Report of the 2020 CAP Implementation Workshop

Background

The 2020 CAP Implementation Workshop was held 29-30 September, and a CAP Training session was held 28 September. Both events were hosted by the International Telecommunication Union (ITU) and were conducted as Zoom Webinars. In addition to ITU, there were four other co-sponsors of the Workshop: the International Association of Emergency Managers (IAEM), the International Federation of Red Cross and Red Crescent Societies (IFRC), the OASIS standards organization, and the World Meteorological Organization (WMO).

The Workshop was a technical meeting intended solely for information sharing among experts. Accordingly, Workshop participants represented themselves; they did not formally represent any organizations with which they were affiliated.

About 800 persons participated in the Training or the Workshop. They were from 126 countries, 30+ international organizations, and 30+ commercial companies.

The following other documents may be also of interest:

- The Programme lists all of the Workshop agenda topics and links to the presentations;
- The list of Speakers includes speaker biographies, portraits and links to the presentations;
- The list of Participants gives name, organizational affiliation, and e-mail address of each.

Report Process

At the Workshop, participants agreed the process for producing this Workshop Report. The Workshop Chair, Eliot Christian, would produce a draft Report in consultation with co-sponsors. The draft would be shared among Workshop participants for a period of two weeks, with the Chair making revisions based on any comments received. Thereafter, the Chair would publish the final Workshop Report and link to it from the 2020 CAP Implementation Workshop website.

Presentation Summaries by Agenda Item

3.1 CAP from an ITU Perspective

This presentation was given by Maritza Delgado on 29 September, 2020.

ITU emphasizes that emergency telecommunications has a critical role in disaster risk reduction and management. Information and communication technologies (ICTs) are key to: monitoring the environment, analyzing information to deliver early warnings and alerts, and ensuring the timely flow of vital information in the immediate aftermath of disasters.

ITU also supports its Member States in ensuring the inclusion of ICTs across the four phases of disaster management. This includes the design of National Emergency Telecommunications Plans (NETPs), the setting up of early warning and monitoring systems, and the provision of emergency telecommunications equipment when disasters strike.

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As part of the implementation of NETPs, ITU highlights the need to develop and implement multi-hazard early warning systems (MHEWS). MHEWS should include the participation of different stakeholders and actively involve people and communities at risk. This approach will ensure that MHEWS have appropriate technology, regulatory and legal frameworks to support implementation, adequate operational capacities, and well-defined roles and responsibilities of all participating agencies.

CAP enables authorities to receive information and to deliver early warnings and alerts to end users, particularly to communities at risk, so those people can take concrete actions to save lives and livelihoods. Using CAP, all manner of emergency alerts can be communicated through all kinds of ICT, reaching even those who are not covered by mobile networks. ITU is leveraging the implementation of CAP at a national level through the development of national training multi-stakeholder workshops in different regions.

3.2 Open Source CAP for Radio and Television

This presentation was given by Rob Hopkins and Vincent Maggard on 29 September, 2020.

Rob shared stories about his passion for accessible low cost FM radio as his motivation for visiting community stations in Southeast Asia. Station volunteers there have some software IT skills, but most were operating with older broken computers infected with malware/viruses without remote access studios or the ability to relay unattended CAP Alerts. In Cox's Bazaar, Bangladesh, Rob saw first-hand, the living conditions of 900,000+ illiterate Rohingya refugees in a displaced persons camp. They were under a total Internet blackout with only limited access to FM radio programming a few hours a day.

Vincent talked about open source CAP alerting using a Raspberry Pi as a client for alert hubs that include AWS POLLY TTS voices capable of supporting numerous languages. This service works out to around $4.00 for 1 million characters. The CAP receiver for broadcast has support for alerting in indigenous dialects, with tools to add regional language files.

Rob and his group would like to partner with countries and humanitarian organizations in providing solutions for the distribution of CAP messages to regional community radio stations using open source software. They can help with financial sustainability of the community radio sector by facilitating tools for governments to relay CAP messages. A complimentary open source CAP Alerting and media play out software for the Raspberry Pi is available here from OpenBroadcaster.

