



ArcGIS GeoEvent Server: Working with Real-Time Analysis

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RJ Sunderman

2021 ESRI
DEVELOPER SUMMIT

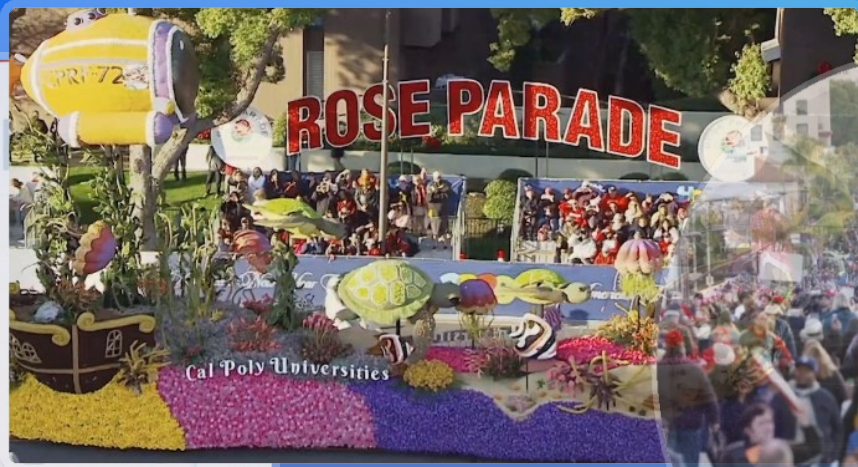
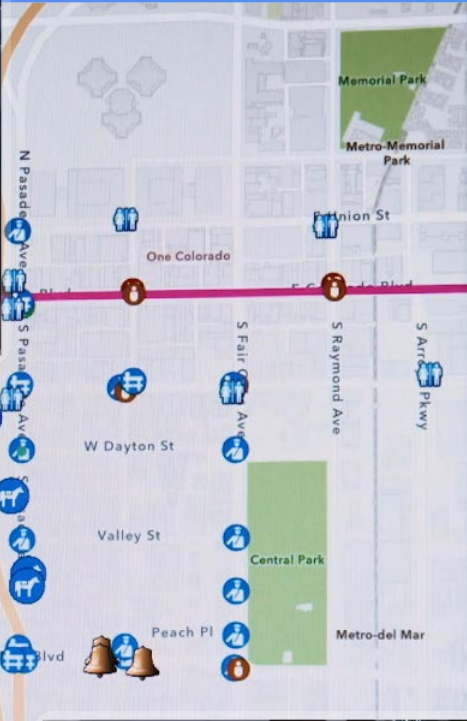
Agenda:

- 1 Product overview and conceptual use cases
 - 2 Enhancements and new functionality in 10.9
 - 3 Configurability demonstrations and best practices
 - 4 Q & A
-

