

Organizing Data from Wildland Fire Reports

An Alternative Way to Associate Data Pertaining to:
Fire Occurrence Ignitions and Outcomes
Management Actions
Support Actions

Wildland Fire Reporting Data

Key Concepts

- Data elements should be tied to a unique ID(s)
 - Comprehensive data sets
 - Integration of systems
- What data are we collecting and how?
 - Better questions: What data do we need and why?
- Fires are inherently spatial and temporal events
 - Specific place (point of origin, burned area)
 - Specific time interval (start & end date/time)
- Outcomes are assessed at the end of events
 - But data starts to flow at the beginning of events

How Fire Data is Organized

Historic/Current Method

- Data elements tied to single Unique Identifier (UII, GUID)
 - Based on POO loc & discovery time
- No differentiation between:
 - Fire occurrence data
 - Fire mgmt/workload data
- Problems & shortcomings:
 - Duplicate reports (multiple units claim credit for work/outcomes)
 - Merged fires (multiple ignitions, 1 outcome)
 - Inconsistent re. mgmt data (strategies, successes)
 - Support Actions = junk data?

New Method?

- Separate occurrence data from mgmt/workload data
 - Occurrence data tied to:
 - Initiation: POO, start time
 - Outcome: Perimeter, out time
 - Temporary vs final outcomes
 - Mgmt/workload data tied to:
 - Initiation (e.g. IA) or...
 - Time interval relating to one or more outcomes (e.g. Large Fire phase encompasses several daily outcomes)
- Final outcome (perimeter, out time) serves as the ultimate Unique Identifier

A Different Way to Organize Fire Data

Taxonomy (Data Bins)

- Fire Occurrence
 - Initiation
 - Growth phases
 - Outcomes
- Incident Management
 - Management phases
 - Objectives & strategies
- Unit Workload
 - False alarms
 - Assists
 - Other support

Architecture (Primary Key)

- Relating to Point of Origin
 - Cause, POO attributes
- Relating to Polygons
 - Size, area attributes
 - Most mgmt & growth data
- Non-spatial
 - Other support

Status Indicators (& Metadata)

- Derived vs Entered
- Interim/daily vs Final
- Provisional vs Approved

Wildfire Events

(Data Elements Relate to Fire Occurrence)

Start as Ignitions

Ignitions are distinct spatial features, made unique by:

- Point: Lat/Lon coordinate
- Start (or Discovery) Date/Time

Inaugural data elements associated with an ignition:

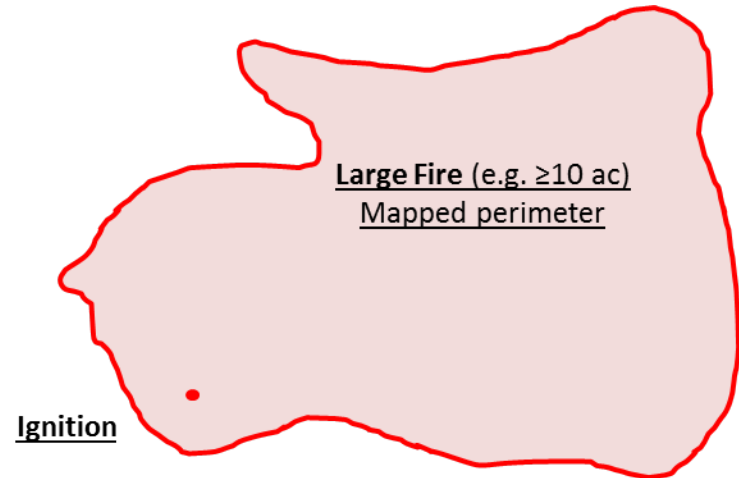
- Jurisdictional Unit ID
- Fire Number; Initial Fire Name
- Cause; Was Investigated?
- POO site attributes: FM, slope, etc
- Ignition Narrative
- etc

Ignition 

Small Fire (e.g. <10 ac)
Mapped perimeter

Or

Auto-generated (circle whose
area = reported final fire size)



End as Perimeters

Perimeters are distinct spatial features, made unique by:

- Perimeter: Geo-referenced polygon
- Extinction (or Out) Date

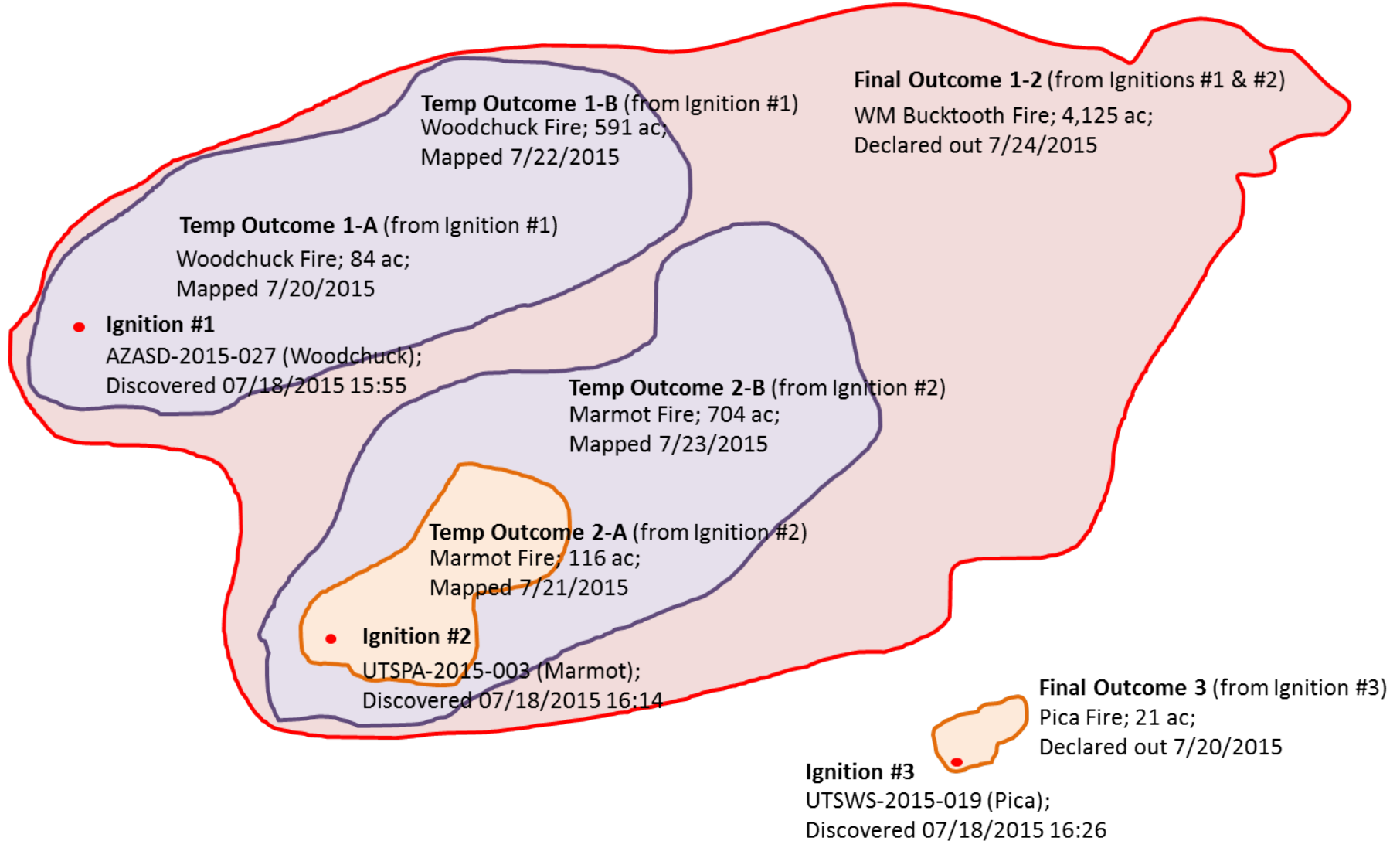
Outcome data elements associated with a final perimeter:

- Final Fire Name
- Final Size
- Max Complexity Level; Highest IMT Type
- Total Residences/Other Structures Destroyed
- Total Injuries/Fatalities
- Intersected WUI?
- Predominant area attributes: FM, slope, et
- Final Outcome Narrative
- etc

