

Operations Risk Insights with Watson

How IBMers and non-profit partners apply AI to improve natural disaster communications and resilience despite multiple concurrent global crisis

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Operations Risk Insights (ORI)

An automated, comprehensive, and Watson-powered Alert Service that assesses supply chain, operations and disaster relief risk events to identify those posing the greatest threat of impact.

thousands

data sources monitored hourly to synthesize millions of records in real-time and analyze risk-event impact to

25,000+

points of interest globally including hospitals, airports, aging dams, watersheds, glacial lakes and other disaster relief centers and data center sites worldwide

Business Impact

\$18M

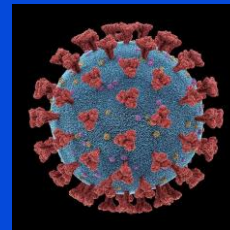
Gain in efficiency and cost avoidance over five years

The Weather Company
An IBM Business

#1 internal user of TWC APIs across IBM



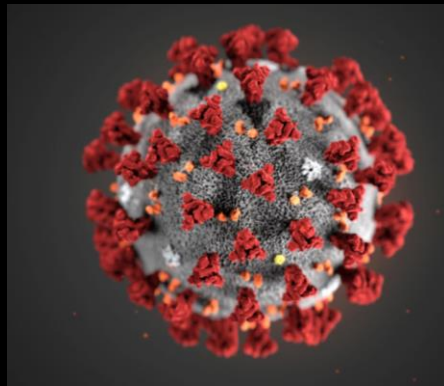
2018 Call for Code Finalist and 2019 Call for Code winner of IBM People's Choice Award



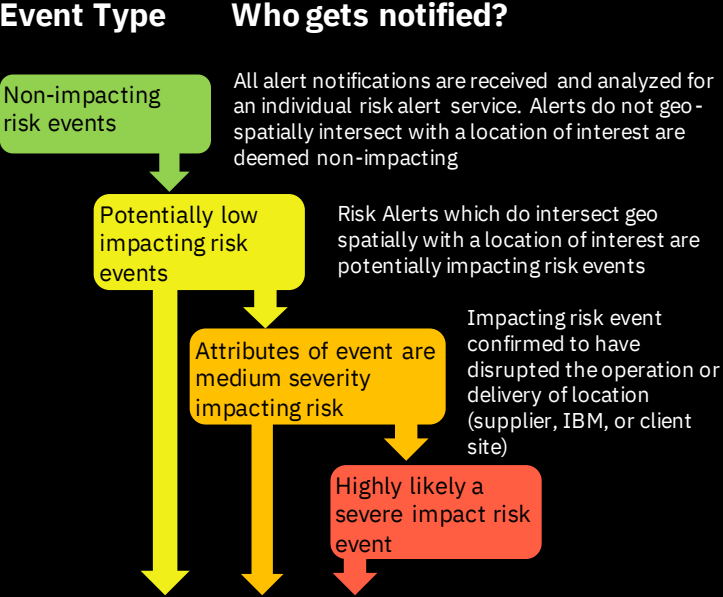
2020 added COVID-19 global insights and social vulnerability index



