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The ACP Theory for Industry Agnostic Emergency Preparedness & Management

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ABSTRACT

Global climate change is real. Gun violence in the United States is endemic and unfortunately, a regular part of life. Flash mob crime is trending. Pandemics continually prove they will return deadlier. As humans expand on planet Earth, we encroach on areas which have not been exposed to human touch. The Earth, much less the universe, has proven it can and does host extinction events on a recurring basis. That said, humans have to live, work, and hopefully thrive in a tenuous world and the consequences of natural and or human actions associated with their (human) existence. Emergency & Risk Management as a coping mechanism is not in step with natural and current societal changes. Thus, a new way to address crisis and consequence is needed, such as the Adaptive Contingency Process Theory or ACP.

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Introduction

Global climate change is real. Gun violence in the United States is endemic and unfortunately, a regular part of life. Flash mob crime is trending. Pandemics continually prove they will return deadlier. As humans expand on planet Earth, we encroach on areas which have not been exposed to human touch. The Earth, much less the universe, has proven it can and does host extinction events on a recurring basis. That said, humans have to live, work, and hopefully thrive in a tenuous world and the consequences of natural and or human actions associated with their (human) existence. Emergency & Risk Management as a coping mechanism is not in step with natural and current societal changes. Thus, a new way to address crisis and consequence is needed, such as the Adaptive Contingency Process Theory or ACP.

Unlike most Emergency/Contingency Management models, the ACP was developed, modelled, and has been theorized from real-world situations. The main drivers of the theory focus on actions and or experiences from failure to adequately address and account for, the unknown, identity, concurrency, multiplicity, influencing forces, threat / risk movement and threat / risk power. Again, this is a new way of thinking about Emergency and Safety Management. Before we get into the critical parts of the ACP let's look at how it is organized.

The ACP Follows the KISS Principle of Keeping it Simple… That Said, the ACP Uses and is Composed of:

- A Hazards Threat / Risk Vulnerability Matrix
- Four Phases referred to as
- Identify
- Adapt
- Control
- Adjust

An ACP Overlay a.k.a. Threat Evolution Risk-Chain for Each Identified Threat / Risk Vector or TRV Which Consists of:

- The Phases of the ACP as Iterations
- Monitored EFTFs or Environmental Factors & Time Factors
- Perceived & Predicted T/R Vectors (TRV) States (forces of pressure)
- Perceived & Predicted T/R Vectors (TRV) Kinetics (forces of movement)
- Perceived & Predicted T/R Vectors (TRV) Magnitudes (forces of potential energy)

These components of the ACP attempt to provide some modicum of understanding the "pressure" leading to "energy", "velocity" or "movement" or "flow" in and outside the perceived Threat / Risk Vector (TRV) as it evolves into a real and tangible threat / risk that is ready and capable of releasing its "energy" on a business, a person, people, and or property.

This is the Structure of the ACP as Depicted by the Figure 1. Diagram Below.

