Public/Private (Motorola/EE)
Devices ²				
Spectrum	No dedicated spectrum	Dedicated Band 14 spectrum allocated for FirstNet	Dedicated Band 28 spectrum allocated - 700MHz spectrum	No dedicated spectrum – prioritized access to commercial networks
Geolocation	UNK	GPS-based location	GPS-based location	GPS-based location
Evolution	UNK	4G LTE/5G	4G LTE/5G	4G LTE
3GPP Compliant ⁴	Yes	Yes	Yes	When completed
Status	<ul style="list-style-type: none"> Pre-Commercial Procurement Phase Prototype demonstration held 7 June 2021 Evaluation team of 49 responder organizations in 14 countries 	<ul style="list-style-type: none"> Operational More than 15,000 U.S. agencies and organizations have subscribed to the network 	<ul style="list-style-type: none"> Operational - network completed April 2021 Will be integrated with the nation's LTE-Railroad (LTE-R) and LTE-Maritime (LTE-M) networks 	<ul style="list-style-type: none"> Transition from existing Airwave TETRA system potentially delayed past 2025
Authority	Public Safety Communications Europe (PSCE) in coordination with the Horizon 2020 Research Program	First Responder Network Authority	Safe-Net Forum	Emergency Services Mobile Communication Programme (ESMCP) in the Home Office

Some estimates put the annual investments in public safety LTE/5G-ready infrastructure at more than \$3 billion (USD) by the end of 2023.⁵ While much of this investment is focused on initial development and equipment installation, there will be ongoing investment in devices, integration, se-

curity, and upgrades as the area covered by these systems increases. Advances in public safety networks may not address all the operational requirements for this capability gap but should help to ensure that the network is ready and available.

¹ Data types include audio, video, data, and IoT sensors.

² Device types include push-to-talk radio, smart phone, tablet, smart watch or wearable, and vehicle.

³ FirstNet released land-mobile radio (LMR) to long-term evolution (LTE) interoperability using a Radio Over Internet Protocol (ROIP) gateway.

⁴ The Third-Generation Partnership Project (3GPP) developed an open international wireless standard.

⁵ Public Safety LTE & 5G Market: 2020 – 2030 – Opportunities, Challenges, Strategies & Forecasts, SNS Telecom & IT. May 2020.

NUSTL

The National Urban Security Technology Laboratory (NUSTL) is a federal laboratory organized within the U.S. Department of Homeland Security (DHS). NUSTL conducts mission-critical focus groups and operational field assessments of emerging and commercial technologies.

Night Vision Focus Group Report Published

Through NUSTL's SAVER program, a focus group report was published with information on night vision devices that will be useful to the first responder community in making operational and procurement decisions. Night vision devices are used to provide enhanced vision, sensing and awareness in low or no light conditions. The focus group identified 30 evaluation criteria. Image clarity, the ability of the night vision device to provide a clear, high-resolution image, was identified as the criterion of highest importance. The group of evaluators also suggested product selection criteria and recommended six scenarios that will be used to plan NUSTL's comparative assessment of night vision devices to provide emergency responders with information that will assist with making operational and procurement decisions.

Seven emergency responders from various disciplines (i.e., aviation, emergency management, fire services, law enforcement, maritime, medical/ paramedic, and special weapons and tactics) representing jurisdictions in Lake Havasu, AZ; Morristown, NJ; New York, NY; Plano, TX; Port Orchard, WA; San Diego, CA and Washington, D.C. informed the focus group report. Read the focus group's full recommendations as documented in the [Night Vision Devices Focus Group Report published within NUSTL's SAVER Document Library](#) on DHS S&T's website.

Language Translation Applications Market Survey Results Published

NUSTL's SAVER program also published a market survey of language translation applications. During an emergency, responders must communicate with persons at the scene in order to provide a prompt and accurate response. Language translation applications are downloadable tools that run on mobile devices and translate text or speech from one language to another. Various language translation applications are available on the market, including applications specifically for emergency response personnel.

All language translation applications included in NUSTL's market survey report are HIPAA compliant, offer multi-lingual translation (between English and more than just one other language), and do not require special hardware in order to be used. To view detailed results, read the new [Language Translation Applications Market Survey Report](#).

IFAFRI International Forum to Advance First Responder Innovation focuses on enhancing and expanding the development of affordable technology and innovative solutions to improve first responder safety, efficiency and effectiveness

Contact us today to find out how we can work together to help first responders.