3.3 CAP in AccuWeather

On 29 September, Eric Michielli talked about how private companies, like AccuWeather, can drive awareness of hazardous and impactful weather situations. He noted that one of the biggest challenges facing members of our enterprise is ensuring that life-saving weather warnings issued by governments reach the greatest number of people potentially impacted by hazardous weather, and with enough advance notice to allow people to take proactive steps to remain safe and out of harm's way. AccuWeather currently has relationships with nearly 60 National Meteorological and Hydrological Services to redistribute alerts on the AccuWeather platforms and to AccuWeather Partners.

Eric also reinforced that in order for a seamless integration to more platforms, it is important for each alerting authority to ensure that they provide the following information: Clearly identify what

is happening, Refine where people will be impacted, Define when the users will be impacted, Provide a method for how updates will be communicated for ongoing events.

Eric reiterated the importance of communicating to partners whenever changes are made to alerting processes to ensure all partners are able to adapt and adjust to new requirements.

3.4 CAP in Google

This presentation was given by Nofar Peled Levi and Adi Mano on 29 September, 2020. By Google policy, the presentation slides cannot be published.

Nofar and Adi noted that Google Public Alerts helps support users during critical times of need by collaborating with alerting authorities and others to help users receive fresh, trusted and actionable information. Google strives to provide information through the full crisis life-cycle (before, during, and after the event) with products such as Flood Forecasting, Earthquake early warning and Wildfire boundary detection.

The presenters emphasized three criteria that affect whether an alert will be disseminated through Google products and services:
1. Alert lead time should be low
2. Alerts should be Globally Accessible and Useful
3. Alert content should match users' needs

Nofar and Adi explained that Google Public Alerts advocates these principles:
1. Make sure the alerts are helpful and contain all the need information at once
2. Meet People Where They Are - use familiar ways to provide information
3. Be Specific - Abstraction is hard for Users
4. Be "Visual Forward" - Images help users understand, decide and explore

The presenters suggested actions for CAP alert originators to help Google help them more quickly get alerts to users in harm's way:

1. Support more of the languages in the alerting area - to reach vulnerable populations such as minorities and tourists
2. Provide safety tips - a top user need
3. Ensure CAP alerts are high quality as well as valid - to speed Google integration

3.5 [CAP in ICL Multi-Hazard Early Warning](#)

On 29 September, 2020, this presentation was given by Tun Wang of Institute of Care-life (ICL). His presentation had four parts: Progress on Mulit-Hazard Early Warning (MHEW) in China, Applications of CAP for MHEW, Suggestions on CAP for MHEW, Conclusion and outlook.

Tun said that ICL MHEW technology has given alerts to natural disasters over 100 times. He asserted that ICL has built the world's biggest earthquake early warning network. He noted that this network achieved 6.2 seconds as its average response time, without any false alerts or missed alerts since 2011, during which there were 57 destructive earthquakes. He also talked about successful cases of early warning for landslides, mudslides, floods, and wildfires.

Tun reported that ICL and the National Early Warning Center of China signed a cooperation agreement to promote precise warning dissemination services during 2020. To transmit early warning information to hundreds of millions of users within seconds, he said that ICL cooperates

with various technological enterprises in China including Baidu, Xiaomi, vivo, Sogou, TCL and OPPO.

Tun concluded by saying that ICL is willing to contribute to the optimization of CAP, and that ICL is willing to contribute to the construction of a global MHEW system for a safer world.

3.6 CAP in IFRC

This presentation was given by Jessica Ports Robbins and Marcus Bird on 29 September, 2020.

Jessica presented on behalf of the IFRC, announcing the start of a 3-year project to develop an IFRC Alert Hub and CAP Capacity Building initiative. This project supports IFRC's ambitions to ensure early warning messages reach "last mile" communities and helps to realize the goal that communities everywhere receive the most effective emergency alerting possible and can thereby safeguard their lives and livelihoods.

Jessica noted that the IFRC Alert Hub will have a strong focus on multi-hazard alerting and aims to enable CAP to be leveraged for all manner of emergency preparedness and response activities, at all scales: from city to country and up to global. Consumers of the IFRC Alert Hub will include Red Cross and Red Crescent National Societies, news organizations, telecommunications providers, international and national emergency managers, and disaster relief organizations, among many others. A key objective of this initiative is to improve the impact of early warning messages by strengthening the link with hazard- specific messages on what people can do to reduce risks, protect themselves and prepare for emergencies. The effort will involve engagement at global, regional and national levels, including CAP Toolkit Development, Communities of Practice, regional CAP trainers, and linking with the IFRC WhatNow Service and the IFRC GO Platform.

