# *Examples of user-defined Performance / Operational Monitoring, Situational Awareness & Early Warning FirstWatch Triggers.*

A FirstWatch Trigger is a representation of <u>data</u> based on a set of user-defined data filter <u>criteria</u> using one or more FirstWatch <u>analytical methods</u>. An authorized FirstWatch user can view and run ad-hoc data analyses by logging on to the secure FirstWatch Subscriber web-site. Some Triggers can be configured to send alerts (such as emails) when a set of <u>alerting criteria</u> are met.

A FirstWatch Trigger draws data from one or more Data Sources (like: CAD, ProQA, RMS and ePCR). Typically data is consumed as Events. Each Event is uniquely identified (e.g. event ID) and has an Event Date-Time stamp. Each event can be supplemented with additional event information (e.g. event location information, event comment, etc).

Trigger criteria are defined based on the event information gathered from and supported by the data. The following describes some FirstWatch Trigger Analytical methods, which can be standard or custom based triggers.

1. Choice(s) of Analytical Methods:

    a. **Trends and Patterns Analyses –** applicable to Early Event Detection, Syndromic Surveillance, Situational Awareness; can choose a combination of these three analytical methods:
        i. **Actual Events/Event Count Analysis -** an analysis of event count tally verses an alert threshold which is calculated based on the historical events.
        ii. **Syndrome-To-All Analysis –** an analysis of event count tally with and without the Trigger Criteria.
        iii. **CUSUM Analysis –** Cumulative Summary method another analysis of event count tally verses an alert threshold.

    b. **Sentinel Event Detection/Situational Awareness –** applicable to Event Detection in particular, this analysis treats each event as a sentinel incident.

    c. **Time Compliance Analysis –** applicable to Performance and Operational, this analysis compares the duration of two sets of date-time stamps with a time threshold.

    d. **Geo-Cluster / Geo-Fence Analysis –** applicable to detecting geographic trends by counts of qualified events within a specified diameter or within a defined geographic perimeter.

*The following list of FirstWatch Triggers for EMS, Fire, Police, Communication Centers and Public Health are compiled for the purposes of beginning to help potential customers define the Triggers (sets of user-defined data filter criteria) that will benefit their teams and other stakeholder groups.*

## Sample EMS Trigger Types

**Operational & Performance Triggers / Time Compliance Analysis:**

- o **Call Taker & Dispatch Times** – used to monitor in near real-time, the time it takes call takers & dispatchers to dispatch the initial call against a time standard.
    - o Detailed drill-downs can be enabled by Call Taker or Dispatcher – *requires optional Performance PLUS (PP) enhancement module*

- o **Out of Chute / Reflex / Out of Station** – used to monitor in near real-time, the time it takes units to go responding after they've been assigned/dispatched to an incident.
    - o Detailed drill-downs can be enabled by Unit, Station or Crew by shift – *requires optional PP enhancement module*

- o **Response Time** – used to monitor in near real-time, the response time for an incident. There are many variables to start and stop clock times.
    - o Detailed drill-downs can be enabled by Zone, Unit or Crew by shift – *requires optional PP enhancement module*

- o **Time on Task** – used to monitor in near real-time, the total time a unit is on a call from time assigned/dispatched to the time the go is available or the call is cleared.
    - o Detailed drill-downs can be enabled by Unit or Crew by shift – *requires optional PP enhancement module*

- o **Hospital Turn Around / Long Drop Times** – used to monitor in near real-time, the time it takes units to clear the hospital after they've transported a patient.
    - o Detailed drill-downs can be enabled by Unit or Crew or by Hospital – *requires optional PP enhancement module*

- o **Hospital Contracts Response Times** – used to monitor in near real-time, the time it takes to arrive based on hospital contract compliance.
    - o <u>Scheduled Calls</u> – arrived within a defined time standard based on contract and can be based on promised or requested times
    - o <u>On Demand Calls</u> – arrived with a defined time standard based on contract for non-scheduled calls.
    - o Can be by transport type ALS, BLS, CCT, PICU, NICU and by facility

- o **Other Operational (KPI), Command Staff or Supervisory Sentinel**

**EMS Sentinel Event Detection Triggers:**

- Operational Awareness
- Carbon Monoxide
- Death / Near Death
- Motor Vehicle Accidents
- Pedestrian / Bicycle / Motorcycle Accidents

- Juvenile Injuries
- Drowning / Pediatric Drowning
- Long Drop Times / Patient Off Load / Bed Delays
- Major Incident (based on call type and units assigned)
- Multiple Causality Incident (MCI)
- Stabbing, Shootings
- Police Standby
- EMS Crew Accident
- STEMI, Stroke, Cardiac Alerts
- Supervisory (based on call type)
- Airship Activated
- > X minute response times
- Response Times vs. User-defined (contractual) goals
- > X units responding
- Trauma
- Based on Location Type
- Public Order (Aircraft crash, Bomb Threat, Explosions etc.)
- Notifiable Disease
- Based on Free Text contained within the notes / narrative / comments
- Downgraded Responses
- Any Call Type supported by data within data sources interfaced