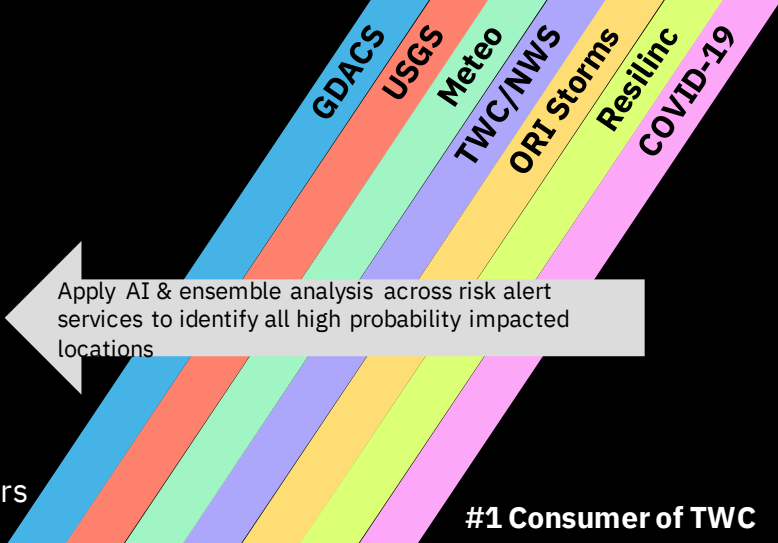
Risk Mitigation with AI



ORI – Alert Service Integration and Analysis



Avg/day	Effort
2000	1hr/wk
100	1hr/event
5	20+hr/wk
<.1	100's of hrs

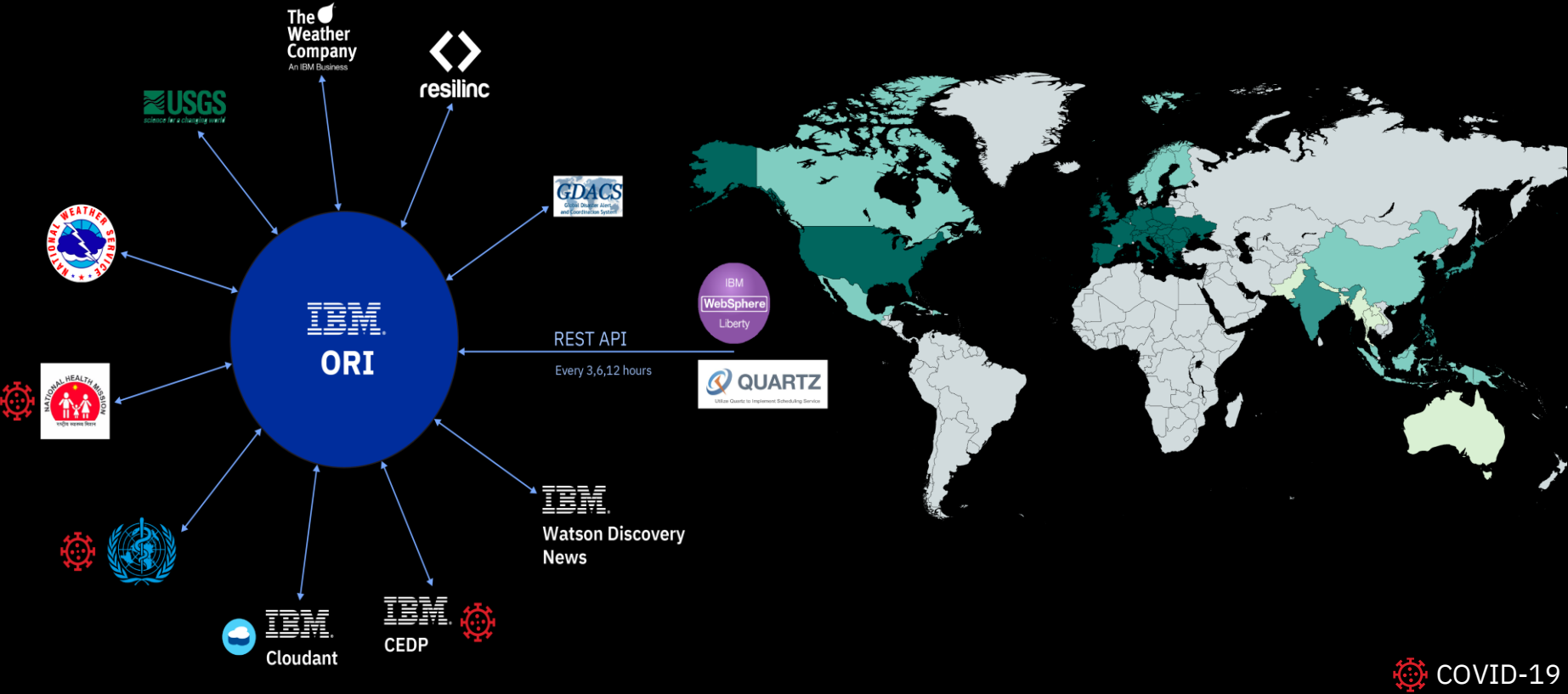


Cognitive Enterprise Data Platform (CEDP) stores details on all Risk Alerts for cognitive analytics and provides risk visibility to other IBM cognitive applications via data analysis and API integration.

Risk Alert Data Ingestion and Analysis

#1 Consumer of TWC APIs Inside IBM, used By 1000's of IBMers and NGO partners monthly

Operations Risk Insights – Trusted Data Sources



COVID-19

Operations Risk Insights – Data Sources

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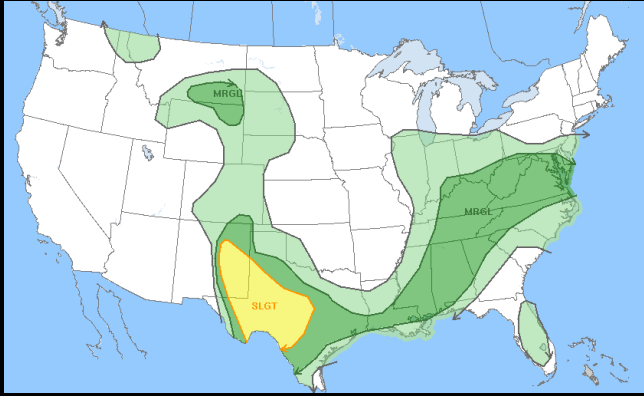
DAY 1 CONVECTIVE OUTLOOK AREAL OUTLINE
NWS STORM PREDICTION CENTER NORMAN OK
0748 AM CDT FRI MAY 28 2021