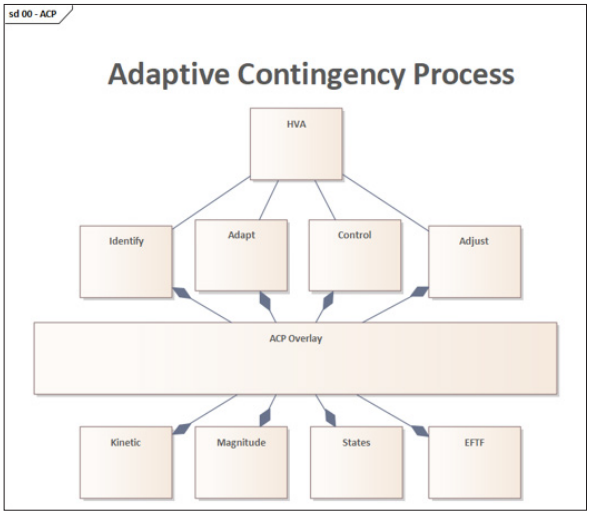

Figure 1

The following are two (2) real-world scenarios which highlight the importance of the ACP Theory. Briefly, in the Emergency and or Safety Manager role, we know the only constant is change. An Emergency Operations Plan may not be as effective as one thinks and Emergency and Safety Managers may have to adapt the plan and associated behavior in real-time. Take for example the case of the US Airways Flight 1549 Inflight Emergency or (IFE). When a large bird-strike turned this Air Bus jet into essentially a glider, one of the first and immediate actions for the captain was to depart or partially depart from the checklist (taboo) and immediately prioritize and adapt his actions to his changing situational state. The first of which was powering on the aircraft's APUs or Auxiliary Power Units normally used on the ground to generate power. Why? The captain understood that in a fly-by-wire aircraft, electricity was paramount to stay in a controlled flight. Loss of both engines (dual engine failure) that normally supplied electric power for the flight controls, control surfaces, instruments, and avionics, meant the aircraft needed a different source of power ASAP – hence, Captain Sullenberger started the APUs inflight that were low or not on the checklist for his type of emergency. Case and point; very few things in life stay the same or develop as expected. Often, they change. Therefore, Emergency and or Risk Managers need to continually adjust with adaptive critical thinking facilitated by a means of addressing changing elements and situations in real-time. This is a dynamic behavioral model and not a static structural model. In the extreme example case of Flight 1549 Captain Sully Sullenberger and his co-pilot immediately became the airborne Emergency Managers with severely limited resources Identified and Evaluated their current State, Adapted their posture to the situation, brought some means of Control into their environment as best they could, and Adjusted operations to their new circumstances; all influenced by that pesky and most important "never seen" present forces of Environmental and Time Factors (EFTF) affecting the situation. The result of Sullenberger's and his copilot's cockpit crew actions turned a "Worst Case Scenario" inro a "Best Case Scenario," the results of which were evidenced in the saving not only their lives, but the lives of everyone on the plane through sacrificing a multimillion-dollar corporate investment i.e. the plane itself.

Now, let's very take a high-level look at a scenario where the outcome was not as spectacular and resulted in the loss of life, property, and business capability. In this examination cited is the 1982 Alpine Medows Avalanche which was a vastly different type of emergency born of a vastly different type of threat / risk. Yet both threat / risks had the same prevalent "never seen" force or forces that changed everything. This disaster was more predictable, had a sense of preparedness by affected personal (or so the affected assumed), took longer to develop, and had more planned resources at its (the emergency) disposal than those of Flight 1549 and had a drastically different outcome. Why? The presence of Environmental Factors and Time Factor or forces (EFTFs) were common to both scenarios. In the case of Flight 1549, the EFTFs once presented and accounted for, were stable and not rapidly changing much with the exception of the loss of altitude (environment) over very short time. With Alpine Meadows, the EFTFs were changing rapidly, not adequately accounted for, but over a longer period of time. Thus, we compare the EFTFs in both these cases. In the case of Flight 1549 the Environmental Factors or forces after the initial bird-strike event were addressed adaptively and made relatively stable by the aircrew's quick actions. The Time Factor or force to TRV release was rapidly changing i.e. decreasing. In the case of Alpine Meadows, the Environmental Factors were also constantly changing from the storm's increased snow deposits as was the event Time Factor, but stretched out over longer a period and were not addressed adaptively. The time to TRV energy release was also decreasing but at a slower rate. Summarily, one had a longer developing TRV in this scenario that ultimately led to the release of TRV energy and the tragic loss of seven (7) lives as opposed to a shorter and faster developing Flight 1549 TRV scenario where the outcome was as optimal as one can get. Common in both, were TRVs, EFTFs, Phases, States, Kinetics, and Magnitudes resulting in different outcomes.

These two (2) scenarios highlight the reasons behind the development theory of the ACP. The ACP is primarily concerned with a posture of being actively prepared to Identify and Adapt to changing conditions affected by EFTFs regardless of the Contingency. Additionally, the ACP emphasizes the capability to apply some modicum of Control to a sub optimal situation while verifying the States of the TRV to provide a reasonable situational understanding of a TRV's probable State while transitioning toward a release of its stored Energy. This also includes recognition of fine and continuous Adjustments to actions before, during, and after an event. At the conclusion of events, both scenarios resulted in the release of TRV energy as noted. The latter case had a longer period of which to respond to the event i.e. taking longer to develop, with the outcome being significantly worse.

The ACP (shown in figure 2) is inclusive of an ACP Overlay a.k.a. Threat Evolution Risk-chain for a Cyber Threat / Risk event which is a hybrid TRV in that it has human and technology sides.

