*Global Harmonization Through Collaboration*

# The Luminary System

## Vendor Brief

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*Date:* *August 28, 2012*

EUROCONTROL

Federal Aviation Administration

AIR TRANSPORTATION INFORMATION EXCHANGE CONFERENCE - (FEATURING AIXM, WXXM AND FIXM)

August 28, 2012 - August 31, 2012
NOAA Auditorium and Science Center
Silver Spring, Maryland

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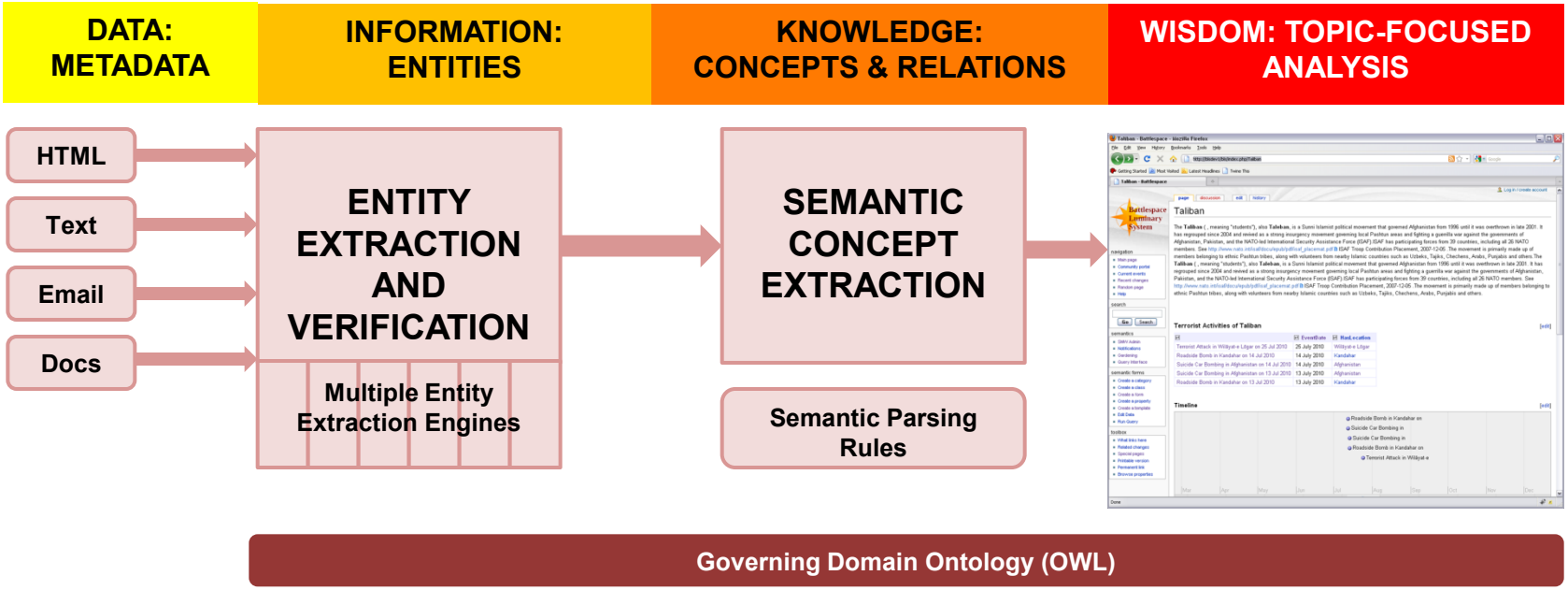
# Luminary is...