VALID TIME 281300Z - 291200Z

PROBABILISTIC OUTLOOK POINTS DAY 1

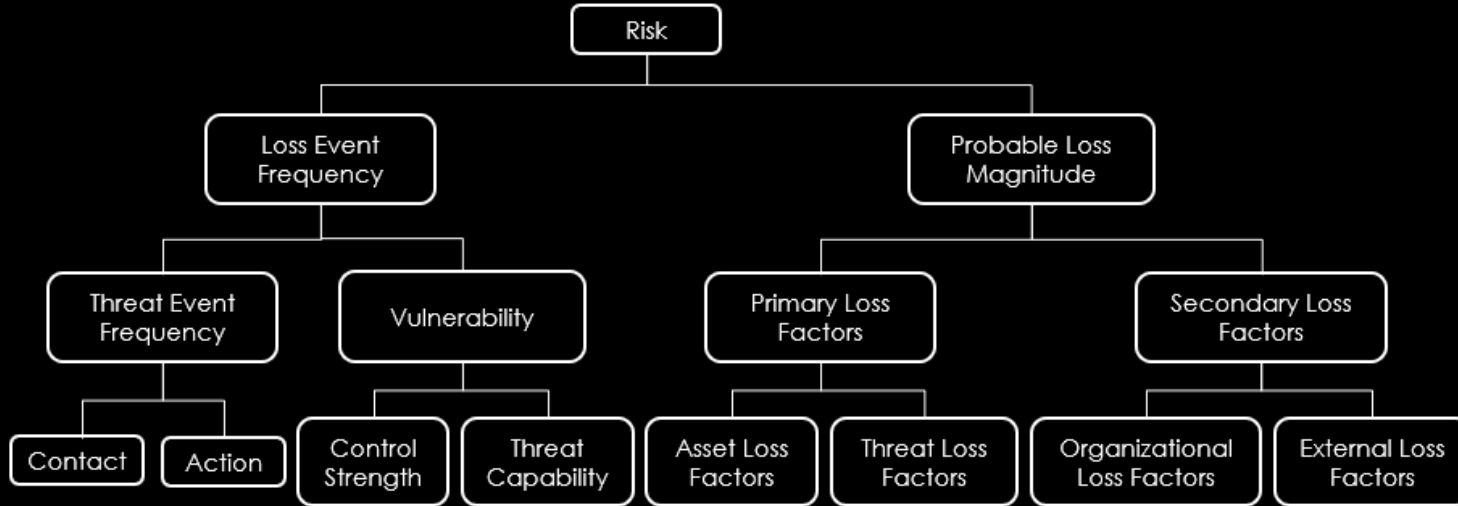
... TORNADO ...

0.02 37647573 37257635 37097745 37017802 37387843 38037804
38987705 39217670 39197610 38757576 38127552 37647573
0.02 28840356 30340388 31750440 33350519 34400565 35550539
35790501 35070433 33890347 32370138 31910051 31699899
31269855 30599875 29889942 28700082
0.05 32670411 33330401 33490380 33320347 32700280 31490149
31020150 30760157 30580193 30900265 31850362 32670411
&&
    
