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Event Terms List – User’s Guide Version 1.0

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- *Common Alerting Protocol Version 1.2*. Edited by Jacob Westfall. 01 July 2010. OASIS Standard. Latest version: <http://docs.oasis-open.org/emergency/cap/v1.2/CAP-v1.2.html>.

Abstract:

The **OASIS Open Event Terms List – User’s Guide** is a resource that has been developed with the aim of helping originators and consumers of CAP alert messages use the **OASIS Open Event Terms List – Lookup Table**. The resource aims to increase interoperability between digitally connected alerting systems in the business of alerting. The table entries have been formatted and structured to allow for seamless integration into any Common Alerting Protocol (CAP) based system, and the **OASIS Open Event Terms List – User’s Guide** presents the details on how this can be accomplished.

At the time of this writing, the variety of practices employed regarding **event-types** in **CAP** messages has made it difficult to compare alert messages from different sources. The problem is one of reduced interoperability between alerting systems due to differences in the practices surrounding event-based elements in CAP messages. Aligning practices around these elements is the focus adopted for this OASIS Open work product to address the interoperability concern. The approach for this User’s Guide is to provide CAP originators and CAP consumers with the guidance needed to align their practices for these elements.

Status:

This is a Non-Standards Track Work Product. The patent provisions of the OASIS IPR Policy do not apply.

This document was last revised or approved by the OASIS Emergency Management TC on the above date. The level of approval is also listed above. Check the "Latest stage" location noted above for possible later revisions of this document. Any other numbered Versions and other technical work produced by the Technical Committee (TC) are listed at https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=emergency#technical.

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1 Introduction

The Emergency Management Technical Committee (EMTC) of **OASIS Open**, has developed this ***OASIS Open Event Terms List - User's Guide*** to support the objective of interoperability in the business-of-alerting. Interoperability is the term given to systems working together for a common cause, and this guide addresses an important aspect of that cause – the handling of information associated with an event deemed worthy of being alerted for. Event information is a key piece of the overall information in the situation.

This User's Guide discusses the concept of an event across the alerting process – throughout the originating phase to the consuming phase. The aim is to help originating agents provide standardized (and interoperable) alert-worthy event information in alert messages for consuming agents in the process ¹. This guide has been constructed to address both the observation and analysis of an event, and the larger alerting situation the event creates for an alerting audience.

Interoperability is a primary objective of the EMTC and many of the Common Alerting Protocol (CAP) based alerting systems that operate world-wide. Many of these systems are digitally connected – originating and/or consuming CAP-based messages on a routine basis. CAP messages are XML-based document files where interoperability is a key objective in its design. CAP is a means for alerting practitioners (a term used to combine originators and consumers into one reference), to exchange alerting information in a standardized way.

In this guide, the premise is that an event is identified and an alerting process is set to begin. Once the event's significance is confirmed, it is designated as an event-of-interest, and the analysis broadens to encompass the entire alerting situation (inclusive of the event and the alerting process). Addressing the situation, from the event inception to the audience notification, is what **OASIS Open** considers to be an alerting service. The ***OASIS Open Event Terms List - User's Guide*** makes frequent reference to CAP in discussing this service ².

Prior to this User's Guide, **OASIS Open** had already published version 1.0 of an ***OASIS Open Event Terms List resource***. The resource was a work product published for the purposes of promoting interoperability between alerting practitioners. Subsequent to publishing, many practitioners requested guidance on how the content of the list is best integrated within CAP. With ***OASIS Open Event Terms List - User's Guide v1.0***, and with a backwards compatible ***OASIS Open Event Terms List - Lookup Table v2.0***, practitioners now have guidance on how to incorporate the **OASIS Open** managed list of universal event terms and codes into their service.

¹ Refer to the ***OASIS Open Event Terms List – Concept Guide*** for more on alert-worthy events (forthcoming).

² For more on **CAP**, and **OASIS Open** recommended alerting practices, see the ***OASIS Open Alerting Practices*** family of resources (forthcoming).

1.1 Executive Summary

The **OASIS Open Event Terms List - User's Guide** is less for the casual reader, and more for the expert practitioner (e.g. service architect, system designer, processing agent, etc.). The aim is to help practitioners build and operate a better system - one that connects seamlessly (i.e. is interoperable) with agencies and audiences on a business/client level, and with originating and consuming agents on a technical/functional level.

The CAP standard is a proven data standard for obtaining this goal. It is a standard for conveying all-event, all-alert information in an end-to-end alerting system devoted to the alerting objective. The CAP standard allows for a "many-originator" to "many-consumer" transfer of information on the technical and functional level, including the use of customized alerting information (if needed), in any originator/consumer relationship.

The focus of this **User's Guide** - the alert-worthy event and its larger alerting situation³ - is just one key component of alerting information to be conveyed to consuming agents and audiences. To that end, the **User's Guide** discusses how to organize, structure, format, and subsequently originate and consume, the following event-based information within a CAP alert message:

- a) the nature of an event;
- b) the impacts of an event;
- c) the location and timing of an event;
- d) the event and its relationship to any associated secondary events; and
- e) the calls-to-action the event may warrant.

The guide also discusses the tasks of the various processing agents involved in the alerting service. This includes:

- a) the business front-line alert originators (observers, analysts, social scientists);
- b) the technical and functional back-line CAP originators (builders, publishers, data operators);
- c) the technical and functional back-line CAP consumers (aggregators, re-distributors, presenters).

It is the back-line consuming agents that are employed to service the target alerting audience. It is the front-line originating agents that start the process.

This **User's Guide** is also part of a series of event-focussed alerting resources prepared by the **OASIS Open EMTC** to cover the full spectrum of event-based information in a business-of-alerting.

³ Refer to other **OASIS Open** resources, such as the **OASIS Open Alerting Practices and Strategies** family of resources for more on other components of alerting.

2 How to Use the Resource?

The **OASIS Open Event Terms List (ETL)** is a collection of 4 resources.

- ***Event Terms List - Lookup Table***
- ***Event Terms List - User's Guide***
- ***Event Terms List - Concept Guide***
- ***Event Terms List - Spectrum Analysis***

The **OASIS Open Event Terms List - User's Guide**, as part of this collection, will make reference to the other resources as needed. For more on a compiled list of **OASIS Open** event terms and codes, see the ***OASIS Open Event Terms List – Lookup Table***. For more on understanding the basic characteristics of an event, including ways to classify the nature, impacts, location, timing, and behaviors of an event, see the ***OASIS Open Event Terms List – Event Concepts***. And finally, for more on understanding the naming of events, and social science that accompanies those naming decisions, see the ***OASIS Open Event Terms List – Spectrum Analysis***.

The **OASIS Open Event Terms List - User's Guide** resource was compiled to provide guidance for **originating agencies** and their **agents** on how to select the best terms and codes from the ***OASIS Open Event Terms List - Lookup Table***, and how **consuming agencies** and their **agents** can subsequently process the chosen terms and codes. If alerting **practitioners** (originators and consumers) are only looking to obtain a basic level of functionality with this material (i.e. its standardized use and its basic benefit of interoperability), the subsections marked as “**Basic**” in section 4 will suffice. With the guidance of this User's Guide, the **OASIS Open EMTC** is asking all CAP practitioners to minimally incorporate the “Basic” function of the ***OASIS Open Event Terms List*** into their business-of-alerting service to further the objective of interoperability.

However, if the practitioner is looking to take full advantage of the ***OASIS Open Event Terms List***, and gain a deeper understanding of events and the alerting situation in the process, the subsections marked “**More advanced**” and “**Fully advanced**” in section 4 are recommended. The advanced material presented makes it possible to handle any conceivable type of event that may be considered an **event-of-interest** worth alerting for.

This Users' Guide breaks down the process of creating a **subject event** – the topic of discussion in an alert message. It does this by utilizing a series of event-based sub-processes appropriate for various entities involved in the exercise. It begins with an **observing** sub-process, followed by an **analyzing** sub-process, leading to a CAP **originating** process, and ending with a CAP **consuming** process⁴.

⁴ For a detailed breakdown of the processes and sub-processes of alerting, and an introduction to the terms used in each of the stages, see the ***OASIS Open Event Terms List – Concept Guide***.

An ***OASIS Open Alerting Practices and Strategies - Glossary*** (forthcoming) is a resource being assembled to house terms from across the many **OASIS Open** alerting based resources. Terms that are both bold and underlined, in this and other resources, are terms that can be found in the glossary. The first time a term is used in a section of a resource, that is also found in the glossary, it will be bolded and underlined to let the reader know there is a provided definition in the glossary. Being familiar with the defined terms will help with using this guide and will make navigating the resource quicker and easier.

This guide is also intended to help alerting **agencies** build a better **system**. Most existing **alerting** system documentation, whether that documentation is based on business **analysis**, business **requirements**, system **specifications**, **service**, or **training**; have been observed to use a mixture of terms from different views into the process. Mixing views can lead to **confusion** for agents building, operating, and promoting alerting systems. This guide does not go into actual system design, but learning the language of the various processes used here will help avoid some of the problems system builders often encounter ⁵.

2.1 Public Review Version ⁶

This presentation of the ***OASIS Open Event Terms List – User’s Guide*** is a **Public Review** presentation. In this particular presentation all feedback will be collected and reviewed. Suggestions, comments, and questions can be on any content, including the terms and codes found in the ***OASIS Open Event Terms List – Lookup Table***. Each feedback item may be used to adjust the final release copies of the ***OASIS Open Event Terms List*** family of resources (as applicable).

OASIS Open plans to publish a set of resources in roughly the following order as a best effort exercise (with no set timeline due to the inability to predict the availability of volunteer resources):

- 1) ***OASIS Open Event Terms List – Lookup Table v2.0***
- 2) ***OASIS Open Event Terms List – User’s Guide v1.0***
- 3) ***OASIS Open Alerting Practices and Strategies – Glossary v1.0*** (forthcoming)
- 4) ***OASIS Open Event Terms List – Concept Guide v1.0*** (forthcoming)
- 5) ***OASIS Open Event Terms List – Spectrum Analysis v2.0*** (forthcoming)
- 6) ***OASIS Open Event Terms List – Lookup Table v2.1*** (planned)
- 7) ***OASIS Open Alerting Practices and Strategies – Glossary v1.1*** (planned)
- 8) ***OASIS Open Event Terms List – User’s Guide v2.0*** (planned)
- 9) ***OASIS Open Event Terms List – Concept Guide v2.0*** (planned)

At the end of this publish cycle all resources, in the family of ***OASIS Open Event Terms List*** resources, will be at v2.0, with the **Lookup Table** having advanced to v2.1 or greater. All version 2.X resources will be jointly compatible as a package, all anchored to version 2.0.

⁵ Refer to the ***OASIS Open Alerting Practices and Strategies*** family of resources (forthcoming) for more on system design.

⁶ This Public Review section will be removed before the final Committee Note for v1.0 of this resource is published.

2.2 Activity-of-Alerting Suggested Task List

The following is a suggested list of tasks as recommended by the **OASIS Open EMTC** when conducting an **event**-based alerting process. Each ordered task aligns with the objectives and processes discussed in this **User's Guide** and with the material covered in the **OASIS Open Event Terms List** family of resources. Many of the descriptive terms used in this list are discussed in detail in the **OASIS Open Event Terms List – Concept Guide**.

Originating agents:

- a) **Observe** and **identify** an event situation (single or complex ⁷);
- b) **Analyse** the events in the situation and devise and form the events-of-interest (an event-of-interest could cover the entirety of the event situation, or any subset part of the situation, with each dependent upon the nature of its conditions and impacts);
- c) **Devise** and **form** the alert-worthy events for the target client (an alert-worthy event could also cover the entirety of the situation, or any subset part of the situation, with each dependent upon the nature of its conditions, impacts, location and timing);
- d) **Associate** the alert-worthy events with other associated secondary events-of-interest to devise and form a subject event for the alerting process (there is wide leeway to what constitutes a subject-event). Subject events may be composed of a single event, a complex event, or an even larger complex event once all the secondary events are taken into consideration);
- e) **Assemble** the larger alerting-situation information (this includes information on the subject-event; any and all supporting information; and any lead time, intersection time, and follow time information the target audience needs for coping with the subject event). This also includes using terms and codes as given in the **OASIS Open Event Terms List**;
- f) **Originate** an alert (the process of publishing one or more alert messages, ideally in CAP form, to address the larger alerting situation).

Consuming agents:

- a) **Initiate** or confirm a connection (for consuming CAP messages);
- b) **Consume** messages for processing;
- c) **Interrogate** each alert message and subject event (for filtering, routing and presenting purposes);
- d) **Establish**, and if necessary **maintain**, an alert notification signal for either:
 - a. the next agent along the path of distribution, or
 - b. the last-mile target audience at the end of the path of distribution.

⁷ A **complex event** is a group of two or more events gathered into one event and dealt with as a group event. Refer to the **OASIS Open Event Terms List – Concept Guide** for more on **complex events**.

3 Event-Based Processes

In this **User's Guide**, a variety of larger alerting situations are exemplified. The terms used in the examples are associated to one or more of the event-based processes as discussed in the **OASIS Open Event Terms List – Concept Guide**. With the **Concept Guide** and this **User's Guide**, there are four main processes (sub-processes to the overall process), that attributed to the four main identifiable parties involved in the alerting process.

- 1) **“Observing” process**: a process that pertains to agencies and agents responsible for observing and identifying events.
- 2) **“Analyzing” process**: a process that pertains to agencies and agents responsible for analysing **events**, **events-of-interest**, **alert-worthy events**, and **subject events**, all for the purpose of potentially alerting for them ⁸.
- 3) **“CAP Originating” process**: a process that pertains to **agents** responsible for originating a CAP-based alert message.
- 4) **“CAP Consuming” process**: a process that pertains to agents and audiences found at the end of the path-of-distribution of a CAP-based alert message.

3.1 “Observing” Process

In the **“Observing”** process, the objective is to identify any events, and any secondary related events, as potential **events-of-interest**, specifically for the purposes of advancing the alerting process. Events-of-interest can be singular events (one identifiable event) or complex events (two or more identifiable events that together as a group are considered one larger event). They are identified by their nature (i.e. by their **observed condition** and **impact**) ⁹.

3.2 “Analyzing” Process

In the **“Analyzing”** process, the objective is to reconcile the details of the **events-of-interest** from the perspective of impacted parties. The process takes the **event situation** and establishes a communication framework for the forthcoming **alerting situation** (i.e. the agency/audience interaction and all which that encompasses). It is here where **alert-worthy events**, the **subject event**, and any noteworthy **secondary events**, are clarified. It also where new events, such as

⁸ The terms **event**, **event-of-interest**, **alert-worthy event**, and **subject event**, all pertain to the same situation under observation, however, each term is used under a different set of circumstances in the alerting process. Each term is used in progression in the alerting process as the details of the situation are examined. Not all events become events-of-interest; and not all events-of-interest become alert-worthy events; and not all alert-worthy events become subject events. For more on these terms, see the **OASIS Open Event Terms List – Concept Guide**.

⁹ Refer to the **OASIS Open Event Terms List – Concept Guide** for more on **observed condition** and **impact**.

solicited **action** events the alerting agency is asking of impacted parties (i.e. any actions to take during the lead time (ahead of the event), the intersection time (during the event) and the follow time (after the event) all due to instance and occasion of the subject event).

3.3 “CAP Originating” Process

In the CAP Originating process, the objective is to clarify the pieces of information that support originators building a proper alert message using the CAP standard. Elements of information in the CAP model are designed to make the exchange of information meaningful to all parties. The aim of CAP originating parties is to create a set of standardized elements of technical and functional alerting information for agents of their consuming client’s needs.

One objective of the **User’s Guide** is to make the originating process easier while simultaneously meeting the needs of all the various consuming parties. The **OASIS Open EMTC** perspective for CAP originators is to not necessarily have them create separately structured CAP product for each and every CAP consuming party, but to have one CAP message that can service them all ¹⁰. The CAP standard is designed to make this possible ¹¹.

3.4 “CAP Consuming” Process

In the CAP Consuming process, the objective is to clarify the pieces of information that support consumers processing a proper alert message based on the CAP standard. Elements of information in the CAP model are designed to make the exchange of information meaningful to all parties with the aim of having consuming parties able to properly use the elements for their needs.

One objective the **User’s Guide** is to make the consuming process easier while simultaneously allowing originating parties the ability to service all their consuming partners simultaneously with the same set of CAP alert messages. The **OASIS Open EMTC** perspective for CAP consumers is to not have them make improper assumptions on the information received, nor have to create additional information to make their service successful. The CAP standard was designed to make this possible ¹².

¹⁰ The strategy of one message for all consumers has its advantages and disadvantages, however, the disadvantages stem more from a poor system design than from the standard itself. **OASIS Open** recommends becoming familiar with good system design with the help of the **OASIS Open** resources built for this purpose, so that the many advantages inherent with using the one CAP message for all consumers can be realized.

¹¹ While the CAP Originating view covers much more than just event information in the larger alerting situation, this guide primarily focuses on event information. For more on the CAP Originating view regarding events, see the **OASIS Open Event Terms List – Concept Guide**. For more on the CAP Originating view regarding other aspects of alerting, see the **OASIS Open Alerting Practices** family of resources.

¹² While the CAP Consuming view covers much more than just **event** information in the larger alerting situation, this guide does primarily focus on **event** information. For more on the CAP Consuming view regarding **events**, see the **OASIS Open Event Terms List – Concept Guide**. For more on the CAP Consuming view regarding other aspects of alerting, see the **OASIS Open Alerting Practices** family of documents.

4 Establishing the Baseline for the Alerting Process

This section outlines the foundational alerting workflow that underpins the four **business-of-alerting** processes defined in the **OASIS Open Event Terms List** family of resources. It reinforces terminology introduced in the **Concept Guide** and introduces additional terms as required.

Following the process discussion, a representative event situation is presented. This scenario serves as a baseline case for establishing a set of baseline steps that can be adapted to a variety of real-world situations. These steps form the backbone of consistent alerting practices across event types.

The **Example Situations** section of this guide builds upon this baseline by exploring case-specific variations. While these examples retain the core principles outlined here, they also highlight distinctive circumstances and considerations unique to each scenario. The primary focus remains on the concept of "event," while other components of the alerting process (alerting signals, layers, profiles, over-alerting, etc...), are covered in separate documents within the **OASIS Open** set of resources¹³.

The process accommodates both **single-event** and **complex-event** scenarios. Complex-events often involve multiple events as observed and are explored in depth in this guide. Single-events are treated as subsets of complex-events and serve as entry points for new users. Learning to manage single-event scenarios is encouraged before tackling complex-event cases¹⁴.

The baseline case presented here involves a **complex-event** that associates several individual **single-events** into one event situation. It is analyzed through three lenses:

- Simple alerting situation (picking one event at exclusion of the others)
- Advanced alerting situation (picking two events that can easily be aggregated into one larger event)
- Fully advanced alerting situation (picking four events that are all associated with each as suggested by business policy and the example event situation as given).

Each perspective demonstrates how the Common Alerting Protocol (CAP) standard's features can be leveraged effectively¹⁵.

¹³ Such as the **OASIS Open Alerting Practices** family of resources.

¹⁴ Refer to the **OASIS Open Event Terms List - Concept Guide** for more on single and complex event situations.

¹⁵ The analysis and discussions provided here reflect the **OASIS Open** perspective and do not imply any absolutes in the alerting process. However, they are intended to serve as guidance, offering a path forward toward achieving **interoperability** between alerting services, whether or not the Common Alerting Protocol (**CAP**) is actually utilized in the process.

4.1 Baseline Process

This guide presents a comprehensive, end-to-end sequence for alerting, beginning with the observation of an **event** (real or imagined ¹⁶), and concluding with an alert **notification** of a **subject event** to the alerting agency's target audience. While the steps are described broadly, some components of the baseline process may be unfamiliar to certain agencies.

This example baseline case serves as the universal reference model for all subsequent examples provided in the **Example Situations** section. Unless explicitly stated, the principles outlined in this baseline case will apply across all additional scenarios. Subsequent analyses of the additional scenarios will focus on how each case diverges from the baseline case, shedding light on their unique elements.

To achieve interoperability across organizations, the **OASIS Open EMTC** recommends standardizing specific steps within the CAP alerting workflow. These universal steps span the following sub-processes: observing, analyzing, originating, and consuming. This guide aligns these steps with the use of **events**, **event-types**, and **event terms**, as discussed in the **OASIS Open Event Terms List** family of resources.

The **OASIS Open EMTC** strongly advises CAP originators to include at least one event code from the **Event Terms List** in every CAP message. This practice ensures consistency and facilitates system interoperability. If no exact match is found, the event-based framework described here still applies, and the **Users' Guide** offers instructions for maintaining interoperability in such cases.

Lastly, it's important to recognize that this process applies to all alerting agencies - public, private, and restricted alike. Whether alerts are broadly disseminated (e.g., CAP <scope> = "public") or directed to specific recipients (e.g., CAP <scope> = "private" or "restricted"), the core process remains consistent ¹⁷.

¹⁶ Refer to the **OASIS Open Event Terms List - Concept Guide** for more on real and imagined events.

¹⁷ For more on **distribution scope**, see the **OASIS Open Alerting Practices** family of resources (forthcoming).