Marcus remarked on the work of the New Zealand CAP Working Group. He began by explaining the rationale for the Red Cross Hazard App, which uses and also creates CAP alerts. Regarding the Working Group, Marcus noted some factors in its success: Regular meetings (getting together in the same place as well as remotely), Collaborative tools (shared media and resource s), and having a Common purpose. An excellent product of the Working Group is the New Zealand Common Alerting Protocol Guidelines.

3.7 CAP in India

The topic of "CAP in Fighting against COVID-19 in India" was addressed in a presentation by Saurabh Basu on 29 September. He presented some quick facts on the spread of COVID -19 in India. He then reported that India's Department of Telecommunication has taken the initiative to create the CAP-based COVID -19 Savdhan ("Careful") platform, in consultation with the National Disaster Management Authority of India.

Developed by C-DOT, the operational platform enables Central and State Government Authorities in India to seamlessly integrate and disseminate important information and advisories related to the COVID-19 pandemic. The target area populations for such dissemination are identified by postal Pin codes. He reported that nearly 2.8 billion SMS messages in 10 Indian languages have been disseminated in 26 States and Union Territories of India.

Saurabh mentioned that India's CAP system was used during Super Cyclonic Storm "Amphan" and Severe Cyclonic Storm "Nisarga". He also reported that India's CAP system is now ready

for use by all Telecom Operators. Other dissemination media such as Radio, Television, and Road Signage will be operationalized in a phased manner.

3.8 CAP in Italy

This presentation, updating on the CAP implementation status in Italy, was given by Marcello Marzoli of the Italian National Fire Corps on 29 October. He reported on a couple of new initiatives: a new app to collect accurately georeferenced data ready to be shared via CAP messages, and the first operational trial of interoperability service to share data in emergency between the Italian National Fire Corps and Cultural Heritage Authorities.

The new app provides access and authentication services that are centrally managed. These allow firemen to collect, save and upload data from the field up to the interoperability service, thereby generating a CAP ready to be shared in real time with any other Authority or Service. The main aim is to enhance location accuracy for situations such as wildland fires and hydrogeological instability related incidents.

The new interoperability service between the Fire Corps and Cultural Heritage Authorities is presently on trial at the Control Centre of Perugia using operational data. This is to assess how to best configure the system and prepare associated operational procedures. Thanks to the service, Control Centers' operators will receive an alert whenever an incident occurs near cultural heritage assets and would potentially impact on it.

Marcello also reported about two European H2020 Innovation Actions in which the Fire Corps participated: IN-PREP and STRATEGY. These concern standards and CAP.

3.9 CAP in Mexico

This presentation was given by Mario Ruiz on 29 September, 2020. He explained that Mexico's IFT (Instituto Federal de Telecommunicaciones) has authority to regulate messages in emergency situations. IFT regulations call for concessionaires, mobile, radio broadcasting, and certain television and audio services to collaborate in a timely and effective manner with the competent authorities in the implementation and operation of CAP. This applies to multiple types of hazards such as Earthquakes, Hydrometeorological, Volcano, and Space Risk.

As Next Steps for Mexico, Mario listed:

- Design, monitor and regulate the mechanism and define the technological parameters required to transmit massively through dealers telecommunications, broadcasting and application service providers, smart alert messages in emergency situations.
- Regulate mode in which telecommunications carriers, broadcasting and application service providers shall or shall not transmit early warnings in emergency situations.
- Strengthening the physical infrastructure of telecommunications to prioritize communications before, during and after an emergency event.
- Develop procedures to disseminate Warnings and Notifications using CAP.

3.10 CAP in The Weather Company

On 29 September, Michael Grogan presented a perspective on "Alerting and CAP at The Weather Company, an IBM Business." Beginning with a review of IBM's weather brands, including an overview of its previous acquisition of The Weather Company (TWC), Grogan detailed TWC's operations in the weather alerts space across its consumer and enterprise/business products. From a CAP and alerts data perspective, Grogan highlighted the

countries for which TWC acquires government weather alerts and, at a very high level, reviewed TWC's approach to alerts data processing. He noted that CAP is preferred and desired by TWC for government alerts data, but that there are a number of tradeoffs and questions that have to be analyzed when choosing CAP or non-CAP / legacy / custom data formats.