ArcGIS real-time capabilities

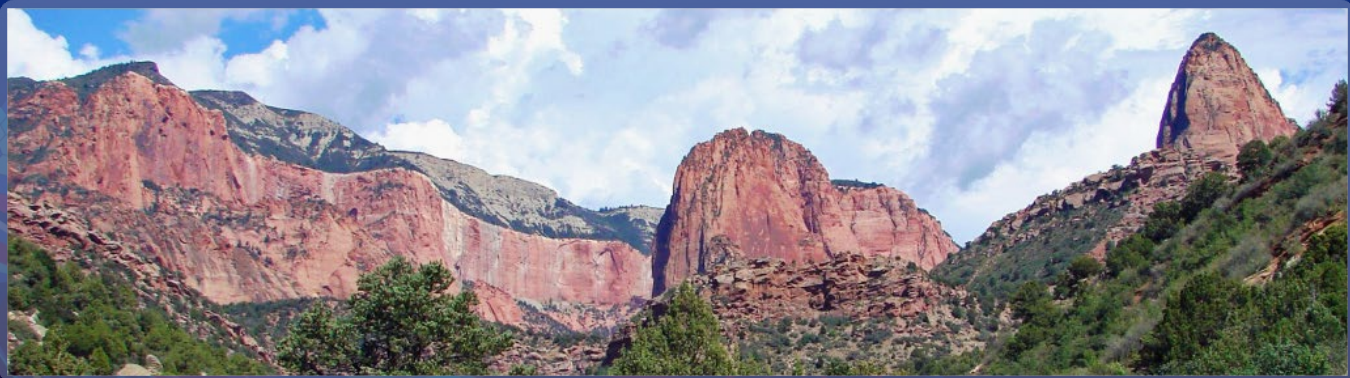
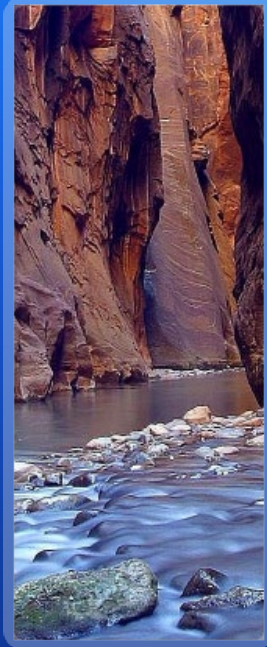
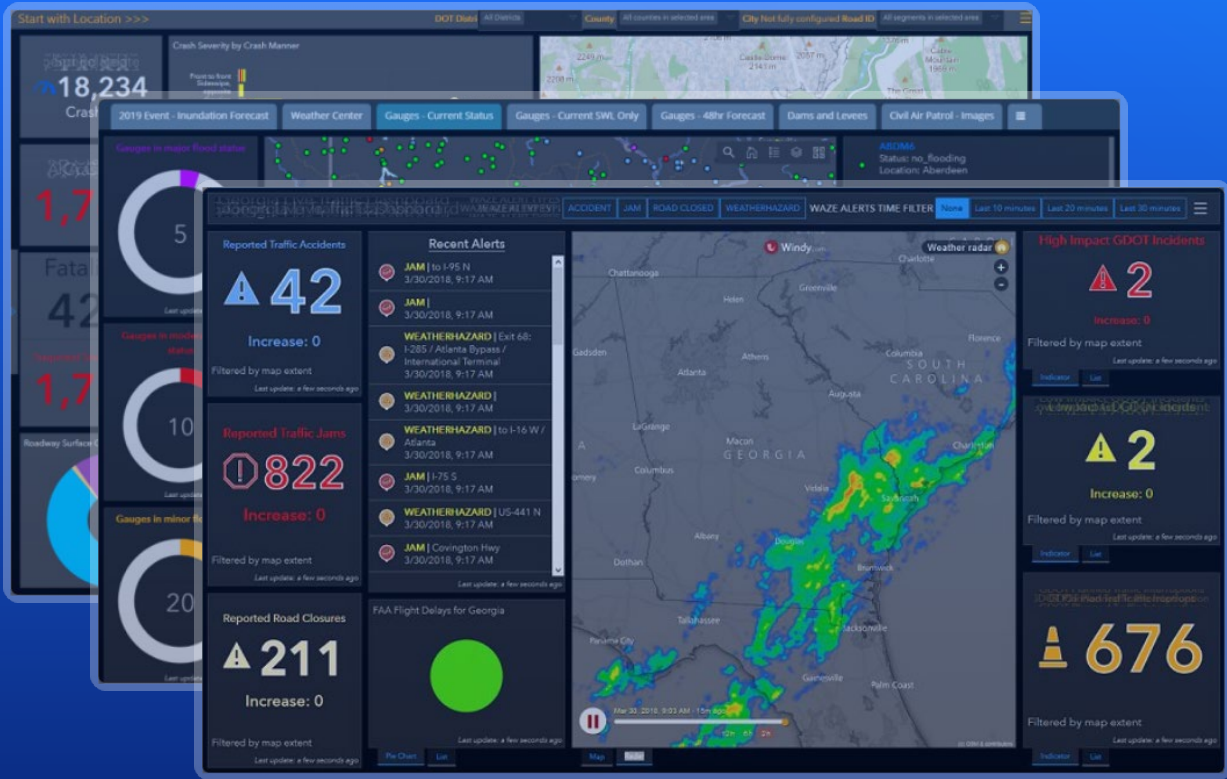
Tracking, Monitoring and Alerting





- Float Parking Locat
- Portable Res
- ATV
- ADA Access
- ADA Viewing
- ADA Parking





The background features a vibrant, abstract composition. On the left, there's a stylized globe with blue and red segments. Below it, a network of blue and red lines connects various nodes, some of which are small blue spheres. The bottom left corner shows a cluster of green and blue hexagonal shapes, resembling a molecular or data structure. The overall aesthetic is modern and technological, with a color palette dominated by deep blues, bright reds, and sunny yellows.