4.1.1 Observing Process

Typical process for identifying an event-of-interest for the alerting process:

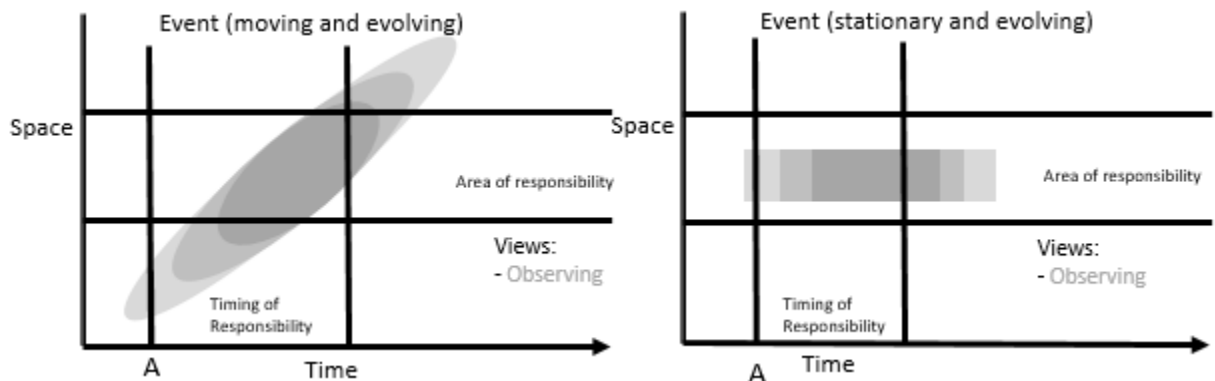
- 1) An alerting agency observes an **event situation**¹⁸, that involves one or more **events**, with each event having the potential to lead an observer to devise and form an **event-of-interest**. The agency gathers data about the events (using direct observation, sensors, and predictive models), to help with the event-of-interest determination. The event-of-interest is an abstract concept devised and formed from the same observable conditions of the event's nature, impacts, location and timing. The boundaries of each event-of-interest's conditions, may end up being a subset part of the event it is derived from¹⁹.
 - a. The events involved are determined by the alerting business and typically pertain to those that by policy, lead to an event-of-interest (and therefore a possible larger alerting situation). The observed events ideally would be ones to have an associated **event-type** on record.
 - b. The observation is conducted with a concerned **client** in mind (i.e., the target audience in the larger alerting process). Ideally, the initial observation for each event is carried out before any impacts to the client occur, however, the observation activity is expected to continue throughout the life of an event - before, during, and sometimes after the impacts for the client are realized. Sometimes, the observation process begins after the event has already impacted the audience.
 - c. The analysis stage, the stage following the observing stage, is when the **full** determination of **events-of-interest** is made. If the analysis confirms the nature, impact, location and timing are indeed interesting (either for the present or for the future), an event-of-interest **marker** is applied to the event and the observation stage continues until the event is no longer interesting.

¹⁸ Either observed as **real** through direct observation or sensors, or observed as **imagined** based on the output of forecasting and predictive models.

¹⁹ For further information on **events** vs. **events-of-interest** events, refer to the **Oasis Open Event Terms List – Concept Guide** for additional details.

Background:

In the two diagrams below, two real events (both illustrated in grey) are present at point-in-time A²⁰. One event is moving and evolving, and the other is stationary and evolving²¹. Point-in-time A serves as the starting point for the observation exercise as in these two diagrams, point-in-time A is when the observer became aware of the event. Note that the events are shown as conceptual representations, without a defined scale for space or time, and the two point-in-time A markers have no relationship to each other in these illustrations – they represent separate cases.

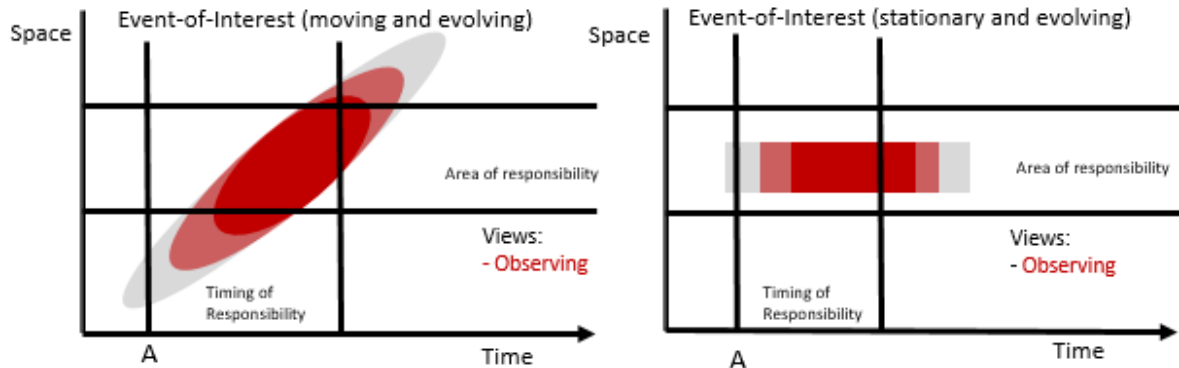


In the two example cases, the nature, impacts, location, and timing will meet or exceed the defined measures of significance (for at least some measurable segment of time), as illustrated in the concentric darker grey areas. The objective is simply to try and identify an observed situation as containing a probable **event-of-interest** (subset or otherwise), along with a general sense of the **event-types** involved.

In the two illustrated example cases, the probable events-of-interest, as per the observing process, are devised and formed as shown in red in the diagrams below. They are probable, as the area in red is in the future (as of point-in-time A). The leftover event areas shown in grey in the diagrams below, are part of the observed events that do not meet the measure of nature and impact of significant events, and therefore are not part of the probable events-of-interest.

²⁰ Refer to the **Event Terms List – Concept Guide** for more on the use of space/time diagrams and on concepts such as the **area-of-responsibility** and the **timing-of-responsibility**.

²¹ For further information on **moving** vs. **stationary** events, refer to the **Oasis Open Event Terms List – Concept Guide**. For further information on **evolving** events (and its binary compliment, the static event), refer to the **Oasis Open Event Terms List – Concept Guide**. Static event cases are simply a subset of evolving event cases and, although not shown, they are equally applicable to these diagrams and the observing process.



There are now two events shown in each of the two diagrams, the core **event** in grey and the **event-of-interest** in red. And while they stem from the same event situation and comprise many of the same conditions, they are treated as separate and distinct events, each with its own devised and formed interpretation (two grey and two red).

All four interpretations are abstract constructs. Each construct is based on a different set of bounding criteria which form each interpretation ²². Additional interpretations, the **alert-worthy** alerting event and the resulting alert message **subject-event**, are discussed later in the analysis stage.

- 2) For any observed event within the situation, if the **level of significance** for any one of the **measures** listed below is not close to being met (“close” being a subjective assessment), the observed event may be excluded as a probable event-of-interest and dismissed from further analysis ²³.
 - a. If the **nature** of an event in the observed situation does not satisfy any measure of conditional significance, the event may be dismissed (e.g., a wind event situation being nothing more than a breeze).
 - b. If the known **impacts** of an event, based on its event-type, does not meet any measure of impact significance, the event may be dismissed (e.g., a wind situation isolated to a mountain peak. It may fall within an agency’s area and

²² For further information on these interpretations and other interpretations of the same core event, refer to **the Oasis Open Event Terms List – Concept Guide** for additional details.

²³ The measure of an **event-of-interest** in the observing view is an incomplete assessment, resulting in more leeway in assigning the event-of-interest tag to an event than that of the analysing view. The efforts of the analysing view are to determine an **actual** event-of-interest status.

460 timing of responsibility, however, it could still be outside the audience's **area-of-**
461 **concern** due to no actual audience present, resulting in no audience impact ²⁴).

- 462
- 463 c. If the spatial **location** of an **event** in the observed situation is not significant, the
- 464 event may be dismissed (e.g., an offshore storm moving away from any agency's
- 465 **areas-of-responsibility**).
- 466
- 467 d. If the **timing** of an **event** in the observed situation is not significant, the event
- 468 may be dismissed (e.g., a distant storm that is not expected to reach the area of
- 469 responsibility until much later, well after the agency's current **timing-of-**
- 470 **responsibility** period).
- 471
- 472 i. If the event is a moving event, and its most likely path is anticipated to
- 473 bring it into the area-of-responsibility at some far distant time, it would
- 474 likely qualify as an event-of-interest, however, not yet leading to an alert-
- 475 worthy event. It remains under observation until some future point-in-
- 476 time when the situation changes ²⁵.
- 477
- 478 3) At the **current** point in time, determine whether the events-of-interest are in a real or
- 479 imagined state ²⁶. This is done while acknowledging that any imagined state may not be
- 480 realized, or may change to a real state over time as new information becomes available.
- 481
- 482 4) The monitoring range in **space** for **moving** situations is likely much **broad**er than the
- 483 range in space for stationary situations. For stationary situations, the monitoring range
- 484 would typically **align** with the alerting agency's area-of-responsibility.
- 485
- 486 5) The monitoring range in **time** for **evolving** situations is likely much **long**er than the range
- 487 in time for static situations. For static situations, the monitoring range would typically
- 488 align with the alerting agency's timing-of-responsibility.
- 489

²⁴ Meaning no "public" impact; however, if a search and rescue operation were underway on the mountain peak and in contact with the alerting agency, a **temporary** area-of-concern could be established. For more on area-of-concern refer to the **OASIS Open Event Terms List – Concept Guide**.

²⁵ This is also highly dependent on the lead-time policies of the alerting agency and the current sensitivities of the audience. An area that has recently experienced a series of storms causing disruptions within its area-of-responsibility might prompt the alerting agency to extend the timing-of-responsibility period to address the audience's heightened sensitivities.

²⁶ Refer to the section on real vs. imagined events in the **Oasis Open Event Terms List – Concept Guide** for additional details.

- 491 6) The criteria for measuring the significance of an **event-of-interest**, based solely on the
492 **nature** of the events, are likely broader in scope than the agency's criteria for an actual
493 **alert-worthy event** (see next section). The evolving and sometimes unpredictable
494 nature of certain events could easily transform a **nearly** alert-worthy event-of-interest
495 into an **actual** alert-worthy event-of-interest at a future time.
496
- 497 7) The alerting agency typically identifies a **primary** event within the observed situation.
498 This could be an individual event (e.g., a tornado) or a complex-event event (e.g., a
499 storm, composed of a wind event and a precipitation event) ²⁷. This preliminary
500 assessment may change during the subsequent analysis stage.
501
- 502 8) The alerting agency should identify any **secondary** events within the observed situation.
503 If any secondary events are deemed events-of-interest, the situation is tentatively
504 classified as a **complex-event** situation. However, the resulting larger alerting situation
505 may still deal with the multiple events-of-interest separately, a determination made in
506 the analysis stage.
507
- 508 9) The alerting agency should identify **risk** or **threat** events that may lead to one or more
509 follow-on events-of-interest ²⁸. These risk or threat events, which are pre-existing
510 and/or antecedent secondary events, form part of the larger alerting situation
511 surrounding a follow-on alert-worthy event. Pre-existing or antecedent condition events
512 are treated the same as other events and are also classified as real or imagined based on
513 their own nature ²⁹.
514
- 515 10) The alerting agency may assign a **label** to the observed situation, such as a name or an
516 incident tracking identifier (e.g., a name like "Tropical Storm Milton" or an identifier like
517 "AAA-001," where "AAA" represents the reporting entity's code and "001" is the
518 incident tracking number for that entity). This label assignment may also be applied
519 during the analysis stage.
520
- 521 11) The alerting agency may choose to record the observing-process event information in a
522 data object for post-analysis and future research. Such activities often help identify
523 improved methods for observing similar situations in the future. Observing-process
524 event information, with its wider leeway parameters, may extend beyond the scope of
525 the analyzing-process event information compiled later.

²⁷ Refer to the section on **complex-event** situations in the **Oasis Open Event Terms List – Concept Guide** for additional details.

²⁸ Refer to the section on **risk** and **threat** events in the **Oasis Open Event Terms List – Concept Guide** for additional details.

²⁹ Refer to the **Example Situations** section later in this guide for additional insights and discussion.

4.1.2 Analyzing Process

Typical process for identifying alert-worthy events and subject events in the alerting process:

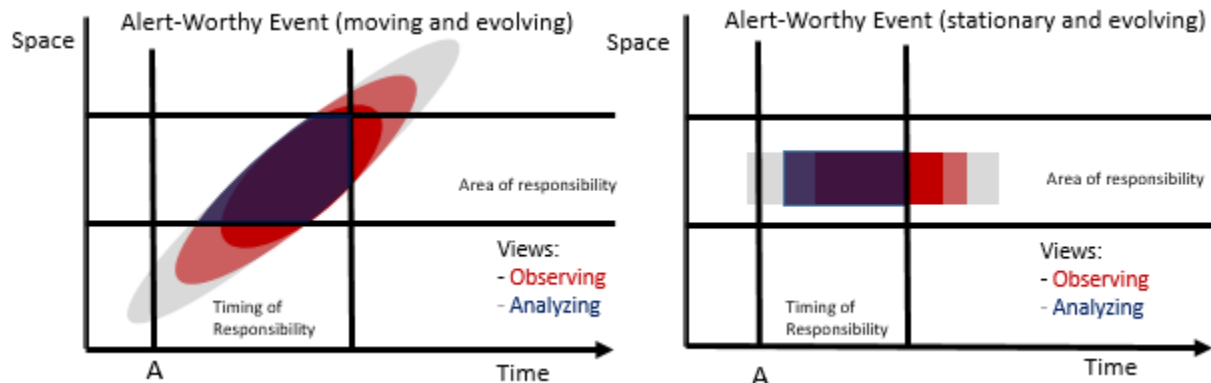
- 1) An alerting agency analyzes the event data of an observed **situation** to determine if any devised and formed events-of-interest are **true** events-of-interest – possibly leading to the need for an **alert-worthy** event construct ³⁰. The analysis would apply to both the current and future states of an event-of-interest (as per the standard practices of the alerting agency).
 - a. Each potential event-of-interest in the observed situation would be assessed against its own **measures of significance** based on condition, impacts, location, and timing (as outlined by the alerting agency's policies based on event-type) ³¹.
 - i. For each potential event-of-interest the alerting agency **assesses** the accuracy of the reported situation in the observing process and validates or adjusts the reported conditions to a final working assessment for the remainder of the analysis process.
- 2) The alerting agency analyzes the events-of-interest to determine any **alert-worthy events**. Like events-of-interest, alert-worthy events are abstract constructs - separate events devised and formed from the same observable conditions. Each construct (event-of-interest and alert-worthy event) is based on a different set of bounding criteria which form the event interpretations.
 - i. For each event-of-interest the alerting agency **compares** the alerting agency area-of-responsibility and timing-of-responsibility with the event-of-interest area and timing. An analysis is completed to determine where and when the two areas and timings intersect with each other. The intersection defines the interpretation of an **alert-worthy** event (i.e. it creates the space and time boundaries of an alert-worthy event).
 - ii. If an event-of-interest is determined to not be an alert-worthy event after analysis, it may still be interesting, either as an associated secondary event to another alert-worthy event, or as a possible future alert-worthy event. It may also be worth commenting on in the larger alerting situation for the target audience of the associated alert-worthy event.

³⁰ Refer to the section on **alert-worthy** events in the **Oasis Open Event Terms List – Concept Guide** for additional details.

³¹ Typically done as one activity, they are discussed here separately to clarify the overall objective of the task.

Background:

The diagrams below, using the same two real and evolving events exemplified in the observing process earlier, illustrate in blue the **alert-worthy** space and time boundaries of concern for the two events. In these examples, the alert-worthy event interpretation is a subset event of the event-of-interest.



- a. For each alert-worthy event the alerting agency determines the **degree** of significance based on the **nature** of the event within the area and timing of responsibility.
- b. For each alert-worthy event the alerting agency determines the **degree** of significance based on **impacts** of the event within the area and timing of responsibility³².
- 3) For each event-of-interest, the alerting agency references the relevant history, research, science, conventional wisdom, and policies from the **event-type** for useable **alert-worthy event** based information (i.e. policies, practices, procedures, etc.).
- 4) If there is more than one event-of-interest, the overall situation is a **complex-event** situation. The alerting agency then is to decide how many alerting situations involving alert-worthy events are actually contained within the overall situation³³.
 - a. For each alerting situation in the observed situation, the alerting agency determines which alert-worthy events are to be part of which alerting situation.

³² Impacts may include the spawning of yet another event-of-interest that is part of the subject event of the alerting process, a new event-of-interest with its own set of impacts. However, pre-existing and antecedent conditions may also play a factor in those other impacts. See the later **Example Situations** section for such cases.

³³ See section on Complex Events in the **OASIS Open Event Terms List – Concept Guide** for more information.

- 587 b. If two or more alert-worthy events are placed into one alerting situation, then
588 that alerting situation is a **complex-event** alerting situation ³⁴.
589
- 590 c. Placing one alert-worthy event into two or more alerting situations is also a
591 possibility and it is the purview of the alerting agency to do so, however, it does
592 presume that two or more co-existing alerting situations stemming from the
593 same alert-worthy event would not be providing contradictory information.
594
- 595 5) Each event-of-interest that becomes a **primary** alert-worthy event in one alerting
596 situation, could still be considered as a secondary event in another alerting situation.
597
- 598 a. As part of the alerting situation, the alerting agency clarifies the **primary** alert-
599 worthy event and any associated secondary events-of-interests (e.g. a secondary
600 earthquake event-of-interest that a primary tsunami alert-worthy event
601 associates back to). The association can be made by standard alerting agency
602 policy (i.e. certain event types always associate with other event types, for
603 example, snow and cold), or can be made based on familiarity (i.e. certain event
604 types associate with each other based on the experiences of the agency and its
605 agents, for example, wind and electrical power grid outages) ³⁵.
606
- 607 6) Determining an actual location in space and interval in time for the entire event (the
608 grey areas in the above diagram, including the red and blue area), is often considered
609 valuable information for parties that might have an interest in such information. Such
610 information is sometimes useful when telling the story as part of the larger alerting
611 situation to an audience. This would be at the discretion of the alerting agency to decide
612 whether to include it or not as part of the story.
613
- 614 7) During the entire event-of-interest, if there is an oscillation (i.e. an ebb and flow of an
615 evolving event being in and out of significance), the decision on whether to treat the
616 observed situation as one or several event-of-interests is usually a business policy
617 decision. Often, such decisions derive from working backwards from the alerting
618 situation (e.g., knowing what the preferred outcome of the larger alerting process is).
619 This would be a consideration in the earlier analysis process ³⁶.

³⁴ Alerting for more than one alert-worthy event in a single alerting process (i.e. a single alerting situation) is not uncommon for alerting agencies. Such approaches are often employed as a means to reduce message fatigue, however, this would need to be balanced against overloading a message with too much information making the message difficult to digest easily. Refer the to the **OASIS Open Alerting Practices and Strategies** family of resources for more information on how to handle this balancing.

³⁵ Refer to the section on **Associated Events** in the **OASIS Open Event Terms List – Concept Guide** for more information.

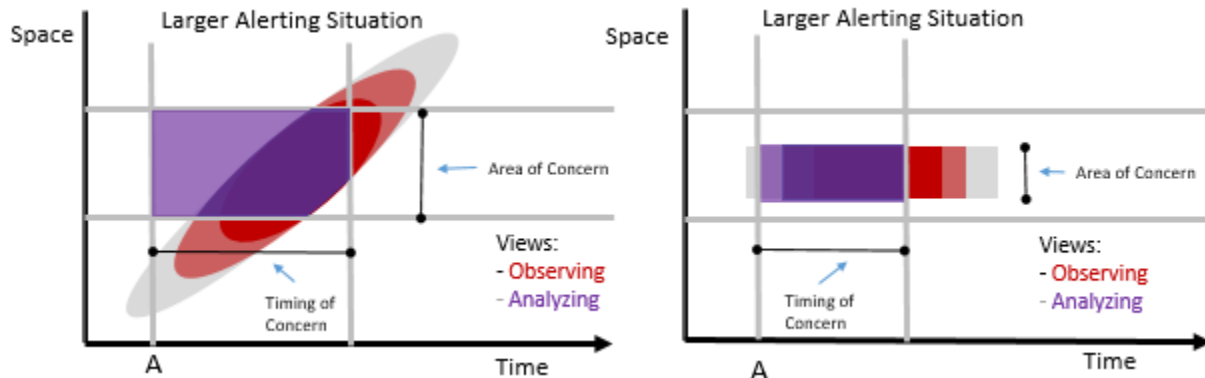
³⁶ Refer to the **Examples Situations** section for such cases and the **OASIS Open Alerting Practices family of resources** for more information (forthcoming).

- 8) Once the compliment of **alert-worthy** events for each alerting situation has been determined, the union of the alert-worthy events then becomes the **subject-event** for the alerting situation. The subject event is another abstract construct – another event-based definition devised and formed from the same set of observable conditions.
- a. If the entire event situation is a single event, the compliment of alert-worthy events is only one event, thereby making the **alert-worthy event** and the **subject-event** the same.
 - b. For a **complex-event** case, this may mean assigning some of the **subject-event** details from one **alert-worthy** event and some of the details from another **alert-worthy event**, or alternatively, having the details from one alert-worthy event become proxies for the others ³⁷.
- 9) Alerting agencies sometimes recognize that the space and time boundaries of an event-of-interest are not measurable. If that is the case, the missing boundaries are not necessarily a critical missing piece of the subject-event at this point. Location and timing policies for alert-worthy events and subject events can be set by policy to produce space and time boundaries for those constructs ³⁸.
- 10) Near the end of the analysis stage, the alerting agency re-connects the **subject-event** back to known event-types. The event types are likely the same as they were during the observation stage, however, it could have changed based on the analysis of the event situation and the larger alerting situation.
- a. The analysis collectively includes the **primary** event-of-interest, the group of associated secondary events-of-interest, and from experience, a general idea of what the larger alerting situation for the target audience may end up being. The re-connection back to event types can be formal (as part of alerting agency policy), or informal (based on the experiences of the agency, community, and their agents). Any secondary event-of-interests should be similarly re-connected to their event types. Occasionally, during the analysis, a secondary event-of-interest may take over as the primary event-of-interest.