## EMS Transport / Hospital Status Board:

- By Region
- By Division
- Enroute & Arrived, by Hospital
- Custom views by logins
- Transfer of Care (TOC) timestamp capture (*requires optional TOC enhancement module*)
- Drill-down into individual Hospital (*requires optional TOC enhancement module*)

## Miscellaneous Triggers:

- Aggregated views – Is the combined data from two or more dispatch centers and two or more separate CAD systems creating a single aggregated view of all incidents being generated from both/all centers in the region.
- All Calls Views – by filtering certain criteria – for example a communications center may be contracted to dispatch for separate agencies and the agencies that they dispatch for may want their own views for calls in their area/agency.
- ePCR compliance – used to track completion of ePCR records for CAD incidents.

### *Notes on Triggers we would like to explore for EMS:*
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# *Sample Fire Trigger Types*

## Operational & Performance Triggers / Time Compliance Analysis:

- **Call Taker & Dispatch Times** – used to monitor in near real-time, the time it takes call takers & dispatchers to dispatch the initial call against a time standard.
    - Detailed drill-downs can be enabled by Call Taker or Dispatcher – *requires optional Performance PLUS (PP) enhancement module*

- **Out of Chute / Reflex / Out of Station** – used monitor to in near real-time, the time it takes units to go responding after they've been assigned/dispatched to an incident.
    - Detailed drill-downs can be enabled by Unit, Station or Crew by shift – *requires optional PP enhancement module*

- **Response Time** – used to monitor in near real-time, the response time for an incident. There are many variables to start and stop clock times.
    - Detailed drill-downs can be enabled by Zone, Unit or Crew or by Shift – *requires optional PP enhancement module*

- **Time on Task** – used to monitor in near real-time, the total time a unit is on a call from time assigned/dispatched to the time the go is available or the call is cleared.
    - Detailed drill-downs can be enabled by Unit or Crew or by Shift – *requires optional PP enhancement module*

- **Knock Down Times**
- **NFPA Compliance to National Goals & Standards** (NFPA 1710, etc)
- **Operational, Command Staff or Supervisory Sentinel**

## Fire Sentinel Event Detection Triggers:

- All Fire Calls
- Suspicious fire activity

    - Dumpster fire
    - Grass / Brush fire
    - Vacant building
    - Smoke investigation
    - Vehicle fire
    - Occupied Dwelling / Multi-floor
    - Boat fire
    - Tree Down
    - Arson / Arson Patterns
    - Fireworks
    - Tree into Power Lines
    - Transformer Fire / Pole Down
    - Illegal Burn
    - Explosions

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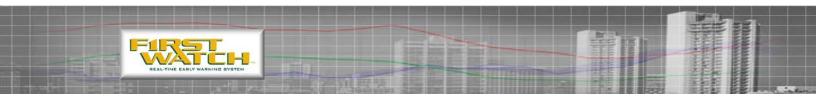
## Fire Situational Awareness Triggers

- 2nd Alarm / Multi-Alarm Fires
- All Active Fires
- Fire Near / Around High Treat / High Visibility Locations
- School Fires / Nursing Home / Hospital Fires
- Strike Team Assignment
- Bomb Threat
- Explosion
- Aircraft Fire
- Domestic Terrorism
- 1st Unit on Scene
- Homeland Security
- Heavy Rescue
- Hazmat / Chemical
- Task Force Request
- Arson Investigation
- Commercial Structure
- Residential Structure
- Swift Water Rescue
- > X Engines responding
- All Fires by City, County, State (aggregated views)

*Notes on Triggers we would like to explore for Fire Department:*

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# Sample Law Enforcement Trigger Types

### Operational & Performance Triggers / Time Compliance Analysis:

- **Call Taker & Dispatch Times** – used to monitor in near real-time, the time it takes call takers & dispatchers to handle / dispatch the initial call against a time standard.
    - o Detailed drill-downs can be enabled by Call Taker or Dispatcher – *requires optional Performance PLUS (PP) enhancement module*

- **Officer Initiated Calls for Service** – tracks proactive policing tasks (i.e. Traffic Stops, Motorist Assist, Field Interviews, Warrant service attempts.
    - o Detailed drill-downs can be enabled by Zone, Beat or by Unit– *requires optional PP enhancement module*

- **Response Time** – used to monitor in near real-time, the response time for an incident. There are many variables to start and stop clock times.
    - o Detailed drill-downs can be enabled by Zone, Unit or Crew or by Shift – *requires optional PP enhancement module*

- **Time on Task** – used to monitor in near real-time, the total time a unit is on a call from time assigned/dispatched to the time the go is available or the call is cleared.
  - o Detailed drill-downs can be enabled by Unit or Crew or by Shift – *requires optional PP enhancement module*