3.12 China's National Early Warning Release System

This presentation was given by Minghui Lyu on 30 September, 2020. Minghui summarized how CAP is used in the Cina's National Early Warning Releasing System (NEWRS). Based on CAP, NEWRS transforms warnings from different agencies and releases them to the public through different channels: TV and radio, mobile, internet, and locally-designed methods, among others. NEWRS also has a dedicated channel to reach emergency management persons. China established a nationwide network of early warning release centers. Each center connects effectively with the relevant government departments at the same level. Public satisfaction with the early warning service has increased continuously over the last six years, according to data from the National Bureau of Statistics.

China has been promoting since 2019 construction of a "three-dimensional dissemination network" for the release of early warning information. Responding to public preferences, this network is developing a capability to push short video productions. Within one minute, a warning can be automatically converted into a 15-second vlog ("video blog"). The video is then available to relevant accounts throughout the warning area.

Several specific cases showed how the network enhances public and stakeholder access to information, and improves decision-making that enhances safety and resilience, especially during the COVID-19 pandemic.

3.13 WMO Role in CAP Implementation

Miriam Andrioli gave this presentation on 30 September. She began with a WMO official statement supporting CAP, issued in 2015: "Congress stressed the need for further guidance to Members on their conversion of weather warnings into CAP format and for enhanced technical assistance to Members, as needed, for the implementation of the CAP standard".

She highlighted various ways that WMO supports its Members in CAP implementation, including the "Guidelines for Implementation of Common Alerting Protocol (CAP)-Enabled Emergency Alerting (WMO No.1109)" and the "CAP Jump-start" arrangements and workshops facilitated by WMO at regional, sub regional and in-country level. These included some conducted via funded projects such as the Severe Weather Forecasting Project (SWFP) and the Climate Risk & Early Warning Systems (CREWS) initiative, among others.

Miriam talked about the WMO CAP Online Training Platform available since early 2020 to WMO Members and all interested parties; the international Register of Alerting Authorities, the Severe Weather Information Center 2.0; and, the Live Feed Widget. WMO's Global Multi-hazard Alerting System (GMAS) was briefly described as well.

3.14 Everbridge and CAP

Scott Benoit gave this presentation on 30 September, 2020. He began by explaining that Everbridge, the leader in Critical Event Management (CEM), helps organizations manage the full lifecycle of a critical event, from assessing risks and locating resources to managing incident responses and analyzing performance. As part of the Everbridge notification platform, Scott

emphasized that CAP plays a key role in helping customers widely distribute their alerts at the local, regional and country-wide levels.

Scott talked about Cell Broadcast technology, which enables emergency messages to be received by all mobile devices in an alerting area within seconds. He highlighted that CAP is the global standard for governments to integrate with Cell Broadcast systems via mobile operators. He noted that Cell Broadcast needs to support all languages and CAP facilitates this. He also said that CAP is easy extendable and supports all existing and new Cell Broadcast functionality such as Device Based Geo Fencing,

Scott remarked on the Everbridge CAP RSS capability. This is useful for getting alert messages to Digital Signage, Websites, Mobile Devices, and other device that reads XML.

3.15 Filtered Alert Hub Update

This presentation was given by Ian Ibbotson on 30 September, 2020. He reviewed the rationale and purpose behind the Filtered Alert Hub, major recent advancements, and plans for upcoming changes. Ian explained that the main activity of this Alert Hub is to aggregate CAP news feeds from alerting authorities, and make the CAP alerts available as a large set of location-based CAP news feeds. Each of these filtered CAP news feeds is a "What I need to know right now" feed, selected on specific criteria from CAP alerts across all monitored sources. Ian also discussed the tools that the alert hub can make available to CAP news feed publishers to help validate and health-check their feeds in real time, thereby providing feedback needed for early error detection and correction.