³⁷ See the later Example Situations section for more on such cases.

³⁸ See the examples and analysis sections for such cases and the **OASIS Open Alerting Practices** family of resources for more information (forthcoming).

11) After the alerting agency determines the make-up of the **subject event**, the focus is on the **larger alerting situation** as it pertains to the consuming audience (as shown in purple in the diagram below).



- a. If the **subject-event** is an anticipated event (real or imagined), the larger alerting situation will have a timing that includes lead timing, intersection timing, and possible follow timing³⁹.
- b. If the subject-event is underway within an area-of-concern, the larger alerting situation will have no lead timing for some or part of the area, especially if the event is a moving event. Past event information, while interesting, is outside of the lead time period and is now just information for the larger audience story.
- c. Follow-timing information is less often incorporated in the alerting story, however, it can be important if follow-time impacts are expected. Follow-time situations, after the alert-worthy event has ended, are typically used for extremely hazardous event situations. Past information is common in follow-time alert messaging.
 - i. If the primary alert-worthy event is ended (a real past event), and there are still follow time impacts which linger, the larger alerting situation will have a timing that now includes only follow-timing. The subject-event for the alerting situation now changes to one of the follow time secondary events. That subject event would now have a focus on a follow time alert-worthy event which would become the primary event in follow time messages.

³⁹ Refer to the section on **Situation Timing** in the **OASIS Open Event Terms List – Concept Guide** for more information.

- 683 ii. The alerting situation may still be considered the same alerting situation
684 after the initial primary event has ended (e.g. a “typhoon” alert-worthy
685 event that has ended, however, a “typhoon emergency” alert-worthy
686 event remains - due to devastating and lasting impacts of the recent
687 typhoon).

- 688
689 1. The alerting agency might want to name the alerting situation a
690 “typhoon emergency” from the very beginning, anticipating
691 follow-on messaging. This strategy connects messages published
692 before, during and after the typhoon emergency to a single
693 named event – supplying quick context to the follow time
694 messaging.
695

696 12) When the subject-event is for a **complex-event**, then the larger alerting situation is
697 considered a **complex-event** alerting situation. In such cases, it is recommended that
698 the name of the larger alerting situation should represent the “complex event” (i.e. a
699 “storm” situation, when two “rain” and “wind” events are combined to make up the
700 complex event storm situation). Alternatively, if two separate and distinct alerting
701 situations are preferred by the alerting agency (one wind, one rain), then this is a case of
702 how the alerting process itself can affect the overall situation analysis ⁴⁰.
703

704 13) The alerting agency takes the additional details of the larger alerting situation and
705 reconciles these details with respect to a story they want to convey to their alerting
706 audience.
707

- 708 a. Details to reconcile with the larger alerting situation may be unique to the
709 situation and be introduced as a judgement call during the analysis (i.e.
710 evacuation routes that are normally used might be blocked due reasons outside
711 of the control of emergency responders).
712
713 b. Details may emerge from the larger situation involving proxies based on the
714 capabilities of the alerting process itself. Knowing the alerting process
715 capabilities, the construction of alert messages may be affected.
716
717

⁴⁰ Such situation-based attributing information can be compiled into the complex-event event type, if applicable, and should be therefore be available for use in the event-of-interest analysis stage.

- 718 iii. The actual true location of the **subject event** may not match with any
719 pre-defined alerting zones used by an agency. A true alert-worthy event
720 location-mapping to alerting-zone process may expand on the area,
721 resulting in a larger alerting area than that of the event-of-interest that
722 triggered the alert (i.e. a case of over-alerting the area-of-concern) ⁴¹.
723
724 iv. The actual true timing of the larger situation may not match with the
725 publishing timing of new alert messages. The alerting update process
726 typically is done based on the workload of front-line agents and often
727 updates or endings of an alert occur after portions of the audience are
728 already free of the impacts of the event-of-interest ⁴².
729

730 14) The alerting agency determines the name for an **alert** best suited to cover the larger
731 alerting situation. An alerting agency typically names an alert in consideration of the
732 alerting audience, trying for a short, accurate, descriptive name for use in the any
733 presentation of the alert messages (i.e. as used in titles/headlines/etc.). Those alert
734 names typically include a descriptor involving the event type, however, that is not
735 always the case ⁴³.
736

- 737 a. If any associated event-of-interests and secondary events are to be covered
738 within the alerting situation, select a name for the alert that best covers the
739 larger complex-event situation.
740

741 15) The alerting agency constructs well suited alert message text for the larger alerting
742 situation. This would be based on the chosen subject-event part of the larger alerting
743 situation as well as any message text for each alert-worthy event that is included.
744

745 16) The alerting agency augments the alert message text from the previous step based on
746 the relevant compiled history, research, science, conventional wisdom, and policies
747 stored with the corresponding event types that make up the subject event.
748
749

⁴¹ From the messaging view, as dictated by the process, all pre-defined alerting zones that overlap with the true area of the subject-event are usually included leading to spatial over-alerting for some of the area within an alerting zone. For more on over-alerting, see the **OASIS Open Alerting Practices** family of resources (forthcoming).

⁴² From the messaging view, as dictated by the process, time and location referencing in alerting messages is often for group locations, causing some subject-event locations to experience temporal over-alerting for some of the area within an alerting zone. For more on over-alerting, see the **OASIS Open Alerting Practices** family of resources (forthcoming).

⁴³ Refer to the section on **Naming Alert Objects** in the **OASIS Open Event Terms List – Concept Guide** for more information.

- 750 a. Knowing the primary event type for the subject event and the composition of
751 the larger alerting situation, the alerting agency checks the compiled history,
752 research, science, conventional wisdom, and business policies for helpful
753 information on terms, instructions, known impacts, call-to-action statements,
754 codes, procedures, etc. to include in the alert message.
755
- 756 17) If the larger alerting situation is expected to change, or continue on past the current
757 timing-of-responsibility for the alerting agency, then a continuation of the alert is to be
758 dealt with using updated alert messages published at a later time. Knowing this, the
759 focus of the larger alerting situation can be weighted to the near future, leaving the far
760 future details for these later messages.
761
- 762 a. These later messages include ended messages (i.e. a CAP message type of
763 “Cancel” where the last mile presentation agency is instructed to discontinue the
764 alerting signal).

4.1.3 CAP Originating process

Typical process for originating a CAP alert message with event based information:

The process outlined here is typical for an agent on behalf of an alerting agency when originating a **CAP** alert message. The **OASIS Open EMTC** recommends populating the **subject-event** information and the larger **alerting situation** information into CAP messages as per the following steps. The agent could either be an operator entering alerting information into a CAP-based interface or a written program that converts externally entered information into CAP-based alert messaging ⁴⁴.

A CAP message revolves around a **subject event**, which is a group of one or more alert-worthy events, each with their **event type**. Without an event type, the alerting situation addressed by the message would likely require a lengthier qualifying description, demanding more time and effort than is typically ideal for an audience in the consuming moment of concern. By introducing the event through an associated event type (e.g., using a headline or other mechanism), an alerting agency can convey the importance or significance of a subject event quickly and efficiently. The full details of the actual alerting situation can then be subsequently shared with an audience that is already engaged as a result of consuming the headline. The event types used in this messaging process are derived from the earlier analysis stage that has already been completed.

The alerting agency initiates a process to originate a valid CAP file. The CAP elements outlined below are linked to the event or event types in a CAP alert message.

1) Element: <event> cap.alertInfo.event.text (required).

This is a basic element that is required in CAP. A CAP message with no **<event>** element is an invalid CAP message.

Definition (CAP v1.2): The text denoting the type of **subject-event** of the alert message.

Objective: The objective of the **<event>** element is to assist consuming agencies in clearly communicating to their audiences the type of event associated to the subject-event in messages published by the CAP alerting agency.

- b. With the expectation of well-crafted text, as per the social science of the situation, the **<event>** element's value is designed to provide immediate context to an audience the reason for the alert message. The text should generate an association to a familiar type of event for the audience. Audiences are then prepared to receive, with context, the remaining message information that follows.

⁴⁴ Refer to the baseline case example situation later in this section for further details.

- c. The **<event>** element is a display-based, audience-facing element composed of free-form text. It is designed in CAP to be a fully flexible element, capable of delivering **event-type** information to any audience without the limitation of pre-published values. As an audience-facing element, the meaning of the value is only constrained to the operating language of the alerting service, not to any functional language between agents executing the service.
- i. The **<event>** element is often constrained within an alerting service to pre-set values (as pre-set values are a sub-set of all possible values), however, the decision to do so risks affecting the ability of alerting agencies to adjust to unexpected situations and/or adapt to changes moving forward when constrained to a formalized change process.
1. New event types are typically discovered as they are happening. Change process delays, due to new configuration and partner coordination, may impact the ability to provide a timely service for new event types if only pre-set values are used. The ability to add new types quickly is highly recommended in any alerting service.
 2. The **OASIS Open EMTC** recommends, that originating agencies that employ a set of enumerated **event-types** that provide pre-set values for the **<event>** text element, should make it clear:
 - a. that the names associated to the **event-types** are for display purposes and could change without notice; and
 - b. that consuming agents and agencies wishing to automate processing functions (based on the **<event>** element), should use other CAP elements, including the agency's compliment of **<eventCode>** elements ⁴⁵.
- d. The originating agency expects the **<event>** value to be either displayed as provided (e.g., **<event>**); used within a constructed presentation that incorporates the value (e.g., "**Event type: <event>**"), or omitted in favor of alternative elements such as **<headline>**, or other presentation constructs derived from the **<eventCode>** element (e.g., **icons** or **symbols**).

⁴⁵ **<eventCode>** elements are enumerated into a finite and predictable set for consumers, making the **<eventCode>** element the preferred choice for automation processes based on event-type. For more on **<eventCode>**, refer to later sections in this Guide and the related **OASIS Open Event Terms List – Concept Guide**.

- 838
- 839 e. The alerting agency should construct the **<event>** element in a CAP message
- 840 using an attribute of the **event-type** that describes the event-type by name. This
- 841 name attribute should be defined as free-form text, reflecting the alerting
- 842 agency's local terminology in accordance with the operating language of the
- 843 alerting service. The selected value should take into account the perspective of
- 844 the target audience.
- 845
- 846 i. The **<event>** element is not used to describe an actual event; rather, it is
- 847 populated to indicate a type of event. For example, the **<event>** element
- 848 would be assigned **<event>hurricane</event>** (an event-type name) rather
- 849 than **<event>hurricane Katrina</event>** (the name of a specific event).
- 850
- 851 f. If no acceptable event-type name is available locally, a term may be entered
- 852 manually if the local process allows. The entered term would be expected to be
- 853 displayed by consuming agencies as given. Alternatively, the originating agency
- 854 may also check the **OASIS Open Event Terms List – Lookup Table** to find an
- 855 event-type term that aligns with the local event-type's meaning and
- 856 understanding. Note that since the **OASIS Open Event Terms List** is not
- 857 translated into other languages, any necessary translations should have been
- 858 completed in advance and stored as part of the **event-type** information.
- 859
- 860 g. If no exact match is found in the **OASIS Open Event Terms List**, a close
- 861 acceptable match may be selected. Suitable alternatives include:
- 862
- 863 i. variations of the same term (e.g. "flood", "floods", "flooding"), or
- 864
- 865 ii. synonymous terms (e.g. "tropical storm" and "tropical cyclone"), or
- 866
- 867 iii. a more general term that serves as an acceptable proxy for a more specific
- 868 term along the general-to-specific spectrum (e.g., "wind" as a broader term
- 869 for "small craft wind") ⁴⁶, or
- 870
- 871 iv. a best judgement call.
- 872
- 873

⁴⁶ "Small craft wind" is not in the OASIS list due to it being a scale-based event type. For more information on the spectrums of terms, see the **OASIS Open Event Terms List – Spectrum Analysis** resource (forthcoming).

- h. If no close acceptable match is found in the **OASIS Open Event Terms List**, then the event term “other” should be the **OASIS Open** term identified for use ⁴⁷. The use would be for the **<eventCode>** element as discussed below, not for the **<event>** element discussed here. The **<event>** element would be populated as discussed above in the previous sub section.
- i. For alerting originators, using “other” for the **<eventCode>** element means the matching process was attempted, however, nothing acceptable was found. This outcome is preferred as compared to the outcome where the matching process gives the impression of a step not being attempted at all. The term “other” is an **interoperability** requirement allowing consumers some recourse of action when “other” is encountered as an **<eventCode>** – see the following **CAP Consuming process** section below.
- ii. The term “other” in the **<event>** value is not prohibited; it’s typically considered meaningless for most presentation systems and therefore is not recommended.
- iii. If “other” is found as a match, the **OASIS Open EMTC** recommends that the alerting agency consider **submitting** a new event term for review. This term would replace “other” in future instances of the currently unmatched event-type for the local alerting agency. The submission process is outlined in the section on **Submitting Content** in the **OASIS Open Event Terms List – Lookup Table**.
- i. If any associated **events-of-interest** are identified, and are to be handled collectively as one **complex-event**, the **<event>** element value should represent the broader event situation as a whole. For example, instead of specifying a narrower event such as **<event>power grid failure</event>**, a more encompassing event term like **<event>service interruption</event>** could be used instead ⁴⁸.
- i. Continuing with the complex-event example, if the overall complex-event situation is deemed as a group the **primary** event-of-interest, the complex-event becomes the event that anchors the **larger alerting situation**. The individual events-of-interest that make up the complex-event may or may

⁴⁷ See the relevant examples in the later **Example Situations** section on how this is done.

⁴⁸ Complex-events cannot easily be addressed using a **standardized** methodology. Each individual event in the grouping is typically analyzed based on its unique characteristics, leading to diverse approaches for grouping them. For further discussion on complex-events, refer to the **OASIS Open Event Terms List – Concept Guide**.

not be explicitly addressed as part of this larger situation. If the agency so chooses to address any of the individual events-of-interest, the CAP standard allows for this to be part of the **<discussion>** element (for target audiences), and as part of the **<eventCode>** element (for processing agents. See **<eventCode>** element below). Consequently, the alerting agency may assign the **primary** event-of-interest to be the complex-event knowing that this messaging option is available for all the individual events-of-interest in **CAP** ⁴⁹.

2) Element: <eventCode> cap.alertInfo.eventCode.group (optional).

This is an added element that is optional in CAP. A CAP message with no **<eventCode>** element is still valid CAP.

Definition (CAP v1.2): A system-specific code identifying an **event-type** for the alert message.

Objective: The objective of the **<eventCode>** group is to assist consuming agents when making processing decisions based on the type of event that the originating agents designate as the **subject event** for the alert messages.

a. Sub-element: <eventCode>.<valueName>

cap.alertInfo.eventCode.valueName.text (required).

This is a conditionally required element in CAP. An **<eventCode>** element group in CAP with no **<valueName>** sub-element is an invalid group.

Objective: The objective of the **<eventCode>.<valueName>** element is to reference the managed set of event-type codes in use when populating the corresponding **<eventCode>.<value>** element within the group.

b. Sub-element: <eventCode>.<value>

cap.alertInfo.eventCode.value.code (required).

This is a conditionally required element in CAP. An **<eventCode>** element group in CAP with no **<value>** sub-element is an invalid group.

Objective: The objective of the **<eventCode>.<value>** element is to indicate to the consumer of the CAP message the chosen code in use within the group. The value is from the referenced **<eventCode>.<valueName>** set of event-type codes.

⁴⁹ See the relevant examples in the later **Example Situations** section on how this is done.

- 948 c. The **<eventCode>** group element is defined as a multi-instanced group element
949 in a CAP message ⁵⁰. The alerting agency may optionally build none, one, or
950 several **<eventCode>** element groups in a **CAP** message using values from one or
951 several sets of standardized and managed event codes.
- 952
- 953 i. In a zero instance case, with no **<eventCode>** group element, the **OASIS**
954 **Open EMTC** recommends that such a case be best left for closed systems
955 where the originator and consumer are both part of the same closed
956 system. In open systems, where the originator and consumer are often
957 unknown to each other, the zero case still allows for consuming system
958 processing, however, it often leads to simpler presentations without any
959 event-based controls. Consuming systems may interrogate less reliable
960 elements for clues about the event-type, such as the loosely defined
961 **<event>** element, however, the **OASIS Open EMTC** considers the results
962 to be less reliable.
- 963
- 964 ii. In a single instance case, with only one **<eventCode>** group element, the
965 originating systems would be limiting the advantage of the **<eventCode>**
966 element to consumers that use the referenced event-type set. The **OASIS**
967 **Open EMTC** recommends that in the single instance case, the set
968 referenced is the **OASIS Open Event Terms List**.
- 969
- 970 iii. In a multi-instanced case, with two or more **<eventCode>** group
971 elements, the elements within each group are each considered
972 independent groups to processed separately. There may be single codes
973 from two or more referenced sets of event codes, or multiple codes from
974 a single referenced set of event codes, or, if the situation suggests,
975 multiple codes from several referenced sets ⁵¹.
- 976
- 977 d. If there is a complex-event situation, the **OASIS Open EMTC** recommends that
978 for maximum flexibility of all consuming agents, all the applicable codes from all
979 the referenced sets in use by the agency be added to the CAP message ⁵². In such

⁵⁰ An element is considered multi-instance if a data standard allows for more than one instance of the element in a single data file. The **OASIS Open** recommendation is that as many as applicable **OASIS Open Event Terms List** **<eventCode>** instances should appear in a **CAP** message, however, it is notable that many alerting agencies at the time of this writing put in no instances, or only put in one instance, even if two or more are apparent.

⁵¹ Refer to the **Baseline Case** example in this guide for an example of just this case.

⁵² See the **Example Situations** section for discussion on multiple **<eventCode>** element usage. Also see the **OASIS Open Alerting Practices** family of resources for a discussion on the advantages of multi-instanced elements.

cases, the **OASIS Open EMTC** recommends listing the **primary** event-of-interest type first.

- e. The **<eventCode>.<value>** may be displayed by consuming agencies as provided or incorporated into a presentation that includes the value (e.g. "Event code: **<eventCode>.<value>**"). However, it is considered a value primarily designed for agents along the path of distribution to make decisions rather than for direct presentation to the final audience.
 - i. If the target audience is emergency services personnel responding to the alert message by providing follow-on services, the **<eventCode>.<value>** itself may hold significance in that presentation.

3) Element: <category>: cap.alertInfo.category.code (required).

This is a basic element that is required in CAP. A CAP message with no **<category>** element is an invalid CAP message.

Definition (CAP v1.2): The code denoting the category (or categories) of the subject event of the alert message.

Objective: The objective of the **<category>** element is to assist consuming agents in making clear processing decisions based on one or more standard CAP **<category>** values. These values are selected from an enumerated set of allowable options as defined by the CAP standard for this element.

- a. With the expectation that categories are appropriately assigned based on the event situation, the **<category>** element's value is intended to provide immediate filtering context for consuming agents. This helps them process or redirect the message effectively along the path of distribution.
- b. The **<category>** element is designed as a multi-instance element within a CAP message. The alerting agency has the option to include one or more **<category>** elements as needed.
 - i. In cases where only a single instance of the **<category>** element is used, despite the situation containing multiple applicable options, the originating systems may be restricting the intended advantage of the **<category>** element as defined.

- 1019 ii. In a multi-instance scenario where two or more **<category>** elements are
1020 included, each value is treated as an independent entity to be processed
1021 separately. The **OASIS Open EMTC** recommends adopting the multiple
1022 **<category>** approach to maximize flexibility for consuming agents ⁵³.
- 1023 c. If a complex-event situation involves multiple event types, multiple **<category>**
1024 instances should be used to list all relevant categories contributing to the
1025 broader situation. When multiple **<category>** groups are necessary, the **OASIS**
1026 **Open EMTC** recommends listing the **primary** event-of-interest categories first ⁵⁴.
- 1027
- 1028 d. A default set of one or more associated CAP **<category>** values should be pre-
1029 assigned for all business **event-types** during the research and science stage of
1030 **event-type** development. These values should be filed as part of the event-type
1031 information. The **OASIS Open EMTC** advises against selecting event-type CAP
1032 **<category>** values during the alerting process (i.e. on the fly), as this approach
1033 may lead to varied interpretations among agents and clients, potentially
1034 compromising the integrity of the agency's alerting service over time.
- 1035
- 1036 i. The **<category>** element is determined locally by selecting one or more
1037 enumerated values from the CAP standard or choosing matching event-
1038 term entries from the **OASIS Open Event Terms List** ⁵⁵.
- 1039 ii. One option is to include all categories as listed in the mapping. However,
1040 since the **OASIS Open Event Terms List – Lookup Table** is also accessible
1041 to consuming agents, they can independently use the given **<eventCode>**
1042 value to look up all **OASIS Open** assigned CAP **<category>** values if they
1043 choose to do so.
- 1044
- 1045 iii. Consuming agencies, along with their clients, can establish customized
1046 arrangements to incorporate a CAP category into their partnership,
1047 ensuring clients receive services tailored to their preferences. For
1048 example, an agency may choose to add the CAP category "Safety" to an

⁵³ See the **Example Situations** section for discussion on multiple **<category>** element usage. Also see the **OASIS Open Alerting Practices and Strategies** family of resources for a discussion on the advantages of multi-instanced elements.

⁵⁴ For further discussion, refer to the advanced section within the following **baseline case** example situation.

⁵⁵ The OASIS Open CAP Category values were determined by committee and are not considered absolute. This process is ongoing and subject to change, primarily through user-suggested additions and mappings for each entry rather than the removal of existing values. For more details, see the **OASIS Open Event Terms List – Lookup Table** and the section on User Submitted Content.

OASIS Open event term, even if **OASIS Open** does not include "Safety" among its listed mappings ⁵⁶.