```



ORI Risk Analysis – FAIR Model

- FAIR [Factor Analysis of Information Risk] model codifies and monetizes risk.
- Breaks down risk by building blocks that make up risk and their relationship to one another
- Only international standard quantitative model for information security and operational risk



ORI Risk Analysis – **Vulnerability & Susceptibility**

CDC – Social Vulnerability Index (SVI)

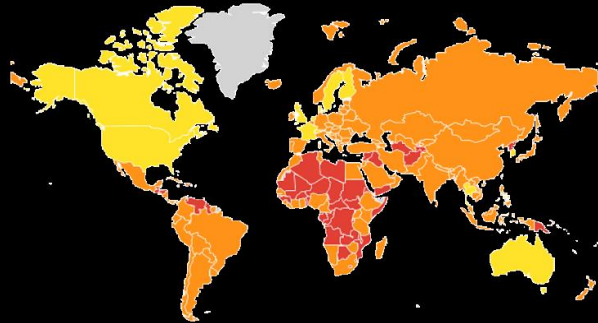
- Ranking of each county based on potential negative effects on communities caused by external stresses on human health

EU SPI – European Social Progress Index

- A measure of societal development and quality of life in European regions

GHSI – Global Health Security (GHS) Index

- Assessment of global health security capabilities in 195 countries

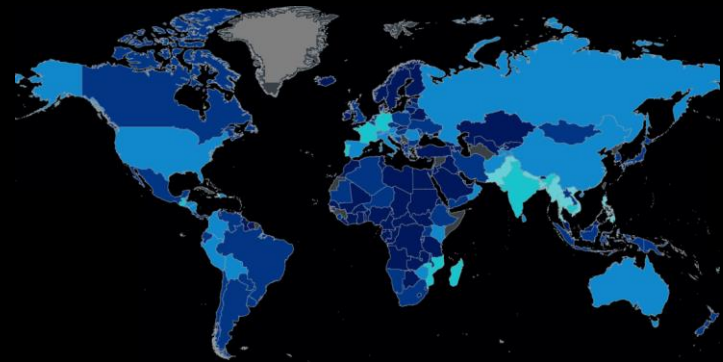


FEMA- The National Risk Index

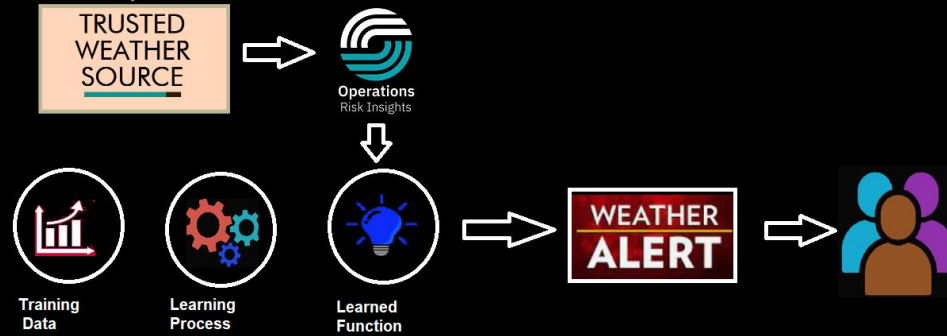
- A baseline relative risk measurement for each United States county and census tract for 18 natural hazards

The Global Climate Risk Index

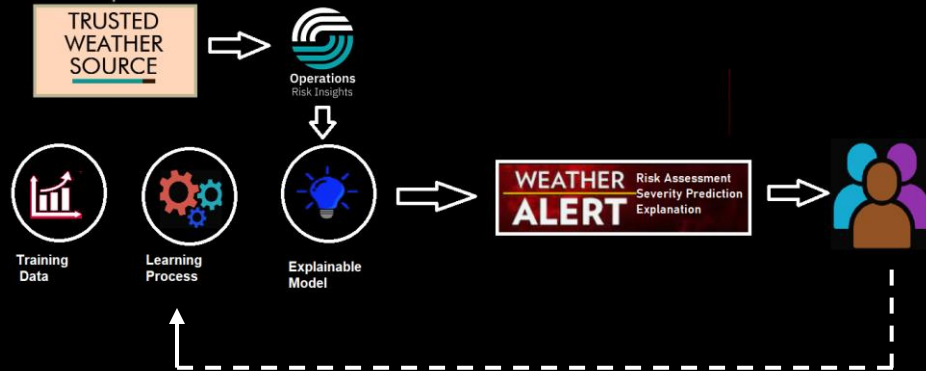
- analyses to what extent countries have been affected by the impacts of weather-related loss events



ORI – Jan 2021



ORI – Current State



Business Resiliency

“How fluid can both we and our workflows become?”

Mark Foster, Building the Cognitive Enterprise

Physical
Agility

Digital
Agility

Human
Agility



Key questions to address:

1. How AI can support effective communication for natural hazard-related emergencies
2. How AI-based technologies can be used to support early warning systems and dashboards
3. How the perspective of stakeholders can be integrated in the development of such technologies
4. What is the relevance of AI and hybrid cloud technologies for disaster risk reduction at the national, regional, and international levels

Data and AI Gaps for NDM:

1. Data quality for risk alerts and hyper local resiliency indicators in developing countries

Thank you

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IBM Operations Risk Insights with Day One Disaster Relief

<https://newsroom.ibm.com/ORI-nonprofits-disaster>

IBM Blockchain for Supply Chain

<https://www.ibm.com/blockchain/industries/supply-chain>