Product Update Overview

Product Updates and Development Themes

Ease of Use

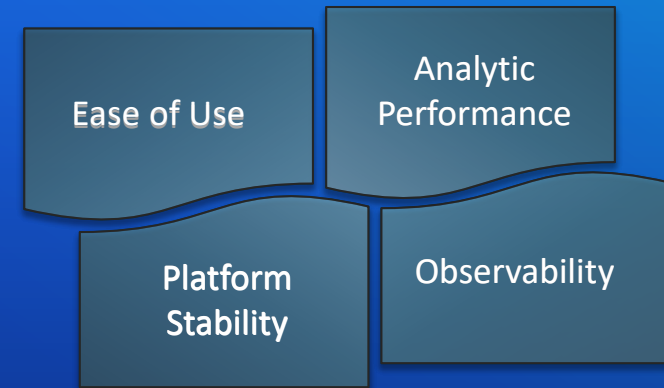
Analytic
Performance

Platform
Stability

Observability

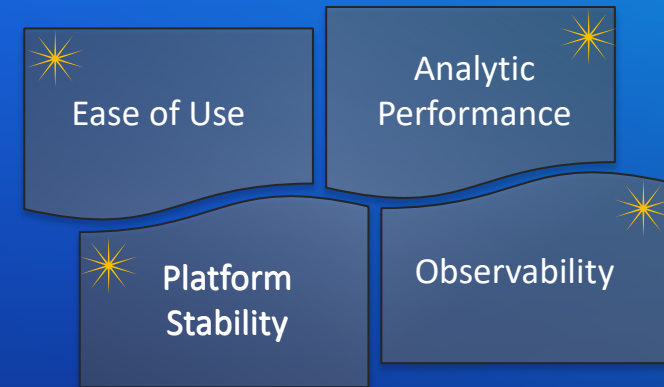
Product Updates

- **Filter / Processor Redesign**
 - **New Choice Element**
 - **Enhanced Field Mapper**
 - **Enhanced Incident Detector**
- **Updates to GeoEvent Gateway**
- **New monitoring capabilities**