A Perimeter Can Be The Outcome of Multiple Ignitions

(or, most commonly, just one ignition)

The Final Outcome is the Last Recorded Perimeter



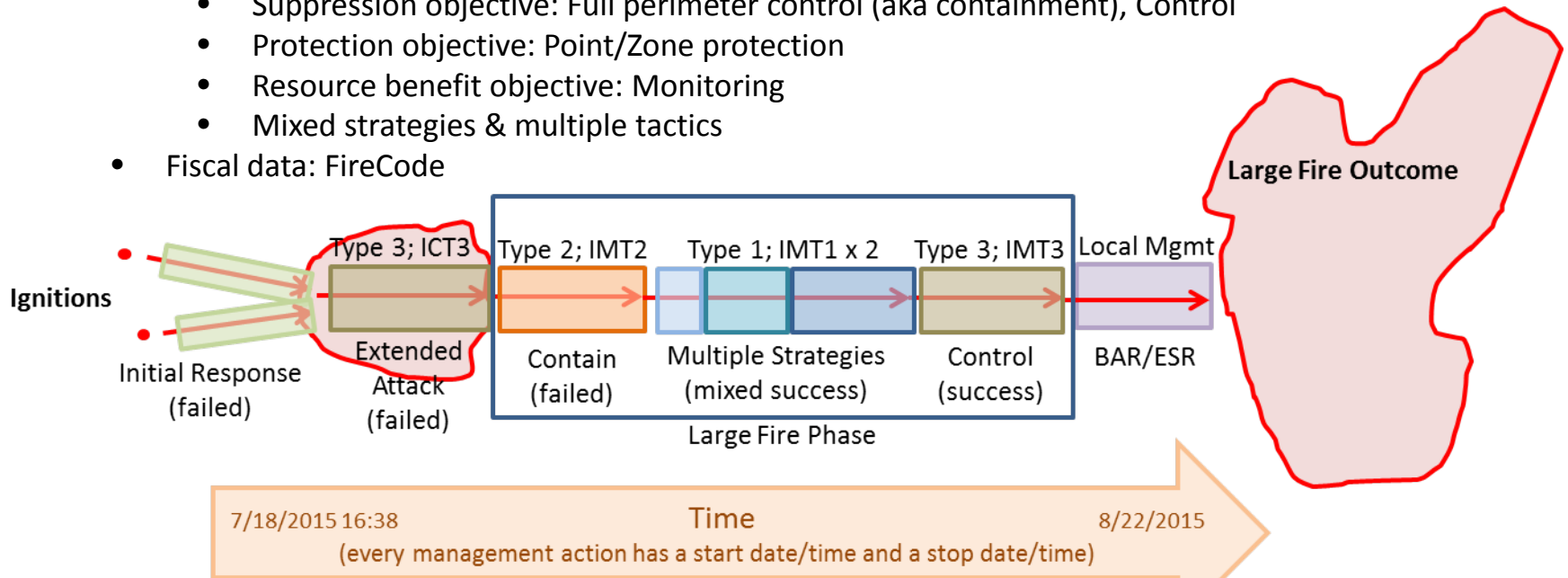
Wildfire Management Actions

Data Could Be Tracked By Management Phase or Combo of Things



Management Actions Are Linked to Time Intervals and Ignitions (IA) or Perimeters

- Management characteristics:
 - Phases: Initial Attack/Response, Extended Attack, Large Fire, BAR/ESR, etc
 - Complexity Level: Type 1, Type 2, Type 3, Type 4, Type 5
 - Organizations: Type 1 IMT, Type 2 IMT, Type 3 IMT, Type 4 IC, Type 5 IC
- Objectives, strategies and tactics*:
 - Suppression objective: Full perimeter control (aka containment), Control
 - Protection objective: Point/Zone protection
 - Resource benefit objective: Monitoring
 - Mixed strategies & multiple tactics
- Fiscal data: FireCode