Air Transportation Information Exchange Conference - (featuring AIXM, WXXM and FIXM)

- Entity & Concept Extraction from unstructured text with Verification
- Semantic Wiki as a content repository for topical information
- Governing Domain Ontology defining topics of interest and their relationships
- A Novel Paradigm for coordinating all of the above

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# Overview

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- Domain Ontology represents domain of information: “what we want to know”
- Wiki Pages represent current knowledge – “what we know”
  - Ideal repository for collecting and correlating content around topics
  - Familiar interface for most users – no barrier to use
- Semantic Wiki incorporates queries, visualizations and forms to support analysis
  - Enables coordination between automated processing and Wiki content
- Ontology-based Lexical Rules for Concept Identification, incorporating:
  - Synonyms
  - Stemming
  - Parts-of-Speech
  - Entity-Variable Substitution
  - Ontology-based Validation
  - Inferencing

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# Example Scenarios

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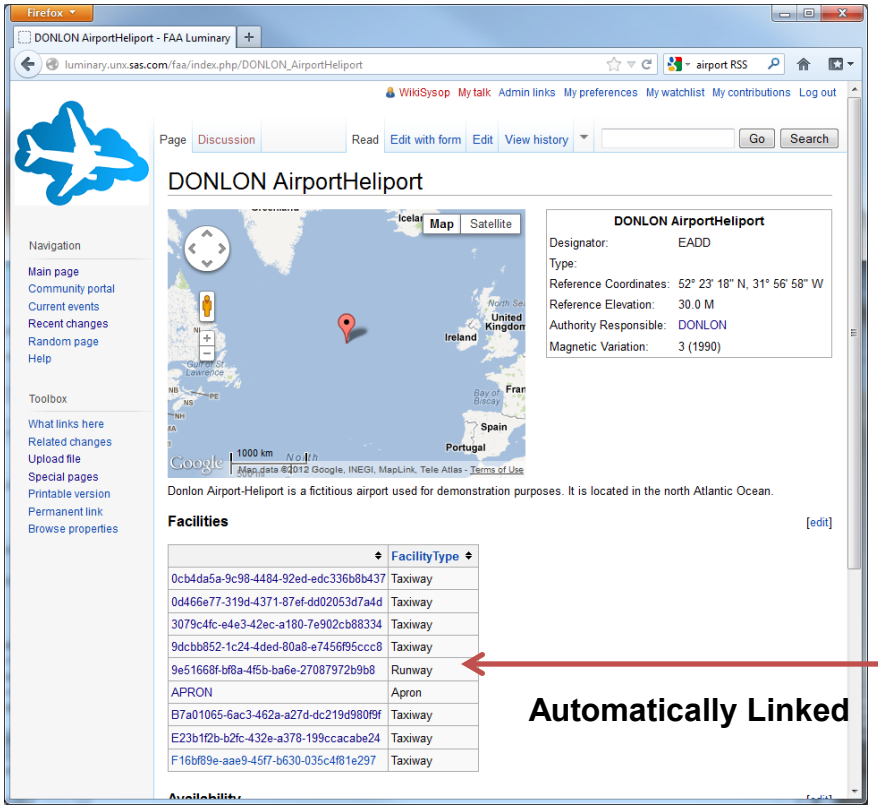
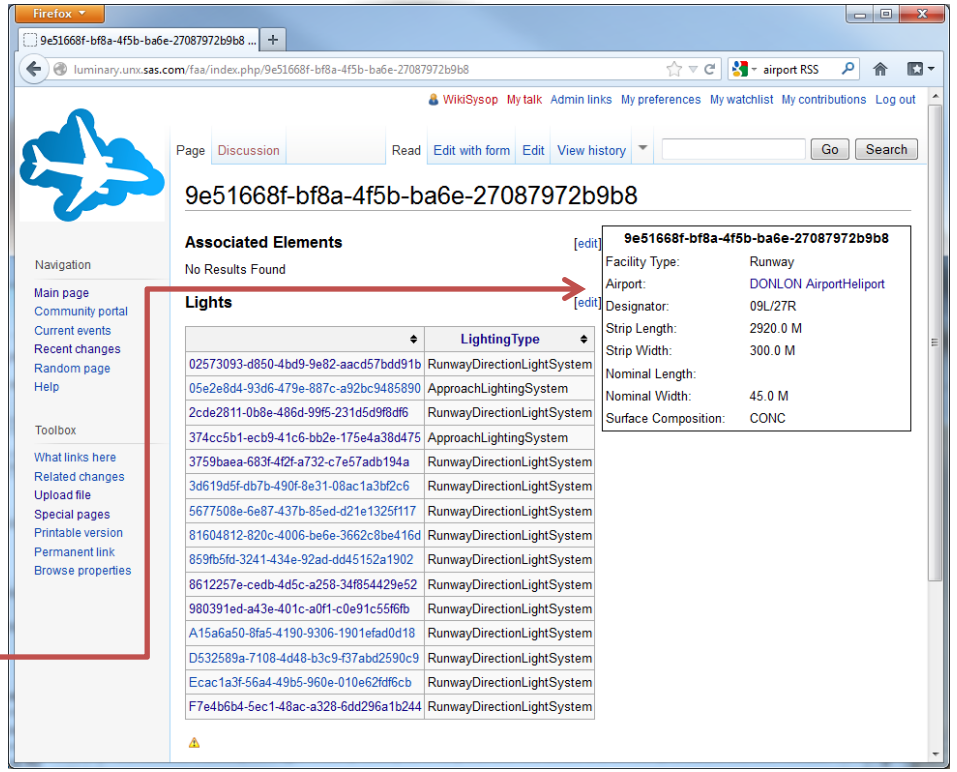
- Correlating a new NOTAM (Notice to Airmen) message with known resources
  - Parsing NOTAM contents to identify additional information
  - Automatically adding notifications to pages for affected Runway, Airspace, etc.
- Detecting information from Twitter, other real-time feeds:

  Tweet233636493187489792 TS=Thu Aug 09 14:50:55 EDT 2012
  Key author value=Carolyn Mann
  Key location value=Austin
  Key screenName value=duztaua
  Delays in ATL (Hartsfield-Jackson Atlanta International Airport) for 61 to 75 minutes, 09 Aug 2012 http://t.co/dFiOTdqM
- Detect Relevant news articles, RSS information
  - Parse for relevant information, identify new or changed information
  - Example: http//theairdb.com, airport RSS feeds
- Collaborative Information Source
  - Correlates Equipment with Procedures, Airports with their Facilities, etc.

# Example Wiki Pages




**Automatically Linked**

- Wiki Page for Donlon AirportHeliport
  - Shows location on map (Airport diagram in development)
  - Lists available facilities, services

- Wiki Page for Runway at Airport
  - Lists lighting systems
  - Availability, Surface Conditions (in development)

# Semantic Content Extraction

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## GE Engine Failure A Contained Incident – NTSB

http://news.airwise.com/story/view/1344531373.html August 9, 2012

The [redacted] said on [redacted] that **the failure of a [redacted] jet engine** on a [redacted]787 Dreamline [redacted] was a contained incident of the sort that does not normally pose an immediate safety risk.

The [redacted] said that a **shaft in the GEnx engine fractured**, leading to the incident in [redacted] in which **debris fell from the engine and sparked a grass fire near the runway**. The jet in question was being tested before Boeing shipped it to a customer.

"A contained engine failure is a specific engine design feature in which components might separate inside the engine but either remain within the engine's cases or exit the engine through the tail pipe," the NTSB said in a statement. "This design feature generally does not pose immediate safety risks."

Extracted Entities:

- US National Transportation Safety Board (Organization) = NTSB
- General Electric (Organization)
- Boeing (Organization)
- Wednesday (Date_Time, normalized to Aug 8, 2012)
- Charleston SC (Location)

Extracted Concepts:

- Jet Engine Failure
  - Details: Genx Engine Shaft Fractured, Debris fell from engine
  - Date: July 2012
  - Location: Charleston SC
- Grass Fire near Runway (related to Jet Engine Failure)

# Questions

# Contact Information

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