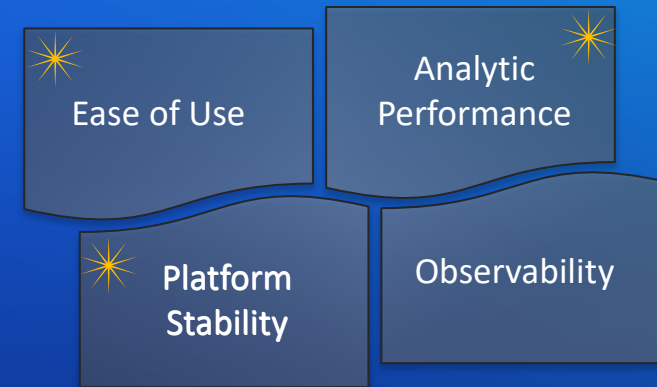
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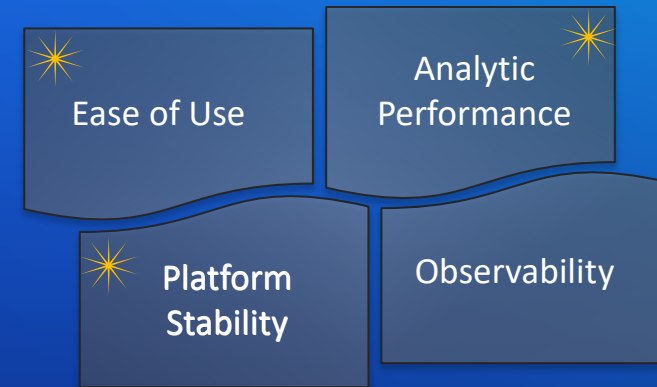
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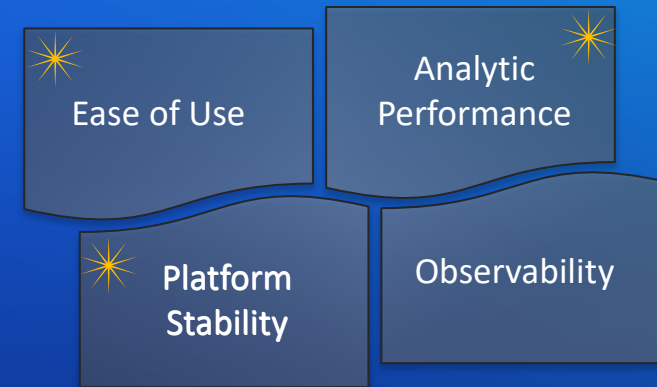
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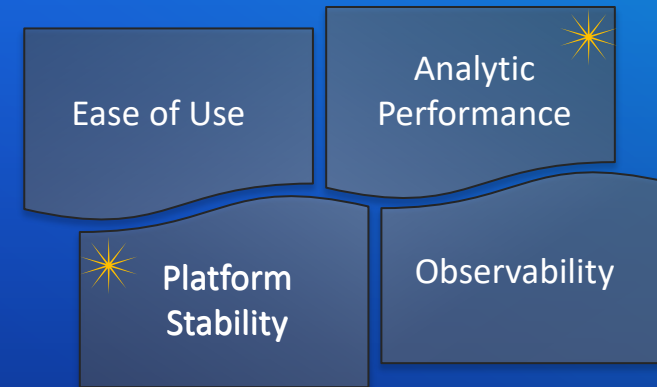
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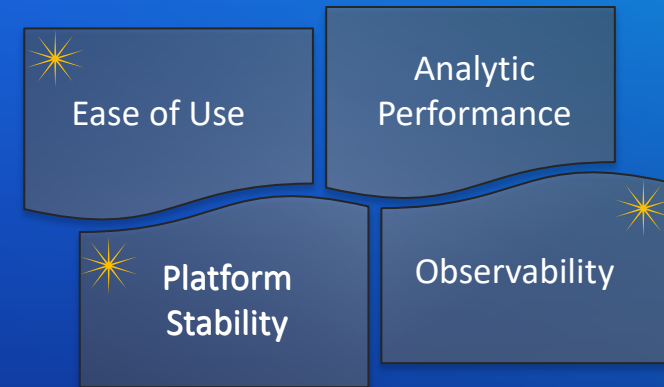
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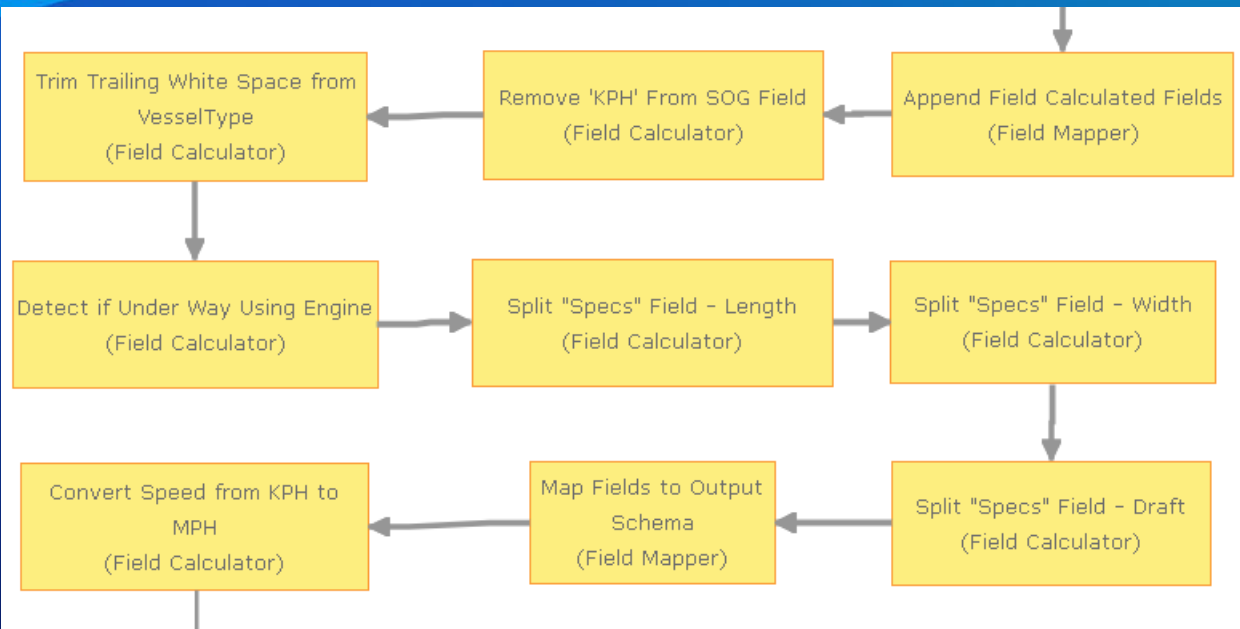
Demonstration of Processor Updates