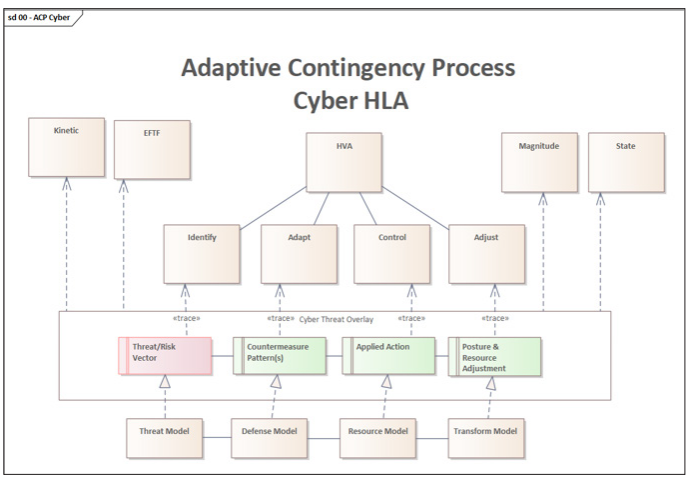

Figure 2

In this diagram, we see all the basics of the ACP applied to a Cyber event. This diagram as implemented uses the Unified Modeling Language or UML to communicate ACP enhancement through a visual semantic notation. In essence, the open arrowhead dotted lines specify dependencies and the closed arrowhead lines specify behavior. Solid lines depict associations and diamond adornments (figure 1.) show composition i.e. "composed of." The way one can read figure 2 is the ACP Cyber Overlay has dependencies on the elements of the ACP which are associated with a Hazard Vulnerability Assessment or HVA. Also identified by the ACP Cyber Overlay a.k.a. Threat Evolution Risk-chain is the predicted behavior of TRV in TRV States, EFTFs, TRV Kinetics and the TRVs Energy or Magnitude. The TRV in the ACP Overlay specifies the behavior of the Threat Model as do the Countermeasures, Applied Actions, Posture and Resource Adjustment requirements specify the behaviors in the Defense Model, Resource Model and Transform Model respectively. For each Phase and TRV State specified in the ACP Overlay the ACP Practitioner iterates through the Identify, Adapt, Control, Adjust phases of the ACP for (x) iterations. As the ACP itself is agnostic, each ACP Overlay helps to customize the understanding, progression, regression (valving), suggested action(s) while predicting a specific ACP Threat / Risk or TRV's release of energy.

The ACP can account for any Threat and any Risk. The ACP is a continuous process which requires critically thinking practitioners as it implies…change. At this writing, the ACP has accounted for eight (8) human associated potential Threat / Risk Overlays, nine (9) natural potential Threat / Risk Overlays, and (2) hybrid human associated potential Threat / Risk Overlays. The ACP has and is currently in use by reputable organizations on simulated and real-world events. In conclusion, the ACP promotes Critical Thinking, Decision Making, EFTF Understanding / Prioritization, Task Shedding, and Collaboration for successful outcomes during a singular event or multiple events.

Conflicts of Interest Disclaimer

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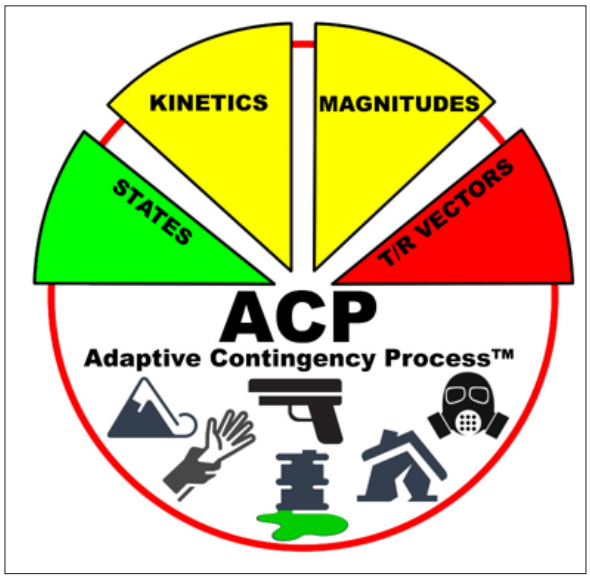
The Adaptive Contingency Process



References

1. Wodtke C (2016) Sully Speaks Out. History Net https://www.historynet.com/sully-speaks-out/.
2. Tikkanen A (2025) US Airways flight 1549. Britannica https://www.britannica.com/topic/US-Airways-Flight-1549-incident.
3. Unknown M (2022) The Legacy Of Alpine Meadows: The 1982 Avalanche. Unofficial Alpine https://unofficialalpine.com/?p=16595.
4. Heywood L (1998) The Alpine Meadows Road Avalanches, Realestate and Politics. Snow Science https://arc.lib.montana.edu/snow-science/objects/issw-1998-432-438.pdf.
5. Skogen A (2022) Remembering the 1982 Alpine Meadows, CA Avalanche That Killed Seven, 40 Years Later. Snow Brains https://snowbrains.com/40-years-remembering-the-1982-alpine-meadows-avalanche-that-killed-i2/.
6. Foust D (2009) US Airways: After the 'Miracle on the Hudson. Bloomberg Businessweek https://www.bloomberg.com/news/articles/2009-02-18/us-airways-after-the-miracle-on-the-hudson.
7. Think Reliability (2016) Flight 1549 "Miracle On The Hudson" Cause Map. Think Reliability https://blog.thinkreliability.com/flight-1549-miracle-on-the-hudson-cause-map.
8. NTSB (2010) Loss of Thrust in Both Engines After Encountering a Flock of Birds and Subsequent Ditching on the Hudson River. Accident Report https://i2.cdn.turner.com/cnn/2016/images/09/07/flight.1548.ntsb..pdf.
9. Pennington D (1986) The Alpine Meadows Avalanche Trial: Conflicting Viewpoints of the Expert Witnesses. Montana State University https://arc.lib.montana.edu/snow-science/item/599.
10. Francovich E (2022) Survivor of deadly 1982 in-bounds avalanche critiques, praises documentary playing in Spokane. The Spokane Review https://www.spokesman.com/stories/2022/oct/13/survivor-of-deadly-1982-in-bounds-avalanche-critiq/.