3.16 Flash Flood Guidance and CAP

This presentation was given by Konstantine Georgakakos and Randall Banks of the Hydrologic Research Center (HRC) on 30 September, 2020. Jason Sperfslage, HRC IT, contributed to the preparation of the interface enhancement. The presentation provided an overview of the Flash Flood Guidance System (FFGS) and current efforts to develop a CAP Composer tool that works with the interactive interface of the FFGS. At present, this effort is in a prototyping phase. WMO, USAID/BHA, and NOAA are HRC's partners in the FFGS Implementations.

The FFGS consists of several regional implementations worldwide. It includes data ingest and quality control components, modeling components, and a web-based interface that supports forecaster analysis of real-time data and forecasts pertaining to imminent or near-term forecasted flash flood events over large domains with high resolution. A very important aspect of the design is that it allows forecaster adjustments to model-generated diagnostic and prognostic products based on external up-to-the-minute information and forecaster experience.

The CAP Composer tool allows authorized forecasters to use the interface information, after adjustments are made, to compose a CAP-formatted file for download to the forecaster PC for any further adjustment and potential approval for dissemination through the country's CAP alerting infrastructure. The current prototype includes mandatory CAP fields, text-based descriptions and instructions, embedded polygon preparation through the interface, as well as a downloadable map image that may be referenced within the CAP alert. It is anticipated that after the prototype is completed and before operationalization, it will undergo review by the partner agencies and by CAP-enabled Countries that use the FFGS.

3.17 Integrated Public Alert and Warning System

This presentation was given by Mark Lucero on 30 September, 2020. Mark works for the United States Department of Homeland Security at the Federal Emergency Management Agency (FEMA), where he is the Chief Engineer for the Integrated Public Alert and Warning System (IPAWS). He explained that IPAWS is a gateway system connecting emergency management, law enforcement, and other public safety agencies to several public alert and warning systems. The primary systems available through IPAWS are the Emergency Alert System (EAS) and the Wireless Emergency Alert (WEA) system. FEMA designed IPAWS to take advantage of the interoperability and universality of CAP. All messages processed by IPAWS require CAP version 1.2 and must conform to the IPAWS Profile. The presentation touched on the background of the IPAWS system, FEMA's adoption of CAP, recent use of the system for real world events, and key takeaways for others considering adopting CAP for their alert and warning systems.

3.18 METCAP Plus Freeware

This presentation was given by Kemal Dokuyucu on 30 September, 2020. He noted that the name is an acronym for METeorological Communication & Application Package and the package is in Turkish, English and Russian. He said the MetcapPlus Beta version has been donated to: Azerbaijan, Turkish Republic of Northern Cyprus, Bosnia and Herzegovina, Montenegro, Kazakhstan, Georgia, Belarus, Yemen, India, Afghanistan, Ukraine (Odessa University), Togo, Turkmenistan, and Qatar.

As a main visualization software of Turkish Met. Service, MetcapPlus performs many tasks to analyze current weather conditions and create meteorological reports. It creates different actual meteorological charts for different levels starting from ground up to the 10 hPa level. It has the capability to combine all prepared charts. It may also create animation for satellite, radar and NWP products. The package creates instant warnings by checking thresholds for radar, satellite, lightning, and observations received from different sources.

Kemal concluded with a slide about the MetcapPlus CAP Editor. This generates CAP alerts for any region for selected cases and alarm levels. The CAP module validates the created alerts using the Google validation site. It has the capability to distribute the reports to selected users and organizations and it maintains an associated CAP news feed in RSS format.

3.19 Pacific Disaster Center and CAP

This presentation was given by Joel Myhre on 30 September, 2020.

As an applied research center of the University of Hawaii with a focus on innovative alerting and Disaster Risk Reduction technologies for humanitarian assistance and disaster relief applications, the Pacific Disaster Center (PDC) was honored to share ongoing CAP-based humanitarian response innovations via our partners from throughout the Association of Southeast Asian Nations region, specifically: Thailand, Indonesia, Myanmar, and the Philippines.

With nearly 2 million global uses of the PDC DisasterAWARE mobile application and broad adoption by United Nations and Non-Government Organization partners of the Emergency Operations DisasterAWARE platform, PDC is proud to collaborate with National Disaster Management Organizations, Information and Communications Technology industry partners, volunteer and technical communities such as the Humanitarian Open Street Map Team

Indonesia, along with WMO, the Operational Satellite Applications Programme of the United Nations Institute for Training and Research, the Group on Earth Observation, and the IFRC.