The background features a complex, abstract graphic design. It includes a globe on the left side, overlaid with various data patterns such as hexagonal grids and circular nodes. Swirling, ribbon-like shapes in shades of blue, red, and yellow flow across the lower portion of the image, creating a sense of dynamic movement and technological complexity.



Choice Processor Demo

Replacing parallel Filters with a single Choice



Field Mapper Demo

Field calculate inside Field Mapper

Processor Properties

Name*	<input type="text" value="Inside Safety Zone"/>
Processor:	<input type="text" value="Incident Detector"/>
Incident Name*:	<input type="text" value="SAFETY_ZONE"/>
Opening Condition*:	<input type="text" value="GEOMETRY INTERSECTS ANY SAFETY_ZONE/*"/> <input type="button" value="Opening Condition"/>
Severity*:	<input type="text" value="Warning"/>
Incident Type*:	<input type="text" value="Point in Time"/>
Geometry Type*:	<input type="text" value="Point"/>
Expiry Time (seconds)*:	<input type="text" value="300"/>
Keep Source Fields*:	<input checked="" type="radio"/> Yes <input type="radio"/> No
Output GeoEvent Definition suffix name*:	<input type="text" value="safety-zone"/>

Incident Detector Demo

Keep your source fields

Incident Detector

Attribute Name & Tag Rules

GeoEvent Definition Name: * incident

Owner Name: com.esri.ges.processor/IncidentDetector/10.9.0

Fields for incident

New Field Reorder Fields

Name	Type	Cardinality	Tags
id	String	1	
name	String	1	
type	String	1	
status	String	1	
alertType	String	1	
openCondition	String	1	
closeCondition	String	1	
description	String	1	
timestamp	Date	1	TIME_START
definitionName	String	1	
definitionOwner	String	1	
trackId	String	1	TRACK_ID
geometry	Geometry	1	GEOMETRY
duration	Long	1	
dismissed	Boolean	1	
assignedTo	String	1	
note	String	1	



1. Source field names prepended with 'SOURCE___'

GeoEvent Definition Name: * vessel-in

Owner Name: siteadmin

Fields for vessel-in

New Field Reorder Fields

Name	Type	Cardinality	Tags
id	String	1	TRACK_ID
name	String	1	
vesselType	String	1	
SOG	Double	1	
COG	Double	1	
description	String	1	
starttime	Date	1	TIME_START
LAT	Double	1	
LON	Double	1	
geometry	Geometry	1	GEOMETRY

