Project Title: Climate Resilience Extreme Events Portal (CREEP)

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Overall Project Goal:

The primary goal is to create a portal for enhanced alert and warning capabilities and decision-support tools to reduce fatalities and injuries, economic losses, and disruptions from weather and climate hazards. Other goals include research and development, technology transfer, education programs to support workforce development, economic opportunity, and improved social equity. The decision support platform for hazards, DisasterAWARE®, will be used to develop CREEP.

Key Project Tasks/Approach/Objectives:

CREEP focuses on "creeping" slow-onset hazards that can result in sudden-onset failures. In addition to climate stressors, deferred maintenance and inadequate investment in human capital threaten the safety of transportation systems. The project has three phases, focusing on data analytics, modeling climate impacts, evaluating countermeasures designed to save lives, reduce economic loss, and minimize disruption, and prioritizing education, training, and workforce development.
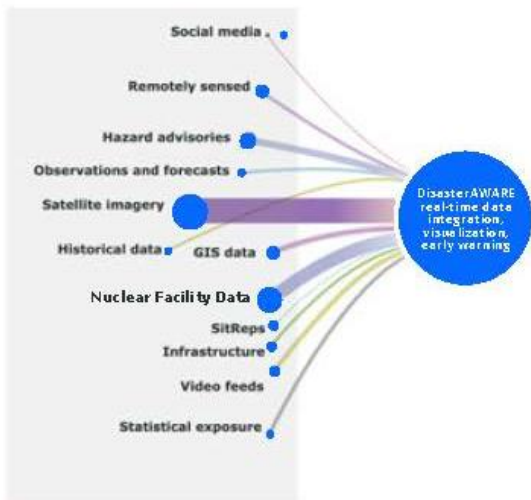
Project Outcomes/Benefits:

The Portal will provide the Federal Railroad Administration, rail industry, and other stakeholders with a practical tool to mitigate climate risk and improve safety, security, and equity.

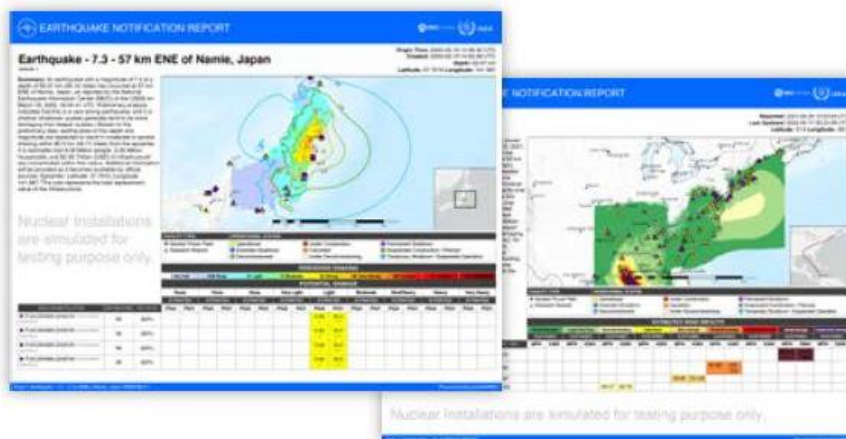| Phase 1	Phase 2	Phase 3
➢ Assess the needs, capabilities, and gaps within the surface transportation industry. ➢ Conduct stocktaking of existing data, models, research, risk reduction strategies, stakeholders, and other resources on climate risk and transportation. ➢ Identify/prioritize climate and risks affecting the industry, including operations, emergency response, and mitigation.	➢ Pilot network analyses to identify high-risk regions for wildfire mitigation projects. ➢ Evaluate costs/benefits of alternative mitigation investments. ➢ Prototype and test train-ground-based, and remote sensors with machine vision/learning to detect structural faults and impacted locations. ➢ Engage minority businesses.	➢ Translate tools/findings into risk reduction and WFD. ➢ Develop FEMA-certified training courses. ➢ Conduct workshops at the Transportation Research Board (TRB) Annual Meeting and other transportation industry events.

CCEETR
Climate Change and Extreme Events Training and Research

Advanced alerting technology to protect nuclear facilities from natural hazard risks

How it works

1 Real-time multi-hazard data integration via DisasterAWARE

- Social media
- Remotely sensed
- Hazard advisories
- Observations and forecasts
- Satellite imagery
- Historical data
- GIS data
- Nuclear Facility Data
- SitReps
- Infrastructure
- Video feeds
- Statistical exposure

DisasterAWARE real-time data integration, visualization, early warning

2 Automated hazard creation, notification, and impact assessment

DisasterAWARE Pro — 6 New Notifications

3 Event Notification Reports Distributed

EARTHQUAKE NOTIFICATION REPORT
Earthquake - 7.3 - 57 km ENE of Namie, Japan

Nuclear installations are simulated for testing purpose only.

Natural Hazards Covered

18

Phase 1   Phase 2   Phase 3

COLORADO STATE UNIVERSITY PUEBLO

MICHIGAN STATE UNIVERSITY

NORTHEASTERN UNIVERSITY

Oregon State University

SJSU SAN JOSÉ STATE UNIVERSITY

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