3.20 The New Meteoalarm System

This presentation was given by Andreas Schaffhauser on 30 September, 2020.

Meteoalarm is an impact-oriented, common framework to aggregate and display meteorological and hydrological warnings of EUMETNET members, a grouping of 31 European National Meteorological Services. Created in the early 2000s, and operational since 2007, Meteoalarm provides warnings in an easy and understandable way to the general public and makes the information available via feeds and the Alert Hub to worldwide (re)users. Currently 37 National Meteorological or Hydrological Services and national partners in Europe are participating. Meteoalarm is led by the Austrian National Weather Service (ZAMG).

Among the Meteoalarm objectives is to further support EUMETNET members in delivering impact- oriented, multi-hazard and multi-lingual warnings and to support the GMAS (Global Multi-hazard Alerting System) concept of WMO. The Meteoalarm partners are working together on the further development of the Meteoalarm CAP profile in a working group. Tasks of the group are to review and refine the use of specific CAP components in Meteoalarm, e.g. for the integration of additional information to take into account different IBF / IoW approaches, and the future use of free polygons.

Meteoalarm 2.0 provides a comprehensive relaunch, upgrade and redesign of the complete Meteoalarm system. The implementation is based on micro services. The architecture was chosen to ensure high availability, performance and scalability. Another goal is maximum compatibility with the current system, while also embracing technological changes and extensibility. Meteoalarm 2.0 will be operational in November 2020.

3.21 Italy's CAP Profile and EU-Alert System

This presentation was given by Umberto Rosini and Stefano Calabrese on 30 September, 2020. Speaking on behalf of the National Civil Protection Service of Italy, they covered three separate topics: the Italian CAP Profile (guidelines), implementation of a public warning system in Italy called IT-alert (Italy's component of EU-alert), and the Italian Alert Hub.

Umberto explained why Italian guidelines for CAP are needed: "CAP is a widely used standard all over the world [...] our goal is to strictly adhere to the standard by defining it for Italian specificities by defining controlled vocabularies for the correct translation of the information in English language contained in the CAP messages, for a representation and homogeneous interpretation of the information, the definition of geodata and specific parameters and event for use on the Italian territory".

Stefano introduced EU-alert, the European Public Warning Service. According to a Directive of European Parliament and the European Council, all EU member states are required to have an effective public alarm system by June 2022. For Italy, IT-alert is the public warning system and it is a multichannel system that will send messages through Cell Broadcast, an App and WebServices. Stefano gave some details on each of these components. He noted that IT-alert uses CAP, including the Italian profile (guidelines), and that Italy will also use Internet news feeds (RSS / Atom), API Rest, and GitHub platforms.

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The presentation concluded with a slide about the Italian Alert Hub. Umberto explained that its purpose is to aggregate alerts from different entities, including alerts used by IT-Alert as well as others.. He said they will use and contribute to the Filtered Alert Hub Project.

3.22 [Update on OASIS Emergency Management Technical Committee Work](#)

This presentation was given by Elysa Jones on 30 September, 2020.

Elysa provided an overview and status of the full suite of specifications from the OASIS Emergency Management Technical Committee. These include the Emergency Data Exchange Language (EDXL) Distribution Element for the wrapping and routing of structured and unstructured data, Tracking of Emergency Patients, Hospital Availability, Resource Messaging, Tracking of Emergency Clients and Situation Reporting.

Her second topic included the progress made and details about the approach by the CAP Subcommittee on the Event Terms List. This list will help guide international implementers in choosing event terms, while recognizing that many existing lists are already in place and appropriate for their audiences. There will be an OASIS Committee Note to include the details. It will be published November 1, 2020 for a 60-day review. Two subject matter expert meetings will occur December 4 and 11 to enable CAP developers to provide input.

Offers to Host the Next CAP Implementation Workshop

Workshop participants were invited to put forward suggestions for the location of a future CAP Implementation Workshop. There are three tentative offers so far: Abu Dhabi, UAE; Hawaii, USA; and Whitehorse, Canada. A likely timeframe for the workshop is August -September 2021.