- iv. If an acceptable entry in the **OASIS Open Event Terms List** is matched, but no suitable CAP category is available (in the opinion of the alerting agency), the agency may still select other CAP Category values from the CAP standard. Additionally, the agency should consider submitting a new CAP category to the **OASIS Open EMTC** for review to accompany the identified **OASIS Open** event term ⁵⁷.

4) Element: <headline>: cap.alertInfo.headline (optional).

This is an added element that is optional in CAP. A CAP message with no <headline> element is still valid CAP.

Definition (CAP v1.2): The text headline of the alert message.

Objective: The objective of the <headline> element is to assist consuming agents in introducing the alert message to audiences. It provides a brief, concise summary with the most relevant details to ensure quick comprehension.

- a. The alerting agency should construct the CAP <headline> element, as well as other audience-facing text-based CAP message elements (e.g., <description> and <instruction>), using their local event term naming label (in their operating language), to represent the broader event-type situation. Additionally, any relevant details from the larger alerting situation that enhance clarity may be included in a concise, attention-grabbing statement. The <headline> should motivate the audience to explore the full alert message for further information.

⁵⁶ "Safety," as a CAP category, could theoretically be assigned to many listed event terms but is not. From the OASIS Open perspective, "Safety" is considered a consequence of various events rather than a direct indicator of the event's nature. For example, "poor visibility" is not mapped to "Safety," even though it presents a safety concern for drivers. Additionally, the CAP standard does not explicitly define what "Category" represents, leaving users to interpret its meaning based on the CAP categories provided. For further clarification, refer to the **OASIS Open Event Terms List – Lookup Table** for **OASIS Open** definitions of the CAP categories.

⁵⁷ **OASIS Open** is not an alerting agency. While significant effort has been made to assign CAP categories to **OASIS Open** Event Terms, the process remains evergreen, meaning assignments will continuously evolve and expand through user submissions over time.

1078 **5) Element: <onset>:** cap.alertInfo.onset (optional).

1079 This is an added element that is optional in CAP. A CAP message with no <onset>
1080 element is still valid CAP.

1081
1082 **Definition (CAP v1.2):** The expected time of the beginning of the **subject event** of the
1083 alert message.

1084
1085 **Objective:** The objective of the <onset> element is to assist consuming agents in
1086 communicating the expected start time of the subject-event within the area-of-concern
1087 to audiences.

- 1088
1089 a. If the subject-event's beginning time is unknown, or is quite varied across the
1090 area-of-concern, the <onset> element may be omitted from the CAP message. In
1091 such cases, the <discussion> element can be used to provide a descriptive
1092 explanation of the expected start time as appropriate for the situation.
1093
1094 b. If the subject-event involves a risk or threat event that could lead to a possible
1095 event-of-interest in the area-of-concern, the **OASIS Open EMTC** recommends
1096 omitting the optional <onset> element from the CAP message. Including the
1097 onset of the risk event could mistakenly be interpreted as the onset of the actual
1098 event-of-interest that the risk event is attempting to reference ⁵⁸.

1100
1101 **6) Element: <parameter>:** cap.alertInfo.parameter.group (optional).

1102 This is an added element that is optional in CAP. A CAP message with no <parameter>
1103 element is still valid CAP.

1104
1105 **Definition (CAP v1.2):** A system-specific additional parameter associated with the alert
1106 message.

1107
1108 **Objective:** The objective of the <parameter> group element is to assist consuming
1109 agents in processing additional, non-standardized alert message information that
1110 originating agencies wish to convey. This additional information may be **event-based** or
1111 **event-type-based** and can serve either as **display-based**, audience-facing content or as
1112 **decision-based**, agent-facing data - or both ⁵⁹.

⁵⁸ Refer to the Risk and Threat section of the **OASIS Open Event Terms List – Concept Guide** for further details on the onset of risk and threat events.

⁵⁹ Refer to the **OASIS Open Alerting Practices and Strategies** family of resources for further details on the <parameter> element.

a. **Sub-element: <parameter>.<valueName>**

cap.alertInfo.parameter.valueName.text (required).

This is a conditionally required element in CAP. An <parameter> element group in CAP with no <valueName> sub-element is an invalid group.

Objective: The objective of the <parameter>.<valueName> element is to provide an assigned naming reference for the information contained in the corresponding <parameter>.<value> element within the group.

b. **Sub-element: <parameter><value>**

cap.alertInfo.parameter.value.text (required).

This is a conditionally required element in CAP. A <parameter> element group in CAP with no <value> sub-element is an invalid group.

Objective: The objective of the <parameter>.<value> element is to indicate to the consumer of the CAP message the chosen value for the additional, non-standardized alert message information within the group.

- c. The <parameter> group element is defined as a multi-instanced group element in a CAP message. The alerting agency may optionally build none, one, or several <parameter> element groups in a CAP message providing values for as many additional, non-standardized alert message pieces of information as desired.

7) Element: <effective> cap.alertInfo.effective.time (optional).

This is an added element that is optional in CAP. A CAP message with no <effective> element is still valid CAP.

Definition (CAP v1.2): The effective time of the information of the alert message.

Objective: The objective of the <effective> element is to assist consuming agents in determining when the presentation of the information within the alert message should begin. The begin time is derived from the broader event situation, which in turn is composed of the subject event and, if applicable, its lead time ⁶⁰.

⁶⁰ For further details on the <effective> element, refer to the **OASIS Open Alerting Practices** family of resources.

- 1149 a. If the alert message is intended for presentation to an audience at a future time,
1150 that moment marks when the originating agency seeks to initiate audience
1151 **awareness** of the subject event. Such larger alerting situations are primarily used
1152 for distant future events, where the beginning of the lead time period itself falls
1153 to a future point in time ⁶¹.
1154
- 1155 b. If the preferred <effective> time for the alerting agency has already passed, the
1156 <effective> element may be omitted from the CAP message, as the effective
1157 time would then be equivalent to the message's publish time. This is a common
1158 practice for update CAP messages when the subject-event is already having an
1159 impact.

1160

1161 **8) Element: <expires> cap.alertInfo.expires.time (optional).**

1162 This is an added element that is optional in CAP. A CAP message with no <expires>
1163 element is still valid CAP.
1164

1165 **Definition (CAP v1.2):** The expires time of the information of the alert message.
1166

1167 **Objective:** The objective of the <expires> element is to assist consuming agents in
1168 determining when the presentation of the information within the alert message should
1169 conclude. The end time is typically based on the broader event situation, which in turn is
1170 composed of the subject event and, if applicable, its follow time ⁶².

- 1171 a. The alerting agency fills in the optional <expires> element with either the
1172 anticipated end time of the larger alerting situation or the end time of the
1173 agency's current period of responsibility (at the time of publishing). This includes
1174 if the larger event situation extends beyond that expires point. Typically, for
1175 short-duration events, the overall situation's end time aligns with the conclusion
1176 of the event-of-interest.
1177
- 1178 b. The CAP standard permits the <expires> element to be optionally omitted from
1179 the CAP message. However, the **OASIS Open EMTC** recommends including the
1180 <expires> element and assigning a value based on an alerting business policy -
1181 typically the current end time of the alerting agency's timing-of-responsibility, as
1182 determined at the time of publishing ⁶³.

⁶¹ For further details on lead time, refer to the **OASIS Open Event Terms List – Concept Guide**.

⁶² For further details on the <expires> element, refer to the **OASIS Open Alerting Practices** family of resources.

⁶³ The business policy governing the <expires> element is influenced by factors beyond the event-of-interest. For further details on common <expires> practices, refer to the **OASIS Open Alerting Practices** family of resources (forthcoming).

- i. The **<expires>** element is optional, but its absence can be concerning for consuming agents, as there is no formal directive specifying when the message presentation should end. In such cases, consuming agents must assume that the originator will eventually provide a follow-up update or cancellation message within a reasonable timeframe to address the expiration timing of the alerting signal.
- ii. When an **<expires>** time is absent, consumers must assume that no network or system issue will disrupt the delivery of a follow-up message through the distribution path. To avoid appearing delinquent in the alerting process (by not removing the message presentation in a timely manner), consuming agencies and agents generally prefer originators to include an upfront **<expires>** element in all CAP messages ⁶⁴. The **OASIS Open EMTC** recommends that the **<expires>** element always be present and assigned a reasonable end time for message presentation.
- iii. Originators concerned about the potential for alert messages to expire on consuming systems, before a replacement message arrives to supersede the message, should factor in a reasonable buffer time beyond the true expires time for the message information. This would be a value balanced by the alerting agency recognizing the consuming agencies desire to not have expired information be presented well after the message, and its information, has gone stale ⁶⁵.

9) Element: <incidents> cap.alert.incidents.group (optional).

This is an added element that is optional in CAP. A CAP message with no **<incidents>** element is still valid CAP.

Definition (CAP v1.2): The “group listing” naming the referent incident(s) of the alert message.

Objective: The objective of the **<incidents>** element in a CAP message is to link the current alert message to a broader observed situation identified by a name and/or index. An alerting agency may optionally include an **<incidents>** element for cross-referencing and tracking purposes, assisting consumers in understanding the context (e.g., a named event like "Hurricane Katrina"). Identifiers may take the form of incident

⁶⁴ This is so that the responsibility for making sure the instruction to both start and stop any alerting signal is always there. It also puts the onus on the originator to make sure the path of distribution they use is reliable, as missed messages now are the responsibility of the originator.

⁶⁵ For further details on **buffer <expires>** time, refer to the **OASIS Open Alerting Practices** family of resources.

tracking codes assigned by different reporting agencies (e.g., AAA-001, BBB-007), allowing multiple agencies to cross-reference their incident records ⁶⁶.

- a. The incident naming or incident indexing practice is determined by the alerting agency as part of its organizational profile. Consumers of the originating agency's CAP messaging can then utilize the assigned value for tracking and cross-referencing purposes.
- b. International naming and indexing activities for extreme events (e.g., earthquakes, volcanoes, etc.) are among the tracking considerations an alerting agency may take into account when utilizing the <incidents> element.

The following element(s) (including sub-elements) outline additional OASIS Open EMTC recommendations for improving interoperability in Common Alerting Protocol (CAP) across digitally connected systems and are applicable to the event and event-type aspects of the alerting process.

10) Element: <code> cap.alert.code.code (optional).

This is an added element that is optional in CAP. A CAP message with no <code> element is still valid CAP.

Definition (CAP v1.2): A code denoting special handling of the alert message.

Objective: The objective of the <code> element is to assist consuming agencies in processing special handling information that may be included in a CAP message.

- a. Special handling information refers to details that go beyond the standard alerting data in a CAP message. This may include additional information layers or constrained elements as part of a profiled limitation (e.g., a maximum length for a free-form text value). Some consumers may choose to ignore special handling information so originators should treat <code> as an element that may not be relevant to all recipients. For example, a size limitation not relevant to a consumer, but indicated by an originator, can easily be ignored by the consumer.

⁶⁶ For further details on the <incidents> element and the standardization of index values, refer to the **OASIS Open Alerting Practices** family of resources.

- b. The **<code>** element is defined as a multi-instanced element in a CAP message.
- i. The **OASIS Open EMTC** recommends that alerting agencies utilizing the **OASIS Open Event Terms List** populate at least one **<code>** element with the following value, as defined by **OASIS Open** ⁶⁷:
- <code>layer:OASIS-Open:ETL-LT:v2.0</code>.**
1. The **OASIS Open EMTC** classifies the **Event Terms List** as a **layer** and specifies that the term "**layer**" must be included, as demonstrated in the example.
 2. The **OASIS Open EMTC** prefers the use of a hyphen to fill in blank spaces in its name for the **<code>** element and specifies that "**OASIS-Open**" be the form of the name, as per the example, not "**OASIS Open**".
 3. The **OASIS Open EMTC** defines versions for the list and specifies that the version reference "**v2.0**" be included, as per the example.
- c. Omitting or ignoring a **<code>** element does not negatively impact the **CAP** message for originators or consumers. However, when included, advanced consuming agents can process the **<code>** element and utilize it as intended. Its presence indicates that the originating agency is adhering to the rules of a "**layer**" or "**profile**" as defined by the layer or profile owner.
- i. In the **OASIS Open Event Terms List**, the layer owner is **OASIS Open**, and the special handling rules specify that at least one **<eventCode>** element must be included in the following **CAP** message. This element will contain a code value sourced from the **OASIS Open Event Terms List – Lookup Table**. Ensuring interoperability, this approach enables consumers to rely on the element and its assigned value.

⁶⁷ For further details on the **<code>** element, refer to the **OASIS Open Alerting Practices** family of resources.

4.1.4 CAP Consuming process

Typical process for consuming a CAP alert message with event based information:

This process is commonly followed by an agent, acting on behalf of an alerting agency's dissemination partner or target audience, when interpreting a **CAP** alert message. The **OASIS Open EMTC** recommends decoding the **subject-event** and broader alerting situation information in **CAP** messages according to the steps outlined below. Refer to the baseline case example situation later in this section for further details.

The consuming agency initiates a process to consume a valid CAP file. The CAP elements outlined below are linked to the event or event-types in a CAP alert message.

- 1) **Elements:** **<eventCode>** (optional) and/or **<category>** (required).
<eventCode> is an added element that is optional in CAP. A CAP message with no **<eventCode>** element is still valid CAP. **<category>** is an element required in CAP. A CAP message with no **<category>** element is invalid CAP.

Objective: If any **event-based** filtering or routing of the CAP message is to be undertaken, the **<eventCode>** element (if populated) and the **<category>** element (as populated), are recommended as the two **event type-based** elements to use for this purpose ⁶⁸.

- a. The filter and routing process can follow either an inclusive or exclusive approach.
 - i. An inclusive filter identifies at least one event code and/or category value that matches the CAP event codes and categories relevant to the consumer ⁶⁹.
 - ii. An exclusive filter seeks to exclude event codes and CAP categories that are not relevant to the consumer ⁷⁰.

⁶⁸ Event-based filtering and routing are actions that typically occur after filtering and routing actions based on an alerting agency's **<identifier>** and/or **<senderName>** are processed. Additional filtering and routing based on other elements are also possible. For more information on message filtering and routing, refer to the **OASIS Open Alerting Practices** family of resources.

⁶⁹ If an inclusive filter is used, newly added terms of interest in standard event code lists will not be **filtered in** unless the filtering process is updated to incorporate these new entries.

⁷⁰ If an exclusive filter is used, newly added terms not of interest added to standard event code lists would miss not be **filtered out** unless the filtering process is updated to incorporate these new entries.

1317 iii. The **OASIS Open EMTC** recommends adopting the inclusive filter
1318 approach ⁷¹.

- 1319
- 1320 b. The "**at least one**" strategy applies when a **CAP** message includes multiple event
1321 codes and categories. In scenarios where two or more events of interest are
1322 present - one related to the condition of the event (e.g., flood) and another to its
1323 impact (e.g., evacuation) - the consumer can match either event independently
1324 or both as part of their operational process. For further discussion on this
1325 strategy, refer to the advanced section of the baseline case example situation.
1326
- 1327 c. The **OASIS Open EMTC** recommends a configurable lookup table approach,
1328 allowing the list of inclusive event types to be updated as needed without
1329 modifying the processing software. If the processing software dynamically
1330 references this list for each new incoming **CAP** alert message, the list can be
1331 updated and implemented separately without impacting the message processing
1332 system.
1333
- 1334 d. As an advanced processing method, a consuming agent can retrieve
1335 <eventCode> element values and cross-reference them with corresponding
1336 **OASIS Open CAP** Category(s) from the **OASIS Event Terms List**. The resulting
1337 category list can then be used to augment the existing **CAP** Category values
1338 within the **CAP** message. This expanded list of **CAP** Categories has the potential
1339 to increase the scope of an inclusive filtering process ⁷².
1340

1341 2) **Element: <event>** (required).

1342 This is a basic element that is required in CAP. A CAP message with no <event> element
1343 is an invalid CAP message.
1344

1345 **Objective:** If the <event> element is utilized by a CAP consuming agency in a
1346 presentation, it should clearly convey its value as an event type, rather than an actual
1347 event. For example, it should be displayed as "Event type: <event>" instead of "Event:
1348 <event>". The preferred messaging should emphasize that "an alert has been issued for
1349 an event of type X", rather than "an alert has been issued for event X".
1350

- 1351 a. A key benefit of this approach is its applicability to both condition-based and
1352 impact-based events. It helps convey impact-based events more clearly, reducing
1353 potential confusion. For example, presenting "**Event type: emergency**" is

⁷¹ For more information, refer to the **OASIS Open Alerting Practices** family of resources.

⁷² Consumer filtering based on <eventCode> or <category> in an incoming message requires trust that the originating agency has properly considered the <category> element. The inclusion of the <code> element serves as a tangible verification of this consideration, reinforcing consumer confidence in the originator.

1354 generally better understood in the social science of alerting than “**Event:**
1355 **emergency**”.

DRAFT

1357 3) **Element: <headline>** (optional).

1358 This is an added element that is optional in CAP. A CAP message with no <headline>
1359 element is still valid CAP.

1360
1361 **Objective:** The CAP consuming agency should present the CAP originator's <headline>
1362 element as provided. While constructing a custom headline is not an **OASIS Open EMTC**
1363 recommended practice, OASIS Open acknowledges that some consuming agencies may
1364 lack presentation systems capable of accommodating all CAP <headline> elements. In
1365 such cases, creating a custom headline may be necessary ⁷³.

- 1366
1367 a. If <headline> is present in the CAP message, the **OASIS Open EMTC** recommends
1368 presenting it as is, ensuring it reflects the preference of the originating alerting
1369 agency. For example, displaying "Headline: <headline>" is preferred, though
1370 presenting "<headline>" alone is also common and considered acceptable.
1371
1372 b. If the <headline> element is omitted, an alternative presentation may still be
1373 effective. However, the **OASIS Open EMTC** strongly recommends displaying at
1374 least the <event> element in such cases (e.g., "Event type: emergency").
1375

1376 4) **Element: <parameter>**

1377
1378 **Objective:** A CAP consuming agency may choose to process <parameter> group
1379 elements, which are optional and may contain customized information related to the
1380 event and event types included in the alert message. The format of this customized
1381 information layer is defined by the alerting agency and can take various forms, including
1382 freeform text ⁷⁴.
1383

1384 5) **Element: <incidents>**

1385
1386 **Objective:** A CAP consuming agency may opt to process the <incidents> element. This
1387 optional element can include information about related events-of-interest and
1388 messages, indexed via a provided incident name or code. ⁷⁵.
1389
1390

⁷³ For more information on <headline>, refer to the **OASIS Open Alerting Practices** family of resources (forthcoming).

⁷⁴ For more information on <parameter>, refer to the **OASIS Open Alerting Practices** family of resources (forthcoming).

⁷⁵ For more information on <incidents>, refer to the **OASIS Open Alerting Practices** family of resources (forthcoming).

The following element(s) (including sub-elements) outline additional OASIS Open EMTC recommendations for improving interoperability in Common Alerting Protocol (CAP) across digitally connected systems and are applicable to the event and event-type aspects of the alerting process.

- 1) **Element:** `cap.alert.code.code` (optional).

This is an added element that is optional in CAP. A CAP message with no `<code>` element is still valid CAP.

Objective: A **CAP** consuming agency may optionally process any `<code>` element in a **CAP** message. A `<code>` value, such as `<code>layer:OASIS-Open:ETL-LT:v2.0</code>`, serves as a **courtesy element** within CAP, signaling to the consumer that the message contains a layer of event-based information related to the published **OASIS Open Event Terms List**. The `<code>` element is designed to enhance processing integrity for advanced consuming systems ⁷⁶.

- a. While the **CAP originator** constructs the CAP alert message, the **format and structure rules** of the `<code>` element instance are determined by the **layer owner** - in this case **OASIS Open** for the **OASIS Open Event Terms List**.
 - i. The value between the opening and closing `<code>` tags is a single string that should ideally be processed and matched in its entirety. The matching string incorporates the colon delimiter, the "layer" designation, **OASIS Open** as the owner, the **OASIS Open** lookup table reference, and its version number. For the **OASIS Open Event Terms List – Lookup Table v2.0**, the standardized format is: "layer:OASIS-Open:ETL-LT:v2.0".
 - ii. The four fields within the value serve as **courtesy fields** to help consuming agents and agencies understand the **OASIS Open reference** provided. Processing these fields individually is **not an expected activity** in an operational environment.

⁷⁶ See the **OASIS Open Alerting Practices** family of resources for more on `<code>` (forthcoming).

4.2 Baseline Case

The baseline case example situation outlined here serves as the universal reference model for all subsequent examples provided in the **Example Situations** section. Unless explicitly stated, the principles outlined in this baseline case will apply across all additional scenarios. Subsequent analyses of the additional scenarios will focus on how each case diverges from the baseline case, shedding light on their unique elements.

The **baseline case** begins with the **observing process**, progresses through various stages, and concludes with the **CAP consuming process**. Each section will introduce a list of relevant terms for the process, followed by discussions at increasing levels of complexity - starting with a **simple analysis**, then advancing to a **more detailed analysis**, and finally concluding with a **fully advanced analysis** on the larger alerting situation.

The **example situation** is a complex-event case categorized as **advanced**. The **simple discussion** presents the case as a straightforward basic alerting scenario, while the **more advanced** and **fully advanced** discussions explore a more **comprehensive approach**. These discussions involve numerous **decisions** based on the **inter-relationships** among the various observed events that collectively shape this **complex-event advanced situation**.

The various **observed events** in the baseline case are **interdependent** within the broader context. And even though each event could be managed separately with individual alerts, the example also demonstrates how they can be **combined** into a single **complex-event situation** and handled through a **single** complex-event alert. The discussion offered here examples how **CAP features** are designed to manage both **single** and **complex-event situations**.

