The Outage Data Initiative Nationwide (ODIN):
Enhancing Situational Awareness for Emergency Managers and Public Safety Officials

Frequently Asked Questions

For More Information

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1   Overview

Q: What is the vision of the Outage Data Initiative?

A: The vision of the Outage Data Initiative is to create a nationwide power outage map that is detailed, timely, and actionable to be utilized by utilities, emergency managers, and the public.