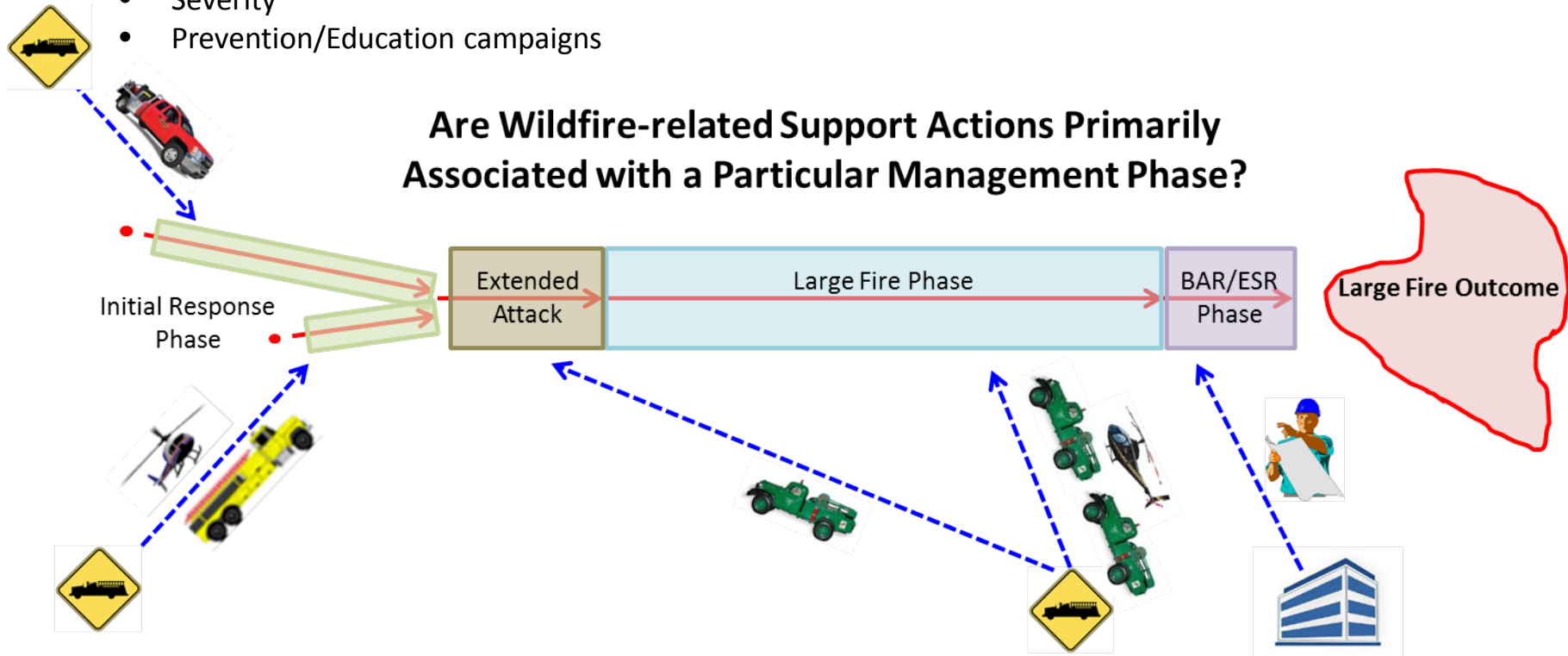
* Objective, strategies, and tactics are neither well defined nor consistently applied in reporting applications, but – in theory – these things should be highly inter-related.

Support Actions

(Data Elements Presumably Relate to Fire Workload Imposed on Specific Units)

What are Support Actions and Do We Need to Report Them?

- Support Actions associated with a wildfire event:
 - Engine sent to neighboring unit to assist with IA
 - Employee who filled an Overhead resource request for a fire in another GA
 - Aren't these already captured via CAD or ROSS?
- Other Support Actions are not inherently spatial, so these may not relate to fire occurrence:
 - Training
 - Severity
 - Prevention/Education campaigns



Key Points

- Wildfire occurrence records uniquely identified by location and time:
 - Ignition: Point, start time
 - Final Perimeter: Polygon, out time
 - Multiple ignitions can contribute to one final perimeter
- Outcomes/data relate to perimeters (daily, final)
- Management actions/data relate to specific time intervals for ignitions or perimeters
- Support actions/data relate to specific management actions (particularly, fire mgmt phase)?
 - Most already captured via CAD or ROSS records
 - Some (e.g. Training) have no tie to specific fire occurrence

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Questions & Discussion