Determining whether to handle the overall event situation as a **series of single events**, each with its own alert, or as **one complex-event situation** within a **single alert**, falls to the **purview of an alerting agency**. Some may opt for the **complex-event approach**, using a single alert attempting to reduce the situation down to one **larger alerting situation** (in efforts to minimize the number of **active alert messages** in play); while others may opt for several **single-event approaches**, handling each with its own alerting situation (with overlapping active messages).

4.2.1 Example Situation - Flash Flood

In this **constructed**, baseline-case example situation, a **public agency** has been alerted to a **rapidly rising water levels** event within its **area of responsibility**. Water gauge sensors indicate that water levels are increasing at a rate exceeding the **pre-determined threshold** for a **flash flood**. Furthermore, the **hard-set level marker** for rate of increase of water levels, and the volume of water contributing the rise, is sufficient for a follow-on **flood** event to also be realized.

Recent records indicate that water levels were **normal** (not high) before the onset of this event situation. Additionally, a quick check confirmed that a **broken levee** at the **county reservoir** is what is causing the **large volumes of water** to spill into an **area of concern**. High degree of certainty observations strongly support that a **flooding situation** is actively unfolding ⁷⁷.

4.2.2 Observing Process

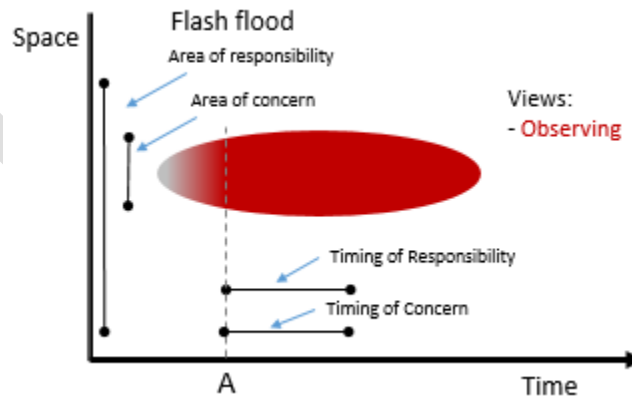
Observed events: flash flood, rainfall, levee collapse, flood

Event-of-interest: flash flood, flood

Secondary events: rainfall, levee collapse, flash flood, flood, evacuation

Simple Observation:

- 1) 1) A **flash flood** situation is observed, with several key observations noted regarding the fast-rising water levels:
 - a. The event is recognized and found to be **real** and **occurring** within a portion of the alerting agency's **area-of-responsibility** at point-in-time A.



⁷⁷ Every situation is unique. This constructed example is specifically designed to highlight certain key discussion points, while acknowledging that numerous "what if" scenarios could be introduced - each potentially altering the situation in significant ways.

- 1474 b. The left edge of the grey filled area on the left side of the marked event is when the
1475 event is acknowledged to have started, even though it wasn't observed immediately
1476 at that point-in-time (it is the time at which the broken levee occurred, i.e. the
1477 trigger event for the flash flood resulting in immediate impacts).
1478
- 1479 c. The red filled area is when the event became interesting to the various observing
1480 parties (when it came to be noticed by the various alerting agencies involved). The
1481 red filled area covers the grey filled area completely, except for a short beginning
1482 period. These two devised and formed events, the event (grey) and the event-of-
1483 interest (red), are constructs identical in nature, impacts, location and timing except
1484 for the beginning timing of when they started ⁷⁸.
1485
- 1486 d. The rising water levels are observed to **exceed** the pre-determined **threshold** for a
1487 flash flood event.
1488
- 1489 e. The location of concern covers only a **portion** of the agency's area of responsibility.
1490
- 1491 f. The situation is promptly designated as a "**flash flood**" **event-of-interest**, as the
1492 term **flash flood** most accurately describes the circumstances at the time of
1493 observation. This classification is based on the **history** and **social science** conclusions
1494 of "flash flood" being the appropriate term.
1495
- 1496 2) The **area of concern** for the **flash flood** is straightforward to determine in this baseline case.
1497 The flash flood event had a **known start time**, based on **recorded observations**, and its **end**
1498 **time** can be **estimated**, using **scientific predictions** and **historical data** from similar past
1499 events.
1500
- 1501 a. The affected **area** is a **single, low-lying location** that is **known to be vulnerable** to
1502 flash flood events. The **outer edge fringe areas** surrounding this location will
1503 experience a **reduced level of impact** compared to the **inner core areas**.
1504
- 1505 b. The **duration** of the **flash flood situation** is closely aligning with predictions from a
1506 **modeled course**. Since the **rainfall event has ended**, no additional water is being
1507 introduced, reinforcing the accuracy of the forecasted timeline.
1508
1509

⁷⁸ After the fact, it is acknowledged that the actual event started at some point-in-time and the alerting agency event of observing it with interest started shortly after that.

- c. The **flash flood-prone area** represents a **zone** requiring an **alert**. This area includes the currently rising water areas and the soon to be rising water areas, as the floodwaters continue to **spread (westward from the Highway 1 East levee breach in the eastern part of the county)**.

3) Additional events in the event situation include a **rainfall event**, a **levee collapse event**, and a **flood event**. These are summarily classified as **past and future secondary events**.

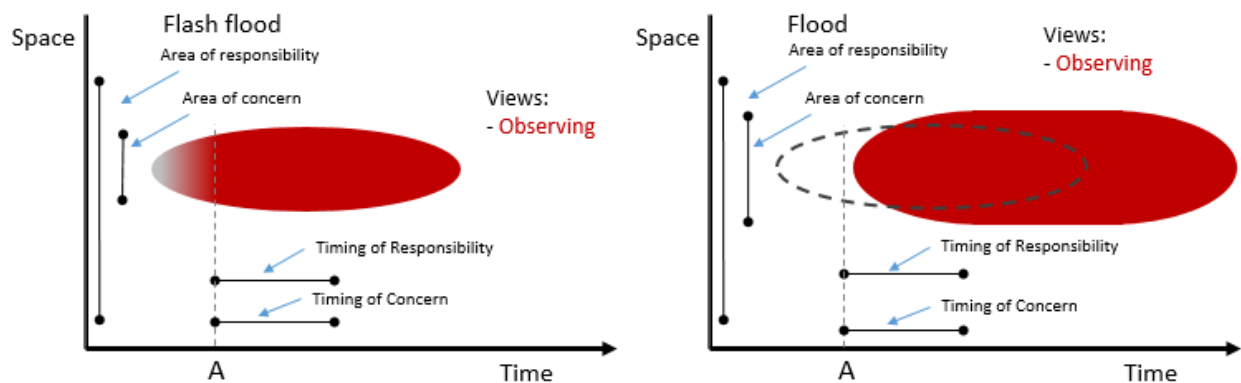
- a. The **rainfall** and **levee collapse** events are past events that provide **background context** to explain the unfolding **flash flood** event. As such, they are **no longer relevant** going forward to the ongoing observing process.
- b. The **flood event** is a **future event**, designated as a second **event-of-interest**. In a simple **alerting process**, it is to be addressed separately in the future with its **own alerting process**. The alerting agency will begin the separate flood event-of-interest process immediately after the flash flood event-of-interest process is addressed. The near term future flood event is an associated secondary event-of-interest to the flash flood event - one needing immediate attention in turn after the flash flood ⁷⁹.

4) Based on **history, research, scientific understanding, and conventional wisdom**, flash floods are widely recognized as **high-impact events**. Given this, the **analysis** of the unfolding and real **flash flood** situation commences immediately.

⁷⁹ The alerting agency, in this example case, has a separate process for flash flood and flood events. The observing process could even be automated. Nevertheless, the result is the flash flood event is being dealt with ahead of the flood event.

More Advanced Observation:

- 1) In this more advanced approach, the alerting agency plans to combine two events-of-interest into one **complex-event** situation to be handled in one alerting situation.
 - a. In addition to bullet 1 in the initial **simple observation** above, further key observations are noted.
 - i. The **volume of water** involved, combined with the **elevation** profile of the flash flood **area of concern**, will result in a flood event over a **larger area**.
 1. The flood observing process happens **concurrently** with the flash flood observing process.
 2. As the high water area continues to spread, its **rate of rise** will decrease, reducing the flash flood concern sooner than flood concern.
 - b. The **flash flood event** is **real** and **occurring** within a portion of the alerting agency's **area-of-responsibility** at point-in-time A. In contrast, the **flood event** is **imagined** and anticipated. While these two events are **independent**, they are both part of a **larger event situation** sharing many of the same measurable conditions. Each event has its own **criteria for existence**, as well as distinct **areas** and **timing** of concern.



- c. The **fast-rising water event**, actively occurring within the **area of concern**, serves as **antecedent** conditions for the predicted **flood event**. Given the established **rising water levels condition**, the forecasted **flood event** is classified as having **high certainty**.

d. The **collapsed levee** is a **separate event** within the **larger event situation** and is being handled by **another agency**. This other event has the potential to **impact the duration** of both the **flash flood** and **flood events**.

i. If the levee break is **addressed in a timely manner**, it may shorten the timing of the two flood based events. The **collapsed levee** is recognized as a **standalone situation** and serves as the **“incident” event** within the broader event situation. The broken levee **responding agency**, in this baseline case, has officially designated a name for the levee **“incident”**, the **“Highway 1 East Levee Collapse”** incident.

e. The **preceding rainfall event**, occurring before the **levee collapse**, was responsible for **elevating water levels** in the **reservoir** beyond normal levels. This increased water volume will further **intensify** the overall **event situation**. While the **rainfall event** could arguably be classified as the overall **trigger event**, and thus the **primary “incident”** to use, rainfall events are **common occurrences**, whereas the **levee collapse** is an **exceptional occurrence**. Given this distinction, the **levee collapse** serves as the **most appropriate incident identifier** for the overall event situation.

2) Building on the **simple observation** section above, at the current **point-in-time A in the diagrams**, the **flash flood** event is the **most immediate concern**. However, as the event situation progresses, the **follow-on flood event** will eventually **become the main concern**, shifting the **primary** event-of-interest from a **flash flood** to a **flood**. This situation involves at least **two events-of-interest**, indicating that it qualifies as a **complex-event situation**⁸⁰.

a. A **judgment call** is made in this situation, determining whether the **responsible agency** is losing significant advance warning time while concurrently assessing **both** flood-based **events-of-interest**. If the **observation-gathering process** for the **flood event** begins to **delay the timely publication** of an alert for the **flash flood event**, the agency may opt to **proceed** with issuing a **flash flood alert** first, with the understanding that it will quickly by an **updated message** covering **both the flash flood and flood events**. This will be determined in the analysis process to follow.

i. Preliminary messages often overdo the area and timing of concern in the haste to get them published, a behavior that can be acknowledged with standard text indicating new messages will be issued with additional details as they become available.

⁸⁰ There could be many more, however for this example, these are the only two events-of-interest addressed.

- 1600 3) If the **flash flood** were to trigger additional **secondary events**, such as **structural damage** to
1601 a **bridge**, or a **building collapse concern**, the overall **complex-event** situation would be
1602 evolving. However, in this **baseline case example situation**, the scenario is intentionally
1603 kept minimal, with no such additional events to consider.
- 1604
- 1605 4) In addition to bullet 2 in the simple observation section above, the **area of concern** for the
1606 **flood events** is also straightforward to determine in this baseline case.
- 1607
- 1608 a. The affected **area** is a **single, low-lying location** that is **known to be vulnerable** to
1609 flood events. The **outer edge fringe areas** surrounding this location will experience a
1610 **reduced level of impact** compared to the **inner core areas**.
- 1611
- 1612 b. The duration of the flood event is less certain than the flash flood due to it's much
1613 longer future-time presence, as there is still a period of high water levels expected
1614 after the rising water nature ends.
- 1615
- 1616 c. The **flood-prone area** represents a **zone** requiring an **alert**. The **low-lying flood-**
1617 **prone area** is a larger area as illustrated in the diagram.
- 1618
- 1619 5) The **trigger event** for the overall **event situation** could reasonably be attributed to either
1620 the **rainfall event**, which **caused the levee collapse**, or the **levee collapse itself**, potentially
1621 due to **structural failure**. However, at this stage, the **trigger event information** primarily
1622 serves as **historical context** for understanding the broader situation. The **focus** is now
1623 shifting to the **alerting process moving forward**.
- 1624
- 1625 a. Reporting the **trigger event** is optional and depends on the **alerting agency's**
1626 **discretion**. Including it could either **complicate the narrative** or help **explain the**
1627 **situation quickly and concisely**. The agency may choose to **introduce the trigger**
1628 **event** in its **initial messaging** to establish context, and then **omit it in later updates**
1629 as the alerting situation evolves.
- 1630
- 1631 6) In addition to **bullet 4** in the **simple observation above**, historical data, research, scientific
1632 analysis, and conventional wisdom indicate that **floods** are also **high-impact events**. Given
1633 this, a **detailed analysis** of the **flood situation** can now begin, along with coordinated
1634 **communication** between **agencies** to ensure an effective response.
- 1635
- 1636

1637 7) The two events-of-interest as a group, the flash flood and the flood, are considered related
1638 events of type “**aggregation**” ⁸¹.
1639

- 1640 a. Relationship types of **aggregation** are neither the weakest nor the strongest type of
1641 relationships. Discussing either flood-based event-of-interest in isolation, may bring
1642 to mind the other events-of-interest, as they are closely related by event-type and
1643 the observed conditions.
1644
- 1645 b. This relationship type is a preliminary assessment done in the observation process.
1646 This assessment could change in the analysis process to follow. For now, knowing
1647 this relationship type is in play, both events should be mentioned and passed on for
1648 analysis with full reference to each other.

⁸¹ Event relationship types, of which there are three classified by **OASIS Open**, are not critical to the effectiveness of the alert signaling service, however, they are helpful in understanding the social science of the event situation and can help build a structured information service given the target audience. Refer to the **OASIS Open Event Terms List – Concept Guide** for more discussion on event **relationship** types.

Fully Advanced Observation:

- 1) In this fully advanced approach, the alerting agency plans to combine three events-of-interest, including the creation of a new one, an evacuation event-of-interest, all grouped into one **complex-event** situation⁸².
 - a. Further to **bullet 1** in the **more advanced observation section** above, additional aspects of the **overall event situation** are identified⁸³.
 - i. The **affected population** has **limited recent experience** with such flood based events, as the last occurrence took place **over 15 years ago**. This lack of familiarity may impact **preparedness** and **response effectiveness**.
 - ii. There has been **little to no public discussion** regarding the condition of the **Highway 1 East levee** for nearly the **same duration** - about **15 years**. As a result, the **levee failure** came as a **surprising and unexpected event** to the affected community.
 - iii. An **evacuation order** may be considered as a **necessary action** given the unfolding event situation. It has its own **criteria for existence**, as well as distinct **areas** and **timing** of concern.
 1. Due to the **population density** of the affected area, any **evacuation effort** could lead to **severe congestion** at critical travel routes, potentially complicating emergency response and safety measures.
 2. Highway 1 East is not a **viable** route for evacuation. Information on viable evacuation routes would be helpful in the messaging, if such information were pre-determined and stored with an event-type relevant to the situation.
- 2) In addition to **bullet 2** in the **more advanced observation section**, considerations regarding an **immediate evacuation** are also incorporated into the thinking of the observation process.

⁸² Note that in the analysis stage, a fourth event-of-interest is added. At the observation stage, this fourth event-of-interest has yet to be conceived.

⁸³ Observing all the **events-of-interest** in the **fully advanced situation** requires added expertise and training of the agents responsible for such tasks as such situations often require adapting to a rapidly changing situation as it unfolds.

- 1685 3) In addition to **bullet 6** in the **more advanced observation above**, historical data, research,
1686 scientific analysis, and conventional wisdom indicate that **evacuations** are **high-impact**
1687 **events** requiring significant coordination between emergency services agencies and
1688 personnel. Given this, a **detailed analysis** of the **imagined evacuation event** can now begin.
1689
- 1690 4) In addition to **bullet 7** in the **more advanced observation above**, the three events-of-
1691 interest as a group, the flash flood, the flood, and the evacuation, are considered related
1692 events of type “**association**”. The two flood events, as its own group, are considered related
1693 events of type “**aggregation**”, however, the addition of the third event-of-interest puts
1694 them all into a different relationship type “**association**”.
- 1695
- 1696 a. Relationship types of **association** are the weakest relationships. An evacuation
1697 event-of-interest does not immediately bring to mind the flood based events-of-
1698 interest in the event situation. An evacuation event could be triggered by many
1699 events not flood-based. In this baseline case, they are only related by the observed
1700 conditions.
- 1701
- 1702 i. Knowing this, the flood-based events, in this baseline case, need to be
1703 explicitly mentioned and discussed separately in the observing process.
- 1704
- 1705 b. This relationship type is a preliminary assessment done in the observation process.
1706 This assessment could change in the analysis process to follow. For now, knowing
1707 this relationship type is in play, all events should be mentioned and passed on for
1708 analysis with full reference to each other.

4.2.3 Analyzing Process

Primary events-of-interest: flash flood, flood, evacuation

Secondary events: rainfall, levee collapse, flash flood, flood, water barrier operations, evacuation, road closure

Alert-worthy Events: flash flood, flood, evacuation, emergency

Trigger events: rainfall, levee collapse

Primary Event type: flash flood, flood, evacuation, emergency

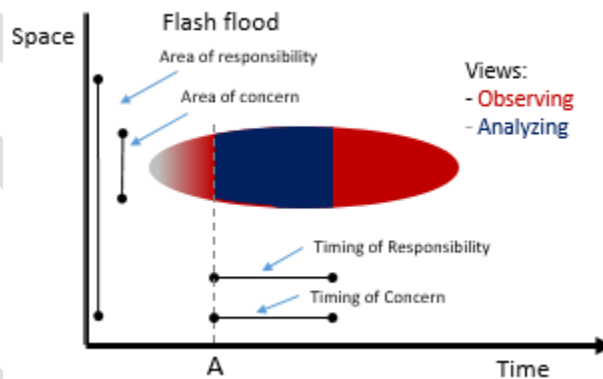
Secondary Event Types: rainfall, levee collapse, flash flood, flood, deployment of emergency services, evacuation, road closure

Subject event: flash flood, flood, evacuation, emergency

Simple Analysis:

1) Beyond what was captured in the **observing process**, the **analyzing process** identifies additional insights, including:

- a. Confirmation that the **flash flood event** (grey) is a truly a devised and formed event-of-interest (red), that does lead to a devised and formed **alert-worthy event** (blue).



- b. In this case, the primary difference between the **event-of-interest** and the **alert-worthy event** is the timing of the two event constructs. The alert-worthy event is constrained to the here and now for the client, relative to point-in-time A, and its worthiness ends when the timing-of-concern ends, again relative to point-in-time A. The **event-of-interest** construct has no such constraints, as its entire existence is of interest to the business ⁸⁴.

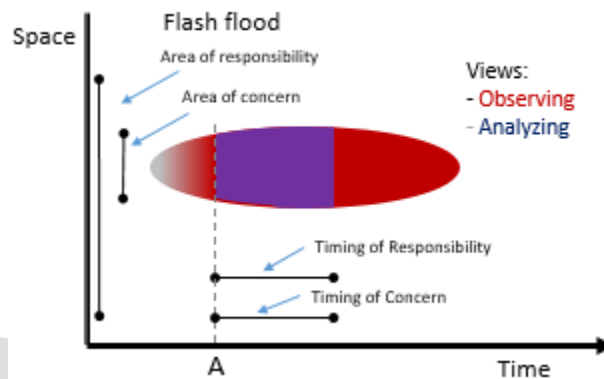
⁸⁴ This approach is simply devising and forming the **event-of-interest** for the alerting agency and devising and forming the **alert-worthy event** to the alerting audience. It is the alert-worthy event's nature, impacts, location and timing that will be what the alerting agency focusses on at point-in-time A. Refer to the **OASIS Open Event Terms List – Concept Guide** for more discussion on the **area** and **timing-of-responsibility**.

- c. Analysis confirms the secondary **flood event** is also a truly devised and formed event-of-interest, leading to a devised and formed alert-worthy event. The simple **analysis** also confirms it can be addressed separately after the **flash flood alert** has been **issued and published**. In this **baseline case**, the **flood event analysis** would begin **immediately after** the **flash flood analysis** due to its **rapidly developing and high impact nature** ⁸⁵.
- d. The **other agency** responsible for addressing the **levee collapse** has initiated a **“deployment of emergency services” event**. The **simple analysis** here confirms that this other event remains a **separate event**, however, it may be worth a mention.
- 2) The **analysis** confirms the alert-worthy **area of concern** for the client completely matches with the flash flood **event-of-interest** area. Although they match, this newly defined area construct is assigned to the **alert-worthy event area** in the **alerting process**. The alert-worthy event area is used to ensure focused communication and response efforts are directed to that area. For other event-type situations, matching areas may not be the case.
- a. The **analysis** acknowledges that the **full extent** of the **area of concern** for the **flash flood event-of-interest** is based on a **prediction**. As conditions evolve and predictions change, **updated alert messages** will be able to **reflect any changes** to the area of concern, ensuring focused communication and response efforts remain appropriate to the situation.
- b. The **scope of analysis** also determines a **set of flash flood based impacts** directly resulting from the **fast-rising water levels**. This would be extracted from the flash flood event-type information stored on hand, and as constrained by the alert-worthy area of concern.
- 3) The **analysis** confirms the alert-worthy **timing of concern** for the client is a subset of the timing of the flood flash event-of-interest. This **timing** now serves as the **alert-worthy event timing**, and subsequently the **alert signaling process**, ensuring timely and accurate information. This timing analysis is updated frequently to keep it accurate.
- a. The **response time** for impacted parties in this baseline case will be **limited**. For those located **near the collapsed levee**, its essentially zero. Given the **confirmed area** and **timing** of the **alert-worthy event**, the **urgency level** for an **alert message** is set to **immediate** to ensure as prompt action as possible of alerting partners.