2. Incident schema always gets the Tags

Incident Detector

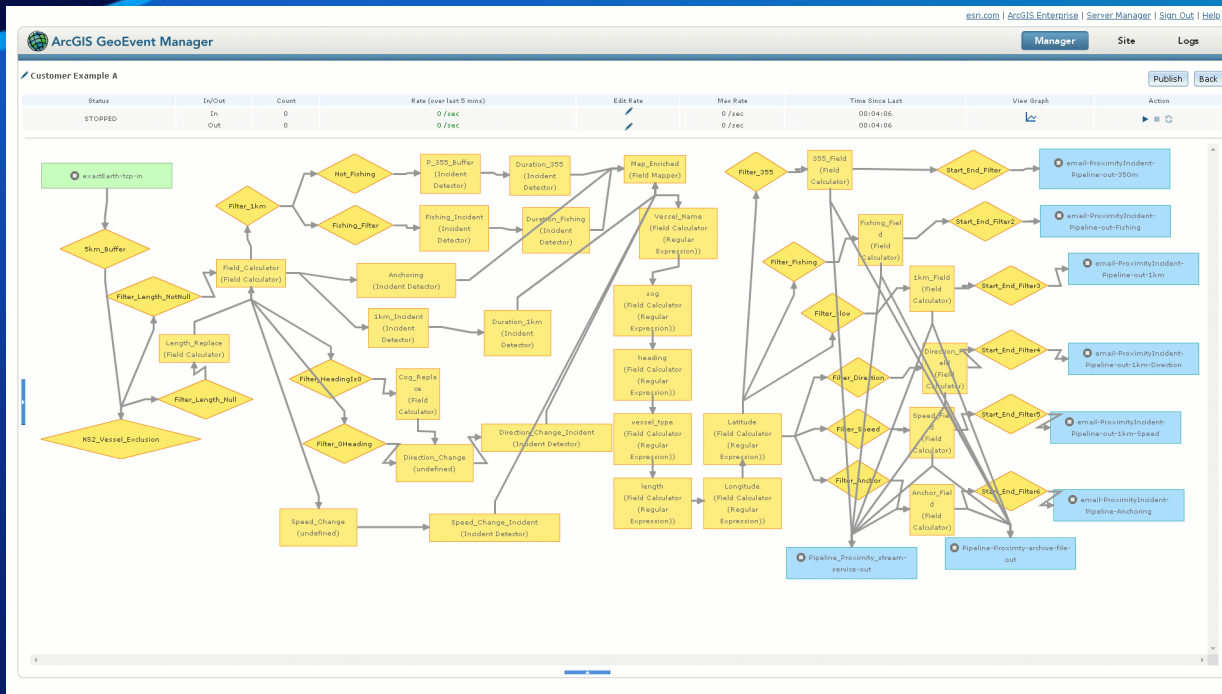
Attribute Name & Tag Rules

2. Incident schema always gets the Tags



1. Source field names prepended with 'SOURCE____'

Name	Type	Cardinality	Tags
id	String	1	
name	String	1	
type	String	1	
status	String	1	
alertType	String	1	
openCondition	String	1	
closeCondition	String	1	
description	String	1	
timestamp	Date	1	TIME_START
definitionName	String	1	
definitionOwner	String	1	
trackId	String	1	TRACK_ID
geometry	Geometry	1	GEOMETRY
duration	Long	1	
dismissed	Boolean	1	
assignedTo	String	1	
note	String	1	
source____GED_Name	String	1	
source____GED_ReceivedTime	Date	1	
source____id	String	1	
source____name	String	1	
source____vesselType	String	1	
source____SOG	Double	1	
source____COG	Double	1	
source____description	String	1	
source____starttime	Date	1	
source____LAT	Double	1	
source____LON	Double	1	
source____geometry	Geometry	1	



Real-World Example Demo

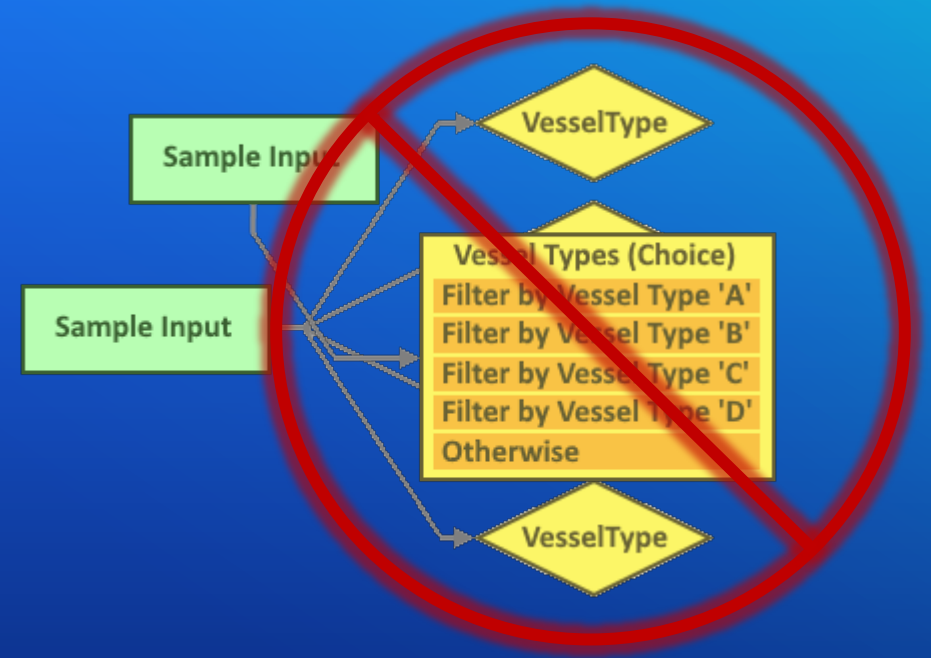
How the enhancements can impact the designs you create

