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WATER: FLORIDA'S MOST DANGEROUS NATURAL RESOURCE
SAP LEONARDO IOT IDEATION CHALLENGE

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WATER

Florida's Most Dangerous Natural Resource

Imagine…

Brenda is a small business owner in Sarasota, FL, having anticipated a strong 2018 tourism season at one of the nation's most popular beaches – Siesta Key Beach. Unfortunately, tourists went elsewhere opting to avoid Red Tide contamination along Florida's Gulf Coast shores, killing sea-life, creating health-hazards, and destroying the coastal way of life this summer (of 2018) as a result. She has no choice but to close her business and say goodbye to life-long employees and a business that has survived three generations.

David lives in Gainesville, FL and has enjoyed the benefits of inland living where most Floridians consider hurricane flooding an isolated coastal living risk. The 2017 IRMA hurricane struck first in the Florida Keys, then tracked through central Florida skirting Gainesville. The city breathed a sigh of relief having avoided a direct hit. Unfortunately, storm surges in Jacksonville were less forgiving to Gainesville, as St. John's River overflow poured into surrounding streams eventually surging the Santa Fe River. As a result, Interstate 75 became unpassable prohibiting thousands AND thousands of evacuees who had evacuated their gulf coast homes via i75 into Georgia and Alabama were unable to return home, leaving displaced families stranded without fuel, neighboring towns (including Gainesville) facing a crushing community economic and safety burden, and extending the costly post-IRMA response and recovery process another week.

NO END IN SIGHT FOR FLORIDA'S ALGAE EMERGENCY AS RED TIDE SPREADS UP ATLANTIC COAST (OCT. 24, 2018)
HTTPS://BIT.LY/2Q9SZ8B

GIANT MOSQUITOES A PUBLIC HEALTH ISSUE DURING HURRICANE MICHAEL CLEAN UP (OCT. 23, 2018)
HTTPS://BIT.LY/2JF0XU5

Problem Statement

Situational Awareness is lacking in both instances, and at many critical stages within both scenarios described. Consider that water quality in example one has been an ongoing PR concern within Florida for many years leaving a long trail of history in its wake regarding Lake Okeechobee, pollutants and IRMA's effect on moving biological contaminants from its basin, into low lying streams (eventually spilling into Lee County thereby creating the Red Tide effect). It is the intent of this ideation to formulate a Leonardo-based data capture, alert, analyze, and act solution premised on sensor-based edge computing.

Ideation

Target Categories: Agriculture, Transportation, Health, Public Safety

First, let's consider the various characteristics we can measure regarding water, if one had a measuring "sensor" to do so:

- Volume/Height :   *how much water is there?*
- Speed :   *how quickly is the water moving?*
- Quality :   *are there contaminants in the water?*
- Temperature

Next factor in additional metrics including time and space. The complexity of the questions grow as does the value of the information towards our situational awareness/risk mitigation value proposition.

- Time :   *how much has water risen over a period of time?*
- Location :   *which streams/lakes are experiencing spikes in pollutants?*

I envision a Leonardo-based solution by which to measure these factors, providing real-time alerts monitored by a rules-based engine defining alert thresholds against which captured data is tested. The data is then analyzed with insights provided real-time thru a command console supplying decision makers critical information helping anticipate what will occur, what action must be taken, and what resources are needed to effect change. These decision makers include government officials (i.e. determining that Army Corps of Engineers must be deployed in a certain geography), CDC (i.e. notified that contaminant has entered public drinking supply chain), general public (i.e. news blast regarding predicted escape route blockage), emergency responders (i.e. electrified water condition alert). These are just a few of the many targetable use cases and beneficiaries the proposed Leonardo IoT solution would directly impact.

Anticipated Outcomes

As the Leonardo IoT system continues adoption across private and public industry sectors, and citizens utilize the new FL Water Alert System, Florida Water Awareness has become an epidemic of vast value and benefit to multiple industries within Florida including agriculture, transportation, public safety, health, emergency management, utilities, economic development and travel & tourism. In fact, Florida Water Awareness has single-handedly shifted water from being a dangerous resource to a critical commodity for these industries who now rely on "water data" as a critical factor equal to their more traditionally trusted economic and weather data factors.   Agriculture especially has harnessed incredible new insights in water quality and movement to drive economic gains in Florida's most prolific industry sector, while public safety and transportation agencies have discovered the benefits of collaborative data sharing and machine learning to launch new campaigns for regionalized industry data sharing consortiums (the All-Hazards Consortium).

The solution begins with SAP Leonardo IoT, SCP, and Hana.