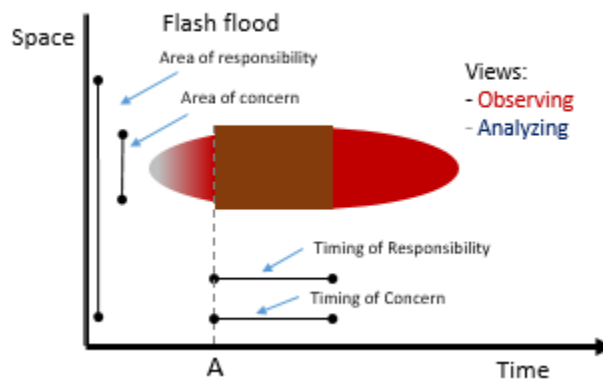
⁸⁵ The observation and analysis of events-of-interest as they happen in order, is purely for discussion purposes. If enough resources are available, such efforts could be handled simultaneously.

b. The **analysis** acknowledges that the **timing of concern** for the **flash flood event of interest** extends **far enough into the future** that its **end timing** is **not currently relevant** at the current **point-in-time A**. Future **update alert messages** will provide **timely information** regarding the **event's conclusion** well before the ending occurs.

4) As the **alert-worthy event** is to be addressed as a single-event-based alert, the **alert-worthy event** and the forthcoming devised and formed alert message **subject event** have identical nature, impacts, location and timing boundaries.



5) The **subject event** is then part of what defines the **larger alerting situation** area and timing.



a. The **larger alerting situation** is defined by the alert message, and includes a single set of begin and end times, and a single set of area references (as shown above). Both remaining fixed until a replacement message is published. In this baseline case, the **larger alerting situation** area is slightly larger than the **subject event** area. The

- 1789 difference is subtle, however in some cases, it can be more. In this baseline case,
1790 some minimal edge areas at point-in-time A are over-alerted spatially ⁸⁶.
1791
- 1792 6) The **analysis** confirms several key aspects of the **fast-rising water levels event**.
1793
- 1794 a. The **current rising water levels** rate meets the **classification** of **fast-rising** as
1795 opposed to its binary compliment **not-fast-rising**. At this stage, it is designated as a
1796 **static event**, as it will remain **fast-rising** (above the rate threshold) until it is not. This
1797 fast-rising classification is expected to **persist for some time**.
1798
 - 1799 b. The **current rising water levels** event meets the **classification** of **growing-in-area** as
1800 opposed to its binary compliment **not- growing-in-area**. At this stage, it is
1801 designated as a **moving event**, as it will remain **growing** (moving and expanding in
1802 area until it is not). This classification is expected to **persist for some time**.
1803
- 1804 7) If **time permits**, the **analysis** can conclude data on **current water levels**, the **rate of rising**
1805 **water**, and the **currently observed extent of the affected area**. While these details are **not**
1806 **essential** to the **immediate alerting process**, they can be **valuable** for situational awareness
1807 and future decision-making.
1808
- 1809 8) Additional **lifecycle details** are gathered to aid in **constructing an alert**. These details
1810 include:
1811
- 1812 a. If the flash flood alert is to **end** when the flash flood event ends (assuming a straight
1813 forward alerting process is determined by the analysis), both the **alert-worthy flash**
1814 **flood event** and **subject-event flash flood event** will end at the same time. The flash
1815 flood **larger alerting situation** would then be deemed as no longer existing.
1816
- 1817 9) Additional **process details** are gathered to aid in **constructing alert messages**. These details
1818 may include.
1819
- 1820 a. **Building a polygon object** to define the **area of concern** at the time of messaging.
1821
 - 1822 b. **Assembling a list of proxy zones** (e.g., **county-based zones**) to represent the
1823 affected areas as per the alerting agency standard operating procedures.
1824

⁸⁶ The spatial over-alerting conclusion here is subjective. Often some over-alerting is accepted as part of the cost of doing business due to technical constraints. Refer to the **OASIS Open Alerting Practices and Strategies – Concept Guide** for more discussion.

c. **Calculating the expiration time** for the **soon-to-be-published alert message**, based on the end timing of the **subject event**⁸⁷. This would be either:

i. the end time of the subject-event, if it was determined the subject-event timing of concern is earlier than the end timing-of-responsibility, or

ii. the end timing of responsibility (as of point in time A) - a time set by **business policy** governing situations of **event-type** flash flood⁸⁸.

10) Since the **event of interest** and the **subject-event**, in this baseline case, are fundamentally based on the **same happening**, the **designated label** for the larger alerting situation is **“flash flood”**, as dictated by **event-type policy**.

a. An alternative label, such as **“high water”**, could be used, but would likely **reduce the perceived urgency** of the situation. Social science suggests that **“flash flood”** is generally **more attention-grabbing**, making it a more effective term for conveying the seriousness of the **alert-worthy event** to the audience.

11) The pre-determined **business usage type** for this particular **larger alerting situation** is that of **“warning”**⁸⁹. Long-standing **practices**, for this baseline case example, dictates that the **“warning” designation** is to be used when notifying the public about such hazardous **subject-events**. This ensures consistency of communication about such hazards over time and over multiple instances of the same hazard-type occurring.

12) The **full named alert** in this example is **“flash flood warning.”** It combines the **chosen event type label** (**“flash flood”**) and the chosen **business usage type** label (**“warning”**). While other label choices exist, **long-standing practice** have established these as the standard in this baseline case example.

13) The **alert message** intended for the **audience** will incorporate **text derived** from the **actual analysis** of the observed **event of interest**, the **alert-worthy event**, and the resulting **subject event**. This ensures that the message is **informative, relevant, and reflective** of the ongoing situation. In this baseline case, such text would likely not change much between the various event constructs, but in some cases, especially **complex-event** cases, it could.

⁸⁷ See the **OASIS Open Event Terms List – Concept Guide** for more on <expires> time.

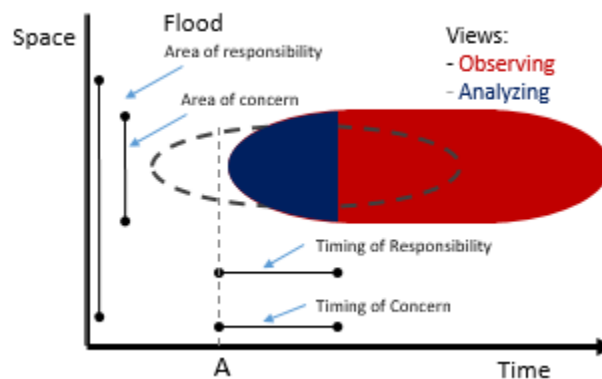
⁸⁸ In a changing situation where updated alerting messages are expected, the expires time of any alerting message is never expected to actually be reached. The message is expected to be superseded long before the expires time is encountered. Refer to the **OASIS Open Alerting Practice and Standards – Concept Guide** for more on “expires”.

⁸⁹ See the **OASIS Open Event Terms List – Concept Guide** for more on event-based **named alert** information.

- 14) The remaining **text in the alert message** will be shaped by the understanding that the **primary event of interest** is categorized as a **flash flood**. The **history, research, scientific analysis, conventional wisdom**, and established **policies** for handling **flash flood events** will guide the **Alerting Agency** in crafting a **clear, effective, and actionable alert message**.
- 15) A review of the **alerting agency's event type classification** for "**flash flood**" confirms that the appropriate **CAP category** for this type of **event of interest** is "**Environmental**." This **category assignment** was determined through **business research** conducted **well before** the actual flash flood event-of-interest occurred, ensuring consistency in classification and response. The **OASIS Open** subcategory is "**terrestrial**", simply confirming that the **OASIS Open** interpretation of such events is one that is over land.
- a. Any other **available information** on the **OASIS Open Event Term "flash flood"** can now be **incorporated into the originating CAP process**, enhancing the accuracy and effectiveness of the alert and the interoperability of the **CAP** alert message.
- 16) The **levee collapse** and **rainfall events**, as noted in the observing process, are **not directly relevant** to the current situation. However, they serve as **background information**, providing **context** for the **consuming audience** to better understand the unfolding events.

More Advanced analysis:

- 1) In this more advanced approach, the alerting agency plans to combine two events-of-interest into one **complex-event** situation to be handled in one alerting situation.
 - a. Beyond what was captured in the **more advanced** section of the **observing process** and the **simple analysing process** above, the **more advanced analysis** identifies additional insights, including:
 - i. Confirmation that the **flood event** (in grey – hidden) is a truly devised and formed event-of-interest (in red – partially hidden), that does lead to a second devised and formed **alert-worthy event** (blue – fully shown) ⁹⁰.



- ii. All other points discussed in bullets 1, 2 and 3 of the simple analysis section apply **except for the decision to defer** the flood alert-worthy event to a following and separate alerting situation.
 - iii. Other agencies may initiate **secondary response activities**, such as **constructing emergency water barriers** to address the concern of the advancing water, thereby impacting the location and timing details of the flash flood and flood events-of-interest.

⁹⁰ Since the flood event is imagined and anticipated, the grey representation for it is in the future and therefore completely covered by the red event-of-interest and blue alert-worthy event representations in the diagram.

- 2) Like bullet 2 in the simple analysis, the **analysis** confirms the alert-worthy **area of concern** for the client completely matches with the flood **event-of-interest** area.
- a. The **scope of analysis** also determines a **set of flood based impacts** directly resulting from the **high water**. This would be extracted from the flood event-type information stored on file, and as constrained by the alert-worthy area of concern.
- 3) Like bullet 2 in the simple analysis, the **analysis** confirms the alert-worthy **timing of concern** for the client is a subset of the timing of the flood event-of-interest.
- a. The **analysis** acknowledges that the **timing of concern** for the **flood event of interest** extends **far enough into the future** that its **end timing** is **not currently relevant** at the current **point-in-time A**. Future **update alert messages** will provide **timely information** regarding the flood **event ending** before the ending occurs.
- 4) The **analysis** notes that it is antecedent **rising water conditions** that will cause **water levels** to exceed the **predefined threshold** for a **flood event** at some **future point in time**, allowing for some **lead time** before the **alert-worthy flood event** begins.
- a. The **response window** for the **alerting audience** is noted to be longer for the **flood** event as compared to a **flash flood** event. The **urgency** to issue an alert is **less immediate** for the flood than the **flash flood**, making the flash flood event still the **primary** event-of-interest at point-in-time A.
- b. The **edge areas** of the flood event will **not experience** the **fast-rising water** condition of a **flash flood** due to the **gradual spread** of the rising water slowing the rate of rising in the edge areas.
- c. The **severity** of the **flood event of interest** is deemed **just as extreme** as a **flash flood**.
- d. The **depth of water** concern across the **flood-prone area** will be a **longer term concern** than the **rising water concern**, one that is expected to persist for **days**.
- e. A **new set of impacts**, those related to **high water flood levels**, is now under consideration.
- 5) Based on **history, research, scientific analysis, and conventional wisdom** surrounding the two events-of-interest - particularly as reflected in their **associated event types** - the most effective terms for these two **events of interest** are **"flash flood"** and **"flood."**

1946
1947 6) Additional lifecycle details are gathered to aid in constructing an alert. These details include:
1948

1949 a. The **named alert** can change names between the **initial** and **updated messages** in
1950 the alert message series. For example, a **“flash flood warning”** message, followed
1951 later by a **“flood warning”** message, as part of the **same continuous** set of messages
1952 associated to the single **complex-event alert**. The **OASIS Open EMTC** considers this
1953 an acceptable approach when the **flood event** overtakes the **flash flood** as the
1954 **primary event of interest** ⁹¹.

1955
1956 i. If the flash flood alert is to be **updated** when the flood event takes over as
1957 the **primary** event-of-interest, the **subject event** will continue and change to
1958 the flood event (in the updated messages). At such time, the **flash flood**
1959 **alert-worthy event** is relegated to a secondary event to the new primary
1960 flood event. The flash flood event-of-interest may continue on, to some
1961 lesser degree, however, it has been overtaken by the flood event as the
1962 **primary** event in the event **situation**.

1963
1964 b. The named alert could initially start off as **“flood warning”** and continue as **“flood**
1965 **warning”** throughout its series of messages, assuming the alerting agency feels the
1966 audience is capable of handling the situation this way.

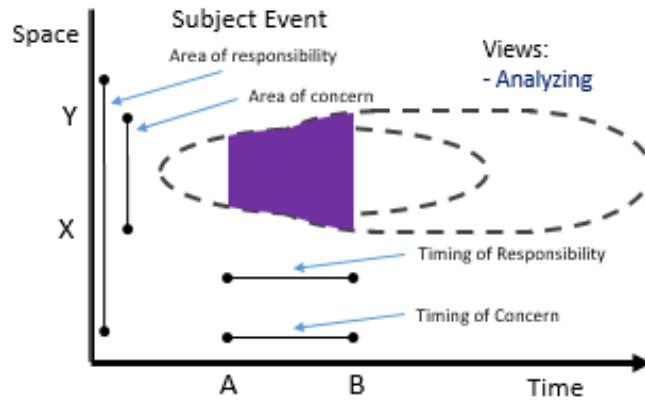
1967
1968 c. A third option, **“emergency flood alert”**, where the descriptive qualifier
1969 **“emergency”** is added to heighten the awareness to a higher level – hopefully one
1970 that will result in more immediate action.

1971
1972 i. The term **“emergency flood warning”** is also a consideration, however, the
1973 social science of **warning** the audience to something specific, and using a
1974 general term like **emergency**, can lead to some confusion. The term **alert** is a
1975 general term that works well with **emergency**, as both these terms direct the
1976 audience to look deeper into the message for the details, with the term flood
1977 providing a quick introduction to the topic of discussion that will be given.

1978
1979 ii. This is one way to use **“emergency”** - as a descriptive qualifier. Another way
1980 is to use **“emergency”** as an event-of-interest itself. For that approach, see
1981 the fully advanced section to follow.
1982

⁹¹ For further guidance on **alerting update strategies**, refer to the **OASIS Open Alerting Practices family of resources**.

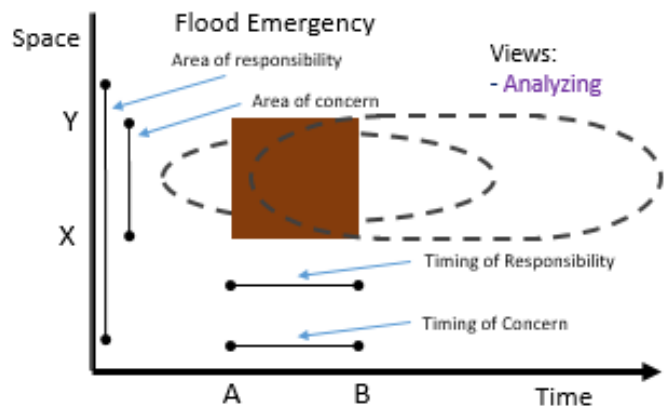
- 7) The **condition, impacts, location, and timing** of a single **subject event**, derived off a **complex-event**, is the union of the **two alert-worthy events**, each of which were determined by their **intersection** with the **alerting agency's area and timing of responsibility**, as illustrated in the diagram below ⁹².



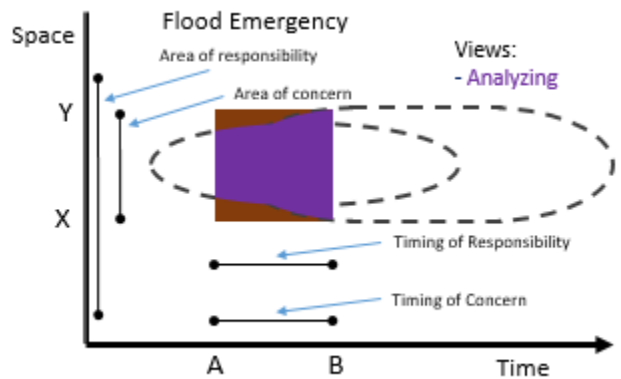
- a. The area in purple is the newly formed and devised **subject event** based on the two alert-worthy events.
- b. Note that the **flash flood event space** is **smaller** than the **subject event space**, but their **timing details align**. Conversely, the **flood event space** aligns with the **subject event space** but **not the timing details** (as the **flood event starts later**).
 - i. In this **more advanced analysis**, the **flash flood timing-of-concern** serves as a timing **proxy** for the **complex-event subject event**, while the **flood event area-of-concern** is used as a location **proxy** for the **complex-event subject-event**.
 - ii. To maintain a simpler **communication** with the **consuming audience**, the **subject event location and timing** are applied to **both events of interest** in the alert signalling process. Each event is being over-alerted in space individually, however, every represented space of the **subject-event** has at least one alert-worthy event in play. Any **necessary clarifications** regarding the **event situation**, as it pertains to this **over-alerting**, could be addressed in the **<discussion>** element text if necessary.

⁹² For further details on **intersection areas**, refer to the **OASIS Open Event Terms List – Concept Guide**.

2011 8) The **larger alerting situation** space/time diagram is as follows:



- 2012
- 2013 a. In this baseline case, the complex-event **subject event location and timing** is less
- 2014 aligned with the **larger alerting situation** than it was with the simple flash flood only
- 2015 approach.



- 2016
- 2017 i. In the **brown area** of the diagram, outside of where the purple **subject event**
- 2018 is bounded, there is no flash flood event expected. And while there is a flood
- 2019 event expected, it is during the alert-worthy flood event’s **lead-time period**.
- 2020 Such considerations may impact the audience based messaging text used in
- 2021 the <description> element. In more advanced situations, alerting agencies
- 2022 are often faced with balancing the repercussions of such details in the text.
- 2023
- 2024 b. If the **flash flood event of interest** was also imagined, and anticipated to begin at a
- 2025 **later time**, the purple **subject event timing** would also shift to **start** at that later
- 2026 time. However, the brown **larger alerting situation timing** would still be anchored to
- 2027 the **current time**, taking advantage of some additional **lead time** for flash flood
- 2028 preparedness and response ⁹³.

⁹³ For more on lead time, see the **OASIS Open Event Terms List – Concept Guide**.

2029
2030 9) Any other **events of interest**, that might have impacted the larger **alerting situation**, have
2031 either **ended** or **do not exist** within this **baseline case example situation**.

2032
2033 a. If additional **secondary events**, such as a **bridge collapse** or an **impending bridge**
2034 **failure** were apparent, they would require **assessment** and **handling** as either:

2035
2036 i. A **separate alerting situation**, with its **own dedicated alert**, or

2037
2038 ii. An **informational component** incorporated into this **larger complex-event**
2039 **alerting situation**, or

2040
2041 iii. Another event-of-interest making it more than the **two** exemplified.

Fully Advanced Analysis:

- 1) In this fully advanced approach, the alerting agency plans to combine up to four events-of-interest into one **complex-event alerting situation**, including the creation of two new ones, an evacuation event-of-interest and an emergency event-of-interest.
 - a. In addition to what is discussed in the **fully advanced observation process**, and what is covered in the **bullet 1** in the **more advanced analysis above**, additional aspects of the **overall larger event situation** are identified.
 - i. The **recent rainfall event** introduced **abnormally high volumes** of **water** into the **reservoir** before the **levee failure** occurred. This **excess water** has the potential to **intensify** the **impacts** and **prolong** the **hazards** of the **flood-based events**, further escalating the situation.
 - ii. An **evacuation order** has been decided upon. This **new** event-of-interest is one that has been introduced in the analysis stage as a consequence of the analysis.
 1. At this stage, the **evacuation event is imagined**. An event-of-interest to be **triggered by the alerting process** within the **event situation**.
 - a. It is considered a static event in the sense of it being an evacuation until it is not an evacuation.
 2. The evacuation **event-of-interest** would now be added to the fully advanced observation process going forward.
- 2) **Bullets 2 through 5** in the **simple analysis** and **bullets 2 and 3** in the **more advanced analysis** apply. Additional analysis finds:
 - a. The **evacuation event-of-interest** leads to a devised and formed **evacuation alert-worthy event**. It needs to be alerted to ensure public safety.
 - b. In this baseline case, as part of the alert-worthy event analysis, things like **evacuation routes**, planned to **away** from the **advancing water** rather than **toward it**, could be made.
 - i. Providing **clear reference points** to assist evacuees - such as **higher ground**, designated **safety markers**, and **passable routes** like **Highway 1 West**, are considerations to make for the messaging.

- 2085
- 2086 ii. If some details are time consuming to compile, possibly delaying the timing
- 2087 of the **initial** evacuation message, they could be deferred and added to
- 2088 **update** messages as soon as they are available.
- 2089

2090 3) The evacuation **event-of-interest** and **alert-worthy event** remain as devised and formed

2091 until their conditions change to indicate otherwise.

2092

2093 a. Their specific details could change quickly in this rapidly developing event situation,

2094 however, they are still based on the singular activity of **evacuating**, and are types of

2095 events most likely to be coordinated with partner agencies.

2096

2097 b. The conditions, impacts, locations and timings of the various evacuation-based

2098 event constructs likely involve the operating procedures of the other official parties

2099 involved. This typically leads to a more adaptive approach than a pre-set one.

2100

2101 4) For a **complex-event situation**, involving two simultaneous flood-based events-of-interest

2102 and one evacuation event-of-interest, an appropriate complex-event group term the

2103 alerting agency might prefer, is **“emergency”**.

2104

2105 a. **“Emergency”**, in this context, is a new event-of-interest that is a single complex-

2106 event that is made up of the other three events-of-interest. It is devised and formed

2107 by the nature, impacts, locations and timing that make up the other three.