Enhancements Review

The background features a vibrant, abstract composition. On the left side, there are several overlapping elements: a stylized globe, a network of blue and red lines, and a cluster of green hexagons. The bottom half of the image is dominated by thick, flowing ribbons in shades of blue, red, and yellow, which appear to be part of a larger, dynamic structure. The overall aesthetic is modern and technological, with a strong emphasis on blue tones.

Product Updates – Recap and Review

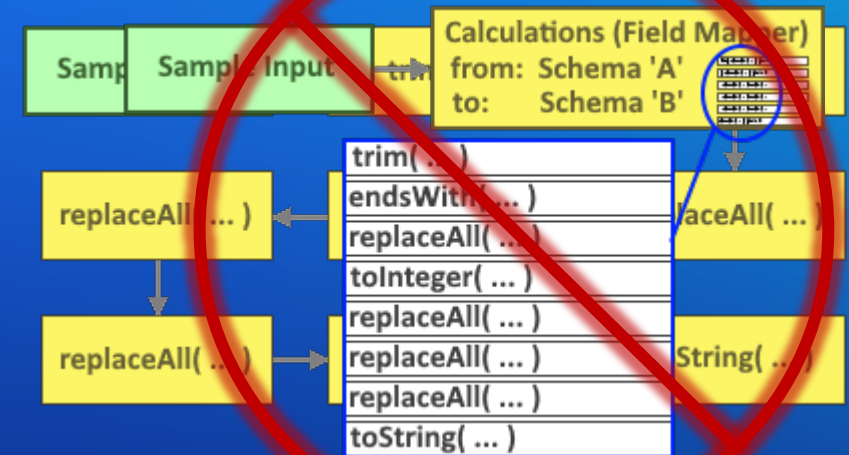
- **Choice Processor**
 - Filtering alternative
 - Simplifies service design
 - Linear performance improvements
 - Reduces data load for processing
 - *Minor UI tweaks coming in second release*



Product Updates – Recap and Review

- **Field Mapper Enhancement**

- Supports expression evaluation
- New functional wrappers
- ... *with more coming in the next release*
- Reduces data load for processing
- Simplifies design of event processing workflows



Product Updates – Recap and Review

- **Incident Detector**

- New *Keep Source Fields* property
- Removed audit history for Point output
- Reduces memory footprint for common use cases