- **Calls within Sector or Zone** (A, B, C, D)

- **Demand Analysis / Demand Consumption – *requires enhancement module***

- **Operational, Command Staff or Supervisory Sentinel**

## Law Enforcement Sentinel Event Detection Triggers:

- Suspicious Activities
- Hot Prowl Sentinel
- Geo-Fence Robbery Sentinel
- Shots Fired
- Gang Activity
- Home Invasion
- Bomb / Explosion Sentinel – Free Text
- High Profile / Critical Infrastructure Location Sentinel
- Homeland Security Sentinel
- Major Incident Sentinel (>X units assigned)
- Amber Alert
- Officer Involved Incidents
- Shooting / Stabbing / Death
- Geo-Fence Sentinel - Critical Events Near School/Universities
- Pediatric Drowning
- Terrorism Sentinel
- Free-Text: particle plate / vehicle description / suspect name

## Law Enforcement Situational Awareness Triggers

- All Law Enforcement Calls
- Burglary
- Target Crimes / Murder
- Situational Awareness
- Robbery
- Strong Arm Robbery
- Armed Robbery
- DV Incident
- Home Invasion
- Commercial Break in
- Theft
- Hotel / Motel Break in
- Auto Theft
- Juvenile Crimes
- Narcotics
- Fights
- Prowler

## Law Enforcement Situational Awareness Triggers (cont)

- Gang Activities / Tagging
- Sex Crimes
- Suspicious Activity
- Transportation
- Shoplifting
- Hot Free Text Alert
- High Profile Location Situational Awareness
- Mass Casualty Incident (MCI) >X units on scene
- Public Order
- Changeable Address Search
- Address Alert - Schools

## Miscellaneous Law Enforcement Triggers

- Auto Theft Analysis
- Stolen Vehicle Recovery Analysis
- Capers Analysis
- General Nuisance Analysis
- Sex Crimes Analysis
- Vice Analysis
- Suspicious Activity Analysis

*Notes on Triggers we would like to explore for  Law Enforcement:*

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# *Sample Communication Center Trigger Types*

## Operational & Performance / Time Compliance Triggers:

- **Call Taker & Dispatcher Times** – used to monitor in near real-time, the time it takes call takers & dispatchers to handle their part of the call process against a Communications Center defined performance time standard.
  - o Detailed drill-downs can be enabled by Call Taker or Dispatcher – *requires optional Performance PLUS (PP) enhancement module.* This can also create the beginning of a web based Score Card for each Call Taker & Dispatcher.

- **ProQA Performance Monitoring** – used monitor to in near real-time, the time it takes units to go responding after they've been assigned/dispatched to an incident.
  - o Detailed drill-downs can be enabled by Unit, Station or Crew by shift – *requires optional PP enhancement module*

- **Response Times** – used to monitor in near real-time, the response time for Police, Fire & EMS incidents.  There are many variables to start and stop clock times.
  - o Detailed drill-downs can be enabled by Zone, Unit or Crew or by Shift – *requires optional PP enhancement module*
  - o *1st Unit on Scene for Police, Fire or EMS (ALS or BLS)*

- **Time on Task or Scene Times** – used to monitor in near real-time, the total time a unit is on a call from time assigned/dispatched to the time the go is available or the call is cleared.
  - Detailed drill-downs can be enabled by Unit or Crew or by Shift – *requires optional PP enhancement module*

## Communication Center Situational Awareness / Sentinel Triggers

- **Office of Emergency Management (OEM) / (DEM)**

- **Early Warning for Terrorism / Bioterrorism / Suspicious activities across entire operational area or multiple jurisdictions**

- **Special Geo-Fence Triggers for Special Events, including NSSE**

- **Hospital Status / EMS Transports / Diversion**

*Notes on Triggers we would like to explore for Communications Center:*

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# Sample Public Health - Syndromic Surveillance (SS) & Early Event Detection (EED) Trigger Types

Standard Public Health Related Triggers use FirstWatch standard analytical methods – Standard Deviation, Syndrome-To-All and CUSUM analysis statistical methods, in addition to geo-cluster and geo-fence GIS analysis methods.

- Respiratory
- Gastrointestinal
- Neurological
- Sudden Illness/Death
- Hemorrhagic
- Environmental (Heat/Cold)
- Toxic Exposure
- H1N1 Flu / ILI Symptoms (Influenza Like Symptoms)
- Rash, Measles, Mumps

*Notes on Triggers we would like for Public Health SS & EED:*

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All of the Sample FirstWatch Trigger Types & Ideas outlined above are examples based on customer / user-defined criteria and represent a combination of standard and custom FirstWatch Triggers as well as FirstWatch enhancement modules.* For specific ideas on FirstWatch Triggers that can be defined & configured based on data elements supported within your system and by data source interface(s) you have in mind, please contact your FirstWatch sales or operations representative. *FirstWatch Enhancement modules require additional fees to deploy, configure & support annually.*