2108

2109 b. Based on the **historical data, research, scientific analysis, and conventional wisdom**

2110 surrounding such events – as fully reflected in the available **event-type** information

2111 on file - the most effective terms for each single **event of interest** are: **“evacuation”**,

2112 **“flash flood,”** and **“flood”**. For the **complex-event situation**, the most suitable single

2113 complex-event term would be **“emergency”**.

2114

2115 c. While the **flash flood** and **flood events** are significant, the **evacuation** and

2116 **emergency events** are considered **more important** in this fully advanced analysis. An

2117 alert labeled with **“flash flood”** or **“flood”** may not prompt as **rapid a response** from

2118 the audience as **“evacuation”** or **“emergency”**. The term **“emergency evacuation”**

2119 provides even more context as would **“evacuation emergency”**. A term like **“flood**

2120 **emergency evacuation”** or **“flood evacuation emergency”** would provide even more

2121 context, however, these naming forms are awkward and may add confusion as per

2122 the social science of the situation.

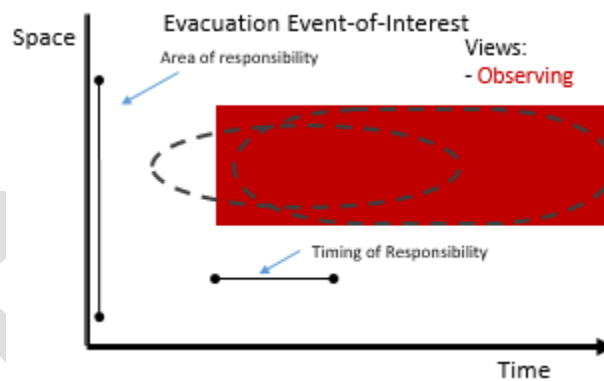
2123

2124

d. Ultimately, the **alerting agency** makes the final decision on terminology.

- i. For this **baseline case**, “**emergency evacuation**”, combined with the business usage alert type “**order**” leads to “**emergency evacuation order**” as the named alert. Here the evacuation is the primary event-of-interest and alert-worthy event.
- ii. The flash flood and flood are still alert-worthy events; however, they are left to the message content to be found in the discussion section.

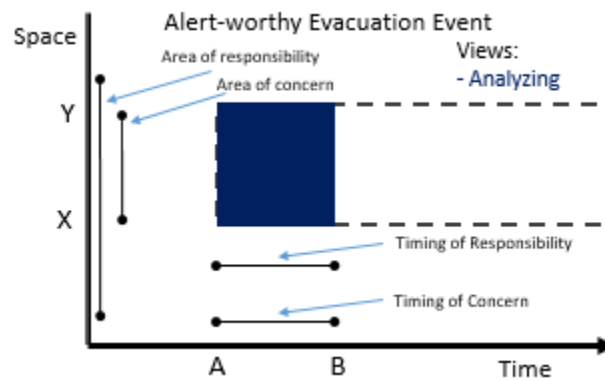
5) The **observation** of the **evacuation event-of-interest** is an **engineered** one, based on the **documented procedures** of the **alerting agency** leading up to the **decision to evacuate**. The space/time diagram for the evacuation **event-of-interest** is as follows.



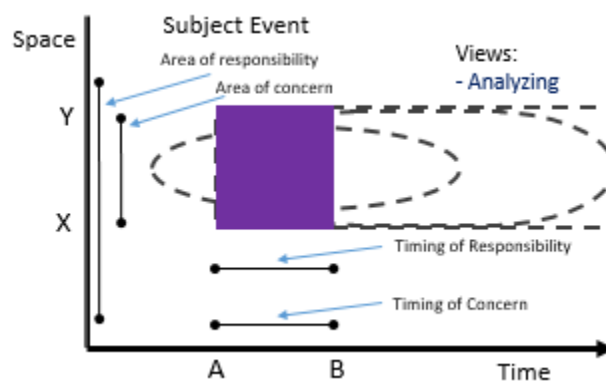
a. The **red-marked area** represents the **new evacuation event-of-interest**.

- i. It is to begin immediately and covers the same area and timing as the two flood-based events-of-interest combined (as discussed in the **more advanced analysis** section).
- ii. The **exact end timing** of the **flood** event-of-interest remains **uncertain**, however, it is confirmed to **extend beyond** the **agency's timing of responsibility** and so the **evacuation** will too. Their endings will be dealt with in later messages.

- 6) The space/time diagram for the conceived **alert-worthy evacuation event**, devised and formed out of the **evacuation event-of-interest**, is as follows:



- a. The blue-marked **alert-worthy event** now includes the subset nature, impacts, location and timing of the **evacuation event-of-interest** – the near term parts that are relevant to the alerting client at point-in-time A.
- 7) In this baseline case, the **subject-event** space/time diagram is as follows, regardless of whether the **evacuation** or the **emergency** is the primary alert-worthy event:



- a. Apply the **more advanced analysis** section bullets 2 and 3, except now the **details** of the **evacuation** and the **emergency events-of-interest** would be added to the group with one or the other as the **primary event of interest**.
- b. At **point-in-time A**, the **flash flood** is **real** and within the **intersection timing**, while the **flood** remains **imagined** within the **lead timing**. The **evacuation** and **emergency events-of-interest**, while **imagined** during the initial analysis process, are **real** at the time of publish, so are considered as real during the analysis.

- i. The **alert message** has an **opportunity** to communicate **lead time flood information**, offering insights into the **condition** and **impacts** of the **flood event** before **flood levels** are **actually reached**, however, the **evacuation** or **emergency**, as the primary event-of-interest, have priority.

8) At the current **point in time A**:

- a. The flash flood has already begun and has some history.
- b. Flood levels will be reached shortly after point-in-time A.
- c. The evacuation event will commence immediately following the publication of the alert message.
- d. All the individual events-of-interest are fully contained within the agency's area of responsibility and are occurring, or are expected to begin, within the agency's timing of responsibility.
- e. The area and timing of the **subject event** at point-in-time A covers the area between Points A and B as well as X and Y on the diagram.
- f. Further details beyond Point B in the **larger alerting situation** will be addressed in updated messages published later. Ideally this will be done before Point B is reached:
- i. to ensure no gaps in the alerting process, and
- ii. with enough time to provide advance notice of those details as per the agency's operating alerting mandate ⁹⁴.

9) Notably, at **Point-in-time B**, the **area-of-concern** of the **flash flood event of interest** (within the **area of responsibility**) is projected to have **ceased expanding**.

- i. Since the **flash flood event** is **no longer introducing new affected areas**, it will **not impact lead time decisions** for future alert messages.
- ii. **Update messages** will **not need to account for new lead time** related to **new flash flood area** ⁹⁵.

⁹⁴ Refer to the **OASIS Open Alerting Practices family of resources** for comprehensive guidance on the **update frequency of alert messages** (forthcoming).

⁹⁵ Refer to the **OASIS Open Alerting Practices family of resources** for further **discussion** on this **concept**.

2210
2211 10) Following the **timing-of-responsibility period**, the **flash flood event** is expected to conclude
2212 once **water levels stop rising rapidly**, whereas the **flood event** will end only after **water**
2213 **levels recede below flood thresholds**.

2214
2215 a. The **evacuation** is planned to be **lifted** upon the **end of the flood event**.

2216
2217 b. At **point-in-time A**, the **later timing-of-responsibility information** beyond **point-in-**
2218 **time B** is **not critical**. The timing details remains uncertain and are to be addressed
2219 in **subsequent alert message updates** throughout the **alerting process**.

2220
2221 11) In this baseline case, the **analysis** of the **evacuation event of interest** confirms that the
2222 **alerting agency** prefers the term **“emergency evacuation”**. Their **evaluation indicates** that
2223 **“emergency evacuation”** creates a **stronger impression on audiences**, leading to a **slightly**
2224 **improved response uptake** compared to **“evacuation emergency”** or the standalone term
2225 **“evacuation”**.

2226
2227 a. One **critical impact** of an **“emergency evacuation”**, as opposed to simply
2228 **“evacuation”**, is the necessity to **evacuate as quickly as possible**, potentially **leaving**
2229 **all non-essential belongings behind**. If this is the **intended directive**, the **alert**
2230 **message** should clearly **address this concern**, ensuring that evacuees understand
2231 the urgency and expectations.

2232
2233 i. In this case, **“emergency”** functions as a **noun adjunct**, modifying
2234 **“evacuation”** to specify a particular type of evacuation response.

2235
2236 ii. Audiences often **seek validation** of alert messages before taking **significant**
2237 **actions**. The more **context** an **initial message provides**, the easier it is for
2238 recipients to **confirm its legitimacy** and **respond appropriately**. Additionally,
2239 **“emergency evacuation”** is a **concise yet impactful term** that **effectively**
2240 **conveys urgency** without being **overly wordy** - ensuring that audiences can
2241 **quickly grasp** the critical message while dealing with their own situation.

2242
2243 iii. Another term, like **“emergency”** alone, may lead to **assumptions** about the
2244 condition of the **emergency**, potentially causing some **alerts to be ignored**
2245 until recipients **confirm** that the situation **directly affects them**.

2246
2247 b. Effectively **describing a situation** to **prompt an immediate audience response** is
2248 **challenging** from a **social science perspective**. To facilitate **fast and informed**
2249 **decision-making**, it is essential to **capture historical insights, research findings,**
2250 **scientific analysis, and conventional wisdom** into the analysis.

- 2251 c. The **pre-determined** business usage **alert type** for the alert assigned to this
2252 **particular larger alerting situation** is **“order”** ⁹⁶. This designation follows a **long-**
2253 **standing practice** which consistently utilizes the **“order”** label to effectively
2254 **communicate an “emergency evacuation”** in an **alerting situation**.
2255
2256 i. The **full named alert** in this example is **“emergency evacuation order.”** It
2257 consists of the chosen event type label **“emergency evacuation”**, and the
2258 chosen business usage alert type label **“order.”**
2259
2260 d. The **alert message** intended for the **audience** will incorporate **key text elements**
2261 derived from the **actual analysis** of the **evacuation alert-worthy event**, and all the
2262 secondary **alert-worthy events**. These details are to ensure that the **message**
2263 **remains accurate, relevant, and informative**.
2264
2265 e. The remaining **text in the alert message** will be extracted from the **primary event-**
2266 **type “evacuation”** and the secondary **event-types** where applicable. To ensure
2267 clarity and effectiveness, the **alerting agency** will draw upon **historical data,**
2268 **research, scientific analysis, conventional wisdom, and established policies** for
2269 handling **evacuation events** and the secondary alert-worthy events as part of the
2270 larger alerting situation.
2271
2272 f. The **alerting agency** has identified a **matching entry** in the **OASIS Open Event Terms**
2273 **List** for **“evacuation.”** As a result, any available **information** related to the **OASIS**
2274 **Open Event Term “evacuation”** can now be **integrated** into the **originating CAP**
2275 **process**.
2276
2277 i. Analysis of the **alerting agency’s event type “evacuation”** determines that
2278 the appropriate **CAP category** for this **event of interest** is **“Safety.”** This **CAP**
2279 **category assignment** was established through **business research** conducted
2280 **well before** the actual event is to be alerted.
2281
2282 ii. All other events-of-interest in the larger alerting situation would also
2283 undergo this same analysis to compliment the evacuation event-of-interest.
2284
2285 12) For the **levee collapse** event, see bullet 17 in the simple analysis above. The **rainfall** event is
2286 treated in the same manner.
2287

⁹⁶ See section on **Naming Alert Objects** in the **OASIS Open Event Terms List – Concept Guide** for more information.

2288 13) Note that for any **one event of interest**, all other **events** - including additional newly
2289 created **events of interest** - are classified as **associated secondary events** related to the
2290 primary event.

2291
2292 a. In this situation, **rainfall, levee collapse, and emergency water barrier operations**
2293 **do not qualify** as **events of interest** for alerting purposes. However, they are still
2294 **relevant** and may provide **valuable contextual information**.

2295
2296 i. These **events** contribute to the **overall story** within the **alerting process**. If
2297 any of them contain **event-type information**, that data should be **readily**
2298 **available for use as needed**.

2299
2300 14) If the **situation analysis** indicated that only a **partial evacuation** is necessary for the larger
2301 **impacted area**, then for the **non-evacuation subset area-of-concern**, a **different primary**
2302 **event of interest** may be more appropriate. **Evacuation** is not the **top priority** in that other
2303 subset area.

2304
2305 a. The **alerting agency** must decide whether to classify this event situation as **one**
2306 **situation** or **two**. If **two**, the **flash flood** or **flood** could take the position of **primary**
2307 **event of interest** in the **other situation** that does not involve an **evacuation**.

2308
2309 b. A possible **directive** in **both subset areas** would be to **encourage ongoing**
2310 **monitoring** for **updated messages**. In changing situations, especially complex-event
2311 alerting situations, the **primary event of interest**, areas, and timing, can easily shift
2312 and evolve.

4.2.4 CAP Originating Process

CAP subject-event: primary flash flood(simple), primary flash flood with secondary flood (more advanced), primary evacuation with secondary flash flood, flood, and emergency (fully advanced)

OASIS Open Event Term: flash flood, flood, evacuation, emergency

OASIS Open Event Term Code with CAP categories: flash flood (OET-080; Environmental, Safety), flood (OET-82; Environmental, Safety), evacuation (OET-XXX⁹⁷; Other), emergency (OET-XXX; Safety)

Simple Message (Event-based CAP elements):

```
<code>layer:OASIS-Open:ETL-LT:v2.0</code>
...
<info>
...
<category>Env</category>
<category>Safety</category>
<event>flash flood</event>
...
<eventCode>
  <valueName>layer:OASIS-Open:ETL-LT:v2.0</valueName>
  <value>OET-080</value>
</eventCode>
<eventCode>
  <valueName>[other event code scheme reference (non-OASIS Open)]</valueName>
  <value>[other event code value]</value>
</eventCode>
...
<expires>[end timing of subject event]</expires>
...
<headline>flash flood warning in effect</headline>
...
</info>
```

⁹⁷ Actual values for XXX will be substituted when the **Event Terms List – Lookup Table** has been publically reviewed and code numbers are assigned. That process is concurrent with this **User's Guide** Public Review process.

- 2350 1) The **primary** event-type for this **baseline case example situation** in the simple analysis is the
2351 locally defined “flash flood”. Based on this **event type**, specific **CAP elements** can be
2352 **populated** using **stored values** associated with this event-type.
2353
- 2354 2) The **OASIS Open EMTC** recommends the **<code>** element is **included** in all CAP messaging
2355 (from simple to advanced), where **OASIS Open Event Terms List** information is to be
2356 present in the **<eventCode>** element. The **OASIS Open EMTC** recommends the **<code>**
2357 element be included exactly as shown with the value “**layer:OASIS-Open:ETL-LT:v2.0**”. The
2358 inclusion of the **<code>** element is a **simple** addition to the **CAP** message as it is a **courtesy**
2359 element for consumer use not affecting the alerting process. Refer to the **CAP Consuming**
2360 **Process** below for additional details regarding its value in **CAP** messaging.
2361
- 2362 a. This **<code>** element value signifies the presence of an **additional layer** of **OASIS**
2363 **Open-defined event-type information** within the **CAP message**. This **extra layer**
2364 enhances the **standard information** contained in a **CAP alert message** but is **not**
2365 **intended to replace or override** any existing **standard CAP elements** ⁹⁸.
2366
- 2367 b. The **<code>** element **notifies CAP consumers** that the **OASIS Open Event Terms List**
2368 is incorporated into this **CAP message**. The **presence** of the **<code>** element
2369 provides CAP consumers with the **option** to enforce **stricter process handling rules**
2370 when **interpreting** and **processing CAP alert messages** ⁹⁹.
2371
- 2372 3) An **examination** of the **OASIS Open Event Terms List** indicates that the most suitable **event-**
2373 **type match** for this **subject event** is “**flash flood**.” The **OASIS Open event-type code** for this
2374 situation is **OET-080** and the **OASIS Open CAP Categories** assigned to “**flash flood**” is
2375 “**Environmental**”. Additionally, the listed **OASIS Open subcategory** for this event type is
2376 “**terrestrial**.” This **CAP categories and subcategory** was determined by the **OASIS Open**
2377 **EMTC** when incorporating “**flash flood**” into the **OASIS Open Event Terms List** ¹⁰⁰.
2378
- 2379 a. As this example is likely a Public Alert, the alerting agency has opted to include
2380 “**Safety**” as an additional CAP category, citing “**life**” and “**property**” as applicable
2381 **OASIS Open** subcategories in their assessment. “**Safety/life**” and “**Safety/property**”
2382 is added to the event-type information on file.

⁹⁸ Refer to the **OASIS Open Alerting Practices** family of **resources** for further **information on layers**. (**forthcoming**).

⁹⁹ Refer to the **OASIS Open Alerting Practices** family of **resources** for further **information on the <code> element** (**forthcoming**).

¹⁰⁰ Refer to the **OASIS Open Event Terms List - Lookup Table** resource for more **information**.

- 2383 b. The two **<category>** elements, in this example, are populated with “**Env**” and
2384 “**Safety**” ¹⁰¹.
2385
- 2386 4) The **<event>** element, in this simple **baseline case example situation**, is populated with the
2387 **locally defined “flash flood” label**. The **<event>** element **sources** its value from the **subject**
2388 **event**, which for this simple message, is composed of only the “**flash flood**” **primary** event-
2389 of-interest.
2390
- 2391 a. In this instance, the “**flash flood**” **local event term** and the **OASIS Open term** are
2392 **identical** ¹⁰².
2393
- 2394 5) Other terms that are **not** recommended for the **<event>** element include.
2395
- 2396 a. “**flash flood warning**”, as this is an incorrect reference to the named alert, not the
2397 event-type
2398
- 2399 b. “**flash flood event**”, as this is not the look and feel of the **OASIS Open EMTC**
2400 recommended event-type naming format. The recommended format does not
2401 include the word “**event**”.
2402
- 2403 c. “**flash flood warning issued**”, as this an incorrect reference to the **alert**, not the
2404 **event**. Such text is more appropriate to a headline, not the event-type in the
2405 **<event>** element.
2406
- 2407 d. “**Main Street flood**”, as this a reference to an actual **named event**, not the **event-**
2408 **type**.
2409
- 2410 6) **<eventCode>** group elements may **optionally** be included in the **CAP message** and should
2411 associate with the **subject event** and the **larger alerting situation**. In simple cases it is one.
2412 With this User’s Guide, the aim is to have at least one instance of this group element be
2413 present and populated with an **OASIS Open** event code.

¹⁰¹ The CAP category is mainly used by agents along the path of distribution for filtering, routing and presentation actions. Unless these actions are based on other elements (i.e. like an event code), such actions are common with the use of the **<category>** element in a CAP message.

¹⁰² In many situations, a difference may exist between the **local** event-type term and the **OASIS Open** event-type term.

- 2414 7) One of the multi-instanced **<eventCode>.<valueName>** elements in the CAP message, the
2415 one of interest to the **OASIS Open EMTC** regarding interoperability, is populated with
2416 **“layer:OASIS-Open:ETL-LT:v2.0.”** It indicates a reference to version 2.0 of the **OASIS Open**
2417 **Event Terms List - Lookup Table** for cross referencing purposes. In the simple case, other
2418 non-**OASIS Open <eventCode>.<valueName>** elements in other **<eventCode>** group
2419 elements would be populated with a reference to another event code scheme.
2420
- 2421 8) The corresponding **<eventCode>.<value>** element to the **<eventCode>.<valueName>** of
2422 **“layer:OASIS-Open:ETL-LT:v2.0”** in the **<eventCode>** block in this simple **baseline case**
2423 **example situation** is populated with **OET-080** for flash flood.
2424
- 2425 a. The **OASIS Open EMTC** recommends that at least **one OASIS Open event-type code**
2426 be present in every **CAP message** to reinforce the goal of **interoperability**.
2427
- 2428 b. Any other **<eventCode>** group element, based on the same or a different event
2429 typing scheme, can be populated in a similar fashion (see the more advanced
2430 **baseline case example situation** section for a case where the same event typing
2431 scheme is used more than once).
2432
- 2433 9) The **CAP originator** does not generate the **<eventCode>** element for **direct audience**
2434 **consumption**, as it is not typically **presented to them in its raw form**. Instead, the
2435 **<eventCode>** serves primarily as a **technical reference** for **agents** involved in **filtering,**
2436 **routing, and presenting activities**. By incorporating an **event code**, these agents can
2437 **enhance presentations** and execute **processing actions** with greater **detail and precision**.
2438
- 2439 10) The **expectation** is that prior to **<expires>** time of the CAP alert message, the initial
2440 message’s **content would likely become outdated**, prompting the need for a **new message**
2441 to be issued. This new issue would be **before the <expires> time**, as an act to **supersede** the
2442 original **Point A** publication. The **OASIS Open EMTC** recommends setting the **<expires>**
2443 value to **the end time of the subject event**, even if the **event-of-interest** is expected to be
2444 ongoing in the **area of concern** at **that time**. If the **event of interest** is expected to conclude
2445 before the **timing-of-responsibility period** ends, the **<expires>** element can alternatively be
2446 set to **the end timing of the larger event situation**, which - under most circumstances -
2447 would typically align with the **subject event** and the **event of interest’s** conclusion as
2448 analyzed ¹⁰³.
2449
2450

¹⁰³ Refer to the **OASIS Open Alerting Practices** family of **resources** for further **information** (forthcoming).