- **Key take away**

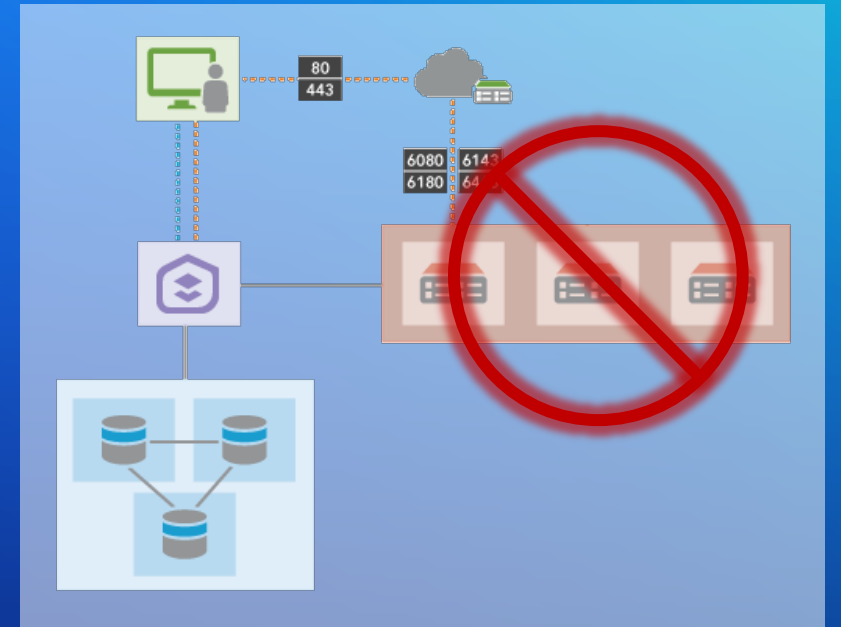
Leveraging these enhancements to incorporate new processor capabilities will require some thoughtful re-imagining of GeoEvent Service design

Fields for VehicleRecord			
Name	Type	Cardinality	Tags
VehicleID	String	1	TRACK_ID
ReportedDT	Date	1	TIME_START
Latitude	Double	1	
Longitude	Double	1	
Geometry	Geometry	1	GEOMETRY

Fields for VehicleRecord - Incident			
Name	Type	Cardinality	Tags
id	String	1	
name	String	1	
type	String	1	
status	String	1	
urlType	String	1	
urlConclusion	String	1	
classCondition	String	1	
description	String	1	
timeStamp	Date	1	TIME_START
definitionName	String	1	
tracked	String	1	TRACK_ID
geometry	Geometry	1	GEOMETRY
duration	Long	1	
source_VehicleID	String	1	
source_ReportedDT	Date	1	
source_Latitude	Double	1	
source_Longitude	Double	1	
source_Geometry	Geometry	1	

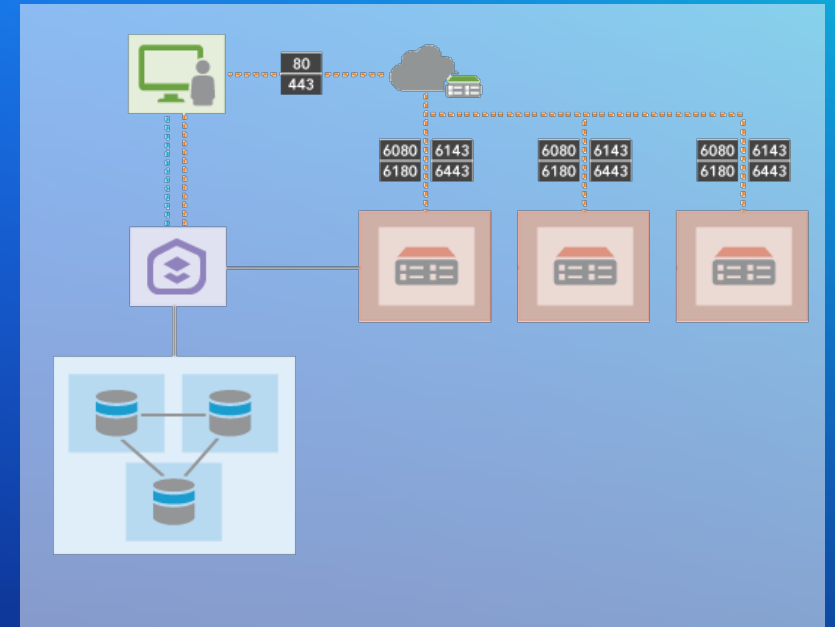
Product Updates – Recap and Review

- **Updates to GeoEvent Gateway**
 - Improved resiliency
 - Optimization of underlying components
 - Removal of support for multi-machine site



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Product Updates – Recap and Review

- **Support for system monitoring and observability**
 - Upgraded GeoEvent Server's runtime to Java 11
 - Added support for JDK Mission Control and Java Flight Recorder
 - Added RESTful monitoring endpoints for ArcGIS Monitor
 - Working to implement on-demand metrics for analysts

2021 GeoEvent Server Development Timeline



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