2451 11) The **<headline>** element typically contains a free text **headline** with the **named alert** as part
2452 of the headline: **<headline>flash flood warning in effect</headline>**.
2453

- 2454 a. **<headline>** may or may not be a fully formed sentence and should be devoid of
2455 capitalization and punctuation – aside from proper nouns and intrinsic punctuation
2456 such as an apostrophe as part of a name. Full sentence elements (such as
2457 **<description>** and **<instruction>**) should follow standard capitalization rules, while
2458 non-sentence elements (such as **<headline>** and **<event>**) should be treated as text
2459 snippets. These snippets may later be merged into larger structured text within
2460 presentations. **Capitalization** of text snippets is the **responsibility** of the
2461 **presentation agent** after the merging. The consuming agency should apply
2462 capitalization based on sentence structure rules once a complete sentence has been
2463 formed.
2464
- 2465 b. For further guidance on presentation practices, refer to the **OASIS Open Alerting**
2466 **Practices** family of documents.
2467

More Advanced Message (Event-based CAP elements with differences from the simple messaging highlighted in grey discussed):

```
<code>layer:OASIS-Open:ETL-LT:v2.0</code>
...
<info>
...
<category>Env</category>
<category>Safety</category>
...
<eventCode>
  <valueName>layer:OASIS-Open:ETL-LT:v2.0</valueName>
  <value>OET-080</value>
</eventCode>
<eventCode>
  <valueName>layer:OASIS-Open:ETL-LT:v2.0</valueName>
  <value>OET-082</value>
</eventCode>
<eventCode>
  <valueName>[other non-OASIS Open event code scheme reference]</valueName>
  <value>[other non-OASIS Open event code value]</value>
</eventCode>
...
<expires>[end timing of subject event]</expires>
...
<headline>flash flood warning in effect</headline>
...
</info>
```

- 2497 1) As per bullet 1 in the **simple** message, the **primary** event-type for this analysis of **baseline**
2498 **case example situation** is still the locally defined “flash flood”. Based on this **event type**,
2499 specific **CAP elements** can be **populated** using **stored values** associated with this event-type
2500
- 2501 2) The **secondary event-type** for this **example situation** is the **locally defined “flood.”** Based
2502 on this **event type**, specific **CAP elements** can be **populated** using **stored values** associated
2503 with this event-type. The **OASIS Open event-type code** for “flood” is **OET-082**. Such
2504 **secondary codes** may **optionally** be included in the **CAP message** and like the **primary**
2505 **codes** are linked to either the **subject event** and **larger alerting situation**.
2506
- 2507 a. The <eventCode> element is a **multi-instanced element**, meaning it can contain
2508 **instances from multiple event code schemes**. However, in some cases - such as this
2509 example - it may also include **multiple instances** from a **single event code scheme**.
2510 See the later **CAP Consuming Process** discussion for this **baseline case example**
2511 **situation** for a discussion on this point and why it is an **advantage to advanced**
2512 **systems**.
2513
- 2514 b. The **primary event-of-interest <eventCode>** for each **event code scheme** should be
2515 **placed first** in the **CAP file**. While this is **not a requirement** of **XML** or **data**
2516 **management**, it is a **practical consideration**; some **consuming systems** only process
2517 the **first code** they encounter and do **not search further**. By ensuring the **primary**
2518 **event-of-interest code** appears **first**, it increases the likelihood that it is **successfully**
2519 **identified** by these consuming processes ¹⁰⁴.
2520

¹⁰⁴ This **ordering recommendation** extends beyond the <eventCode> element. For **any multi-instanced element or group**, the **most important instance** should always be **placed first** to help consuming systems that may not be able to handle more than one instance. For further guidance, refer to the **OASIS Open Alerting Practices family of resources** (forthcoming).

Fully Advanced Message (Event-based CAP elements with differences from the simple and more advanced messaging highlighted in grey):

```
<code>layer:OASIS-Open:ETL-LT:v2.0</code>
...
<incidents>[incident ID (i.e. EMS-001)]</incidents>
...
<info>
...
<category>Other</category>
<category>Env</category>
<category>Safety</category>
<event>emergency evacuation</event>
...
<eventCode>
  <valueName>layer:OASIS-Open:ETL-LT:v2.0</valueName>
  <value>OET-XXX</value> /* evacuation */
</eventCode>
<eventCode>
  <valueName>layer:OASIS-Open:ETL-LT:v2.0</valueName>
  <value>OET-XXX</value> /* emergency */
</eventCode>
<eventCode>
  <valueName>layer:OASIS-Open:ETL-LT:v2.0</valueName>
  <value>OET-080</value>
</eventCode>
<eventCode>
  <valueName>layer:OASIS-Open:ETL-LT:v2.0</valueName>
  <value>OET-082</value>
</eventCode>
<eventCode>
  <valueName>[other non-OASIS Open event code scheme reference]</valueName>
  <value>[other non-OASIS Open event code value]</value>
</eventCode>
...
<onset>[current publish time]</onset>
<expires>[end timing of concern]</expires>
...
<headline>emergency evacuation order in effect</headline>
...
</info>
```


- 2563
- 2564 1) Unlike bullet 1 in the **simple** and **more advanced** messages, the **primary** event-type for this
- 2565 analysis of the **baseline case example situation** is the locally defined “emergency
- 2566 evacuation”. Based on this **event type**, specific **CAP elements** can be **populated** using
- 2567 **stored values** associated with this event-type.
- 2568
- 2569 2) In the **fully advanced** message, the **secondary event-types** for this **example situation** are
- 2570 the **locally defined “flash flood”, “flood”, and “emergency”**. Based on these **event types**,
- 2571 specific **CAP elements** can be **populated** using **stored values** associated with these event-
- 2572 types. These **secondary codes** may **optionally** be included in the **CAP message** and like the
- 2573 **primary codes** are linked to the **subject event** and **larger alerting situation**.
- 2574
- 2575 3) In the **fully advanced** message, an **examination** of the **OASIS Open Event Terms List**
- 2576 indicates that the most suitable **event-type match** for this **subject event** is “**evacuation.**”
- 2577 The **OASIS Open event-type code** for this situation is **OET-XXX** and the **OASIS Open CAP**
- 2578 **Category** assigned to “**evacuation**” is “**Other**”. Additionally, the listed **OASIS Open**
- 2579 **subcategories** for this event type include “**other**”. These **categories and subcategories** were
- 2580 determined by **OASIS Open** when incorporating “**evacuation**” into the **OASIS Open Event**
- 2581 **Terms List** ¹⁰⁵.
- 2582
- 2583 a. Additionally, the secondary alert-worthy events that helped devise and form the
- 2584 subject event, the “**flash flood**”, “**flood**”, and “**emergency**”, are also checked for an
- 2585 **OASIS Open event-type code**. The **OASIS Open event-type code** for **emergency** is
- 2586 **OET-XXX** and the **OASIS Open CAP Category** assigned to “**emergency**” is “**Other**”.
- 2587 Additionally, the listed **OASIS Open subcategories** for this event type include
- 2588 “**other**”.
- 2589
- 2590 4) Like bullet 4 in the simple message, the three <**category**> elements, in this example, are
- 2591 populated with “**Other**”, “**Env**” and “**Safety**”. The alerting agency policy had selected
- 2592 “**Other**” previously as the **CAP category** value to store with their locally defined **emergency**
- 2593 **evacuation**.
- 2594
- 2595 5) The <**event**> element, in this fully advanced **baseline case example situation**, is populated
- 2596 with the **locally defined “emergency evacuation.”** The <**event**> element **sources** its value
- 2597 from the **subject event**.
- 2598
- 2599 a. In this instance, the **local event term “emergency evacuation”** and the **OASIS Open**
- 2600 **term “evacuation”** are **not identical**. The local term “emergency evacuation” should
- 2601 appear in the **CAP message** <**event**> while the **OASIS Open** term can be obtained, if

¹⁰⁵ Refer to the **OASIS Open Event Terms List - Lookup Table** resource for more **information**.

- desired, by consumers using the **OASIS Open** based `<eventCode>` element values and indexing the values into the **OASIS Open Event Terms List – Lookup Table**.
- b. If no local term is available, or if the alerting agency uses the **OASIS Open Event Terms List** as provided, the terms would then match.
- 6) Other terms that are **not** recommended for the `<event>` element include.
- a. “**evacuation warning**”, as this is an incorrect reference to a named alert, not the event-type
- b. “**evacuation event**”, as this is not the look and feel of the **OASIS Open** recommended event-type naming format. The recommended format does not include the word “**event**”.
- c. “**evacuation alert issued**”, as this an incorrect reference to the **alert**, not the **event**. Such text is more appropriate to a headline, not the event-type in the `<event>` element.
- 7) Refer to bullets 7 and 8 in the **simple** message section as they apply.
- 8) The corresponding `<eventCode>.<value>` element to the `<eventCode>.<valueName>` of “**layer:OASIS-Open:ETL-LT:v2.0**” in the `<eventCode>` group element in this simple **baseline case example situation** is populated with **OET-XXX** for evacuation.
- a. The other `<eventCode>` group elements, based on the same **OASIS Open** event typing scheme, can be populated in a similar fashion with **OET-XXX**, **OET-080** and **OET-082** as shown in the fully advanced example **CAP** message above.
- b. See sub bullets 2a and 2b in the previous more advanced section above as they apply.
- 9) Refer to bullets 10 and 11 in the **simple** message section as they apply here.
- 10) The `<incidents>` element should be populated with an **incident ID** or **incident name**, if available, in accordance with the **CAP standard**. If an **incident identifier** is provided by the **alerting agency** or a **partner agency**, it enables **consuming agencies** to **cross-reference** alert messages across different organizations, ensuring they are recognized as part of the **same incident situation**.

2642 11) The optional <onset> element is populated with the start time of the **subject-event**.

- 2643
- 2644 a. **If present**, it will happen to match the start time of the intersection period of the
- 2645 **evacuation event-of-interest** to the **area-of-concern** simply because the agency is
- 2646 **using** the published alert message to **initiate** the **evacuation event**. As it matches
- 2647 the publish time of the message, the <onset> element could be omitted from the
- 2648 **CAP** message on the understanding that the immediate response to the message
- 2649 would already be for the audience to begin evacuating.
- 2650
- 2651 b. For **moving events** - though not **applicable** to this **evacuation scenario** - the <onset>
- 2652 element may not be **meaningful** for all locations within the **area of concern**. As a
- 2653 result, it is often **omitted** in such cases. However, in the case of an **ordered**
- 2654 **evacuation** - where different **sections of town evacuate sequentially** - the <onset>
- 2655 element should reflect the **timing of the first evacuation area**. And then
- 2656 additionally, the <discussion> element would be **recommended** as the appropriate
- 2657 place to **detail the evacuation sequence** for the remaining areas, including the
- 2658 **specific timing** for the other areas.
- 2659

2660 12) The <headline> element typically contains a **free-text headline** that includes the **named**

2661 **alert** within it (i.e. <headline>**emergency evacuation order in effect**</headline>).

2662

4.2.5 CAP Consuming Process

CAP subject-event: primary flash flood (simple process), primary flash flood with secondary flood (more advanced process), primary evacuation with secondary emergency, flash flood and secondary flood (fully advanced process)

OASIS Open Event Term: flash flood, flood, evacuation, emergency

OASIS Open Event Term Code with CAP categories: flash flood (OET-080; Environmental, Safety), flood (OET-82; Environmental, Safety), evacuation (OET-XXX; Other), emergency (OET-XXX)

Simple Message (Event-based CAP elements):

Refer to the **Simple Message** as exemplified in the **CAP Originating Process**.

1) The **<code>** element is a **courtesy** element for the consuming agent, declaring for the agent that the **CAP** message to follow includes **special handling** elements that **conform** to the **rules** of a specific **layer** or **profile**. The **<code>** element can be ignored by consuming agencies, however, consuming agencies that make use of them are able to realize the benefits they provide. Refer to the fully advanced message section below for details.

a. Supplying the **<code>** element is a simple messaging activity for originators while processing the **<code>** element is an advanced messaging activity for consumers.

2) The **<category>** element is a multi-instanced element in CAP, and in this simple baseline case example, it has a multi-instance usage. The two **CAP <category>** elements in this example are populated with “**Env**” and “**Safety**”.

a. If **<category>** element filtering is deployed, the **CAP** consuming agent is recommended to process the message further simply by having at least one of the **<category>** values match one of their categories of interest.

b. They could **filter** this message for specific **CAP category** based **processing**, based on one or all of the CAP **categories** of interest that has a match.

c. They could **route** this message further down the **path of distribution**, based on one or all of the CAP **categories** of interest that has a match.

d. They could **present** the message (**reformatted** for presentation) to an audience based on any consuming agency **special presentation** rules they may have for one or more of these **<category>** values.

- 2702
- 2703 3) The **<event>** element is populated with the value **“flash flood”** - a **free-text element**
- 2704 obtained from the **event-type** on file with the originating agency. This value is **intended for**
- 2705 **the audience**, and the consuming **agent’s role** is simply to **pass it through** and **present it**
- 2706 without modification.
- 2707
- 2708 a. The **OASIS Open EMTC recommends** that agents **do not filter or route** the CAP
- 2709 message based on the **<event>** element. This element is a **free-form, audience-**
- 2710 **based display element** and is **not guaranteed** to adhere to a **standardized set of**
- 2711 **values**.
- 2712
- 2713 b. The **OASIS Open EMTC recommends** presenting the **<event>** element **as is**, without
- 2714 modification, while optionally including a **lead-in text snippet** such as: **“Event type:”**
- 2715 leading to **“Event type: flash flood.”** From the **CAP standard perspective**, this
- 2716 information aims to **identify the event-type**, rather than describe the **specific**
- 2717 **occurrence of the event** ¹⁰⁶.
- 2718
- 2719 i. If the **<event>** element were to contain something like **“gale force wind”**, the
- 2720 suggested **OASIS Open** event-type would be given as **“wind.”** **OASIS Open**
- 2721 does not incorporate **externally managed scale-based typing schemes**,
- 2722 however, the originator is free to describe the **<event>** for the audience with
- 2723 terms that best fit their service ¹⁰⁷.
- 2724
- 2725 4) The optional **<eventCode>** element is populated in this example case with the **OASIS Open**
- 2726 **event-type code** for **flash flood**. A **CAP consuming agent** - by detecting a **matching flash**
- 2727 **flood <eventCode>** within its list of **event codes of interest** - would continue to process the
- 2728 message.
- 2729
- 2730 a. They could **filter** and/or **route** the message for processing and delivering the
- 2731 message further down the **path of distribution**.
- 2732
- 2733 b. They could present the message (reformatted for presentation) to an audience
- 2734 based on any consuming agency special rules this **<eventCode>**.
- 2735

¹⁰⁶ The **presentation** should not **misrepresent** the **event type** as the **actual event**, even though they often **share the same text**. Audiences should **not be conditioned** to expect the **event type** to directly indicate the **specific incident**. If **CAP originators** mix these two usages, it may lead to **confusion over time** and **weaken interoperability** within the alerting process.

¹⁰⁷ Refer to the **OASIS Open Event Terms List - Spectrum Analysis** resource for further insights.

- c. Relying on **keyword searches** within a **human-oriented alert message** can result in **processing failures**. Using **event codes** ensures **efficient filtering** and **reliable identification** of relevant events-of-interest.
- 5) The **<expires>** time marks the **point-in-time B** when the **alert notification signal** should be **discontinued**, as per instruction from the **CAP originating agency**. If **<expires>** is provided, it is set at **point-in-time A** (the time of **publication**) to some future **point-in-time B**, with the expectation that the **CAP message** will expire at **point-in-time B**, or be **superseded** by a newer, updated message, prior to **point-in-time B**.
- a. This superseding aspect is a hard rule in CAP. It effectively **resets** the existing and active alert notification signal to a **new <expires> time**. The signal continues and the carried information changes. It has been adjusted to remain **current and actionable**¹⁰⁸.
- b. If the **<expires>** time is reached before a new message arrives, the existing message presentation should be **discontinued**. Some originators let messages self-expire without a new message to formally **end** the **alert notification signal**.
- 6) The **<headline>** element is a **free-form** snippet of **text element** intended for the target **audience**. The consuming agent's role is to incorporate it into a presentation with some modification¹⁰⁹. The **<headline>** element should arrive **devoid of capitalization** and **punctuation** – aside from proper nouns and intrinsic punctuation (i.e. an apostrophe or hyphen as part of a name).
- a. **<headline>** text snippets may be merged into larger structured presentations. **Capitalization** of text snippets is the **responsibility** of the **presentation agent** based on sentence structure rules once a complete structured presentation has been formed.

¹⁰⁸ Refer to the **OASIS Open Alerting Practices** family of resources for further insights (forthcoming).

¹⁰⁹ For more on presentation practices, see the **OASIS Open Alerting Practices** family of documents (forthcoming).

More Advanced Message (Event-based CAP elements):

Refer to the **More Advanced Message** as exemplified in the **CAP Originating Process**.

- 1) The CAP consumer processes the **More Advanced Message** in the same manner as processing the **Simple Message**. In this process, however, the CAP consumer will find two <eventCode> values from the **OASIS Open Event Terms List**.
- 2) The two **OASIS Open** <eventCode> elements are populated - one with the **event-type code** for **flash flood**, and another with the **event-type code** for **flood**. A **CAP consuming agent** - upon detecting **one or more matching <eventCode> values** within its **event codes of interest** - would continue to **process the CAP message** in accordance with their **standard processing procedures**.
 - a. The goal is to **simplify the originating and consuming processes**. The originating agency includes the two that apply to the subject event, and the consuming agency looks for event-types of interest to them. The **OASIS Open EMTC** recommends the consuming agency take each <eventCode> in-turn and checks their own list for a match, and if at least one code of interest is found, they continue processing the message.
 - i. If the CAP originating agent includes only one instance of the <eventCode> element, the in-turn process is not compromised. Many CAP originators think to put only one instance into a CAP message.
 - ii. A **CAP consuming agent's ability** to rely on a **CAP originating agent** to put at least one instance into the CAP message is **based on mutual agreement**. Such agreements are typically established between **partner organizations** and are **reinforced within CAP** through the **use of layers and profiles**¹¹⁰. With the presence of the **OASIS Open Event Terms List**, agreements can be made upon a pre-existing and maintained list to reduce the work effort to establish such a list.

¹¹⁰ Refer to the **OASIS Open Alerting Practices family of resources** for detailed guidance on **layers and profiles**.

Fully Advanced Message (Event-based CAP elements):

Refer to the **Fully Advanced Message** as exemplified in the CAP Originating Process.

- 1) The CAP consumer processes the **Fully Advanced Message** in the same manner as processing the **More Advanced Message**. In this process, however, the CAP consumer will find four `<eventCode>` values from the **OASIS Open Event Terms List**.
- 2) Four **OASIS Open** `<eventCode>` elements are populated - one with the **event-type code for evacuation**, one with the **event-type code for emergency**, another with the **event-type code for flash flood**, and a fourth with the **event-type code for flood**. A **CAP consuming agent** - upon detecting **one or more matching** `<eventCode>` values within its **event codes of interest** - would continue to **process the CAP message** in accordance with their **standard processing procedures**.
 - a. The goal is to **simplify the originating and consuming processes**. The originating agency includes the four that apply to the subject event, and the consuming agency looks for event-types of interest to them. The **OASIS Open EMTC** recommends the consuming agency take each `<eventCode>` in-turn and checks their own list for a match, and if at least one code of interest is found, they continue processing the message.
- 3) The `<incidents>` element is **optional** and serves as a mechanism for **consuming agencies** to **cross-reference alert messages** that pertain to the **same incident event**. While primarily used to **link messages from different agencies**, it can also apply to **multiple alerts** issued by the **same agency** for a **single incident**. For example, if the **flash flood, flood, and evacuation event situation**, was to be conducted as three separate alerts, they could be **tied together** by assigning them the **same** `<incidents>` value, ensuring a means to cross-reference the related alerts ¹¹¹.
- 4) The `<onset>` element, when present, specifies the **start time** of the **subject event**. It does not have a complimentary timing element for the **end time** of the **subject event**. `<onset>` should be presented as a **distinct value**, similar to **event type** and **headline** (i.e. **“Event start timing: [onset time]”**). The **phrasing and formatting** of the `<onset>` time should be **adjusted** by the **CAP consuming agent** to ensure it is **more audience-friendly** than the existing standard format for this CAP element ¹¹².

¹¹¹ See the **OASIS Open Alerting Practices** family of resources for more on `<incidents>`.

¹¹² The `<effective>` and `<expires>` elements are for alert signal start and end timing, not **event** start and end timing.

2833 5) The <headline> element is processed the same as in the simple CAP message, except it will
2834 likely have a different value based on a different primary event-of-interest.

5 Event Situations

*This section will be generated with example situations to demonstrate many of the concepts discussed in the **OASIS Open Event Terms List - User's Guide** and the **OASIS Open Event Terms List - Concept Guide**. As an unfinished section, and as part of this Public Review stage, work will be taken to expand the section during the Public Review process. New example content will either be inserted here, as part of this **Users' Guide**, or placed into the **Concept Guide**. The provided examples will run the spectrum of simple to fully advanced involving many different event-types.*

Appendix A: Acknowledgments

A.1 TC Participants

The following individuals were members of the EMTC during the creation of this document and their oversight and guidance are gratefully acknowledged:

Elysa Jones	Individual
Gary Ham	Individual
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A.2 CAP Subcommittee Participants

The CAP Subcommittee is Chaired by Jacob Westfall who has led the committee in the development of this Public Review Committee Note. The tireless efforts of Thomas Wood and Norm Paulsen supported by lead editor Rex Brooks have made this document possible. The following individuals have participated in the subcommittee creating this lookup table reference and are gratefully acknowledged:

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A.3 Special Thanks

The Committee would like to acknowledge the assistance provided to the work of the initial CN from:

Frank Bell	Kybernetix
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Appendix B: Revision History

Revision	Date	Editor	Changes Made
01	01-10-2025	Norm Paulsen	First Complete Public Review Draft
02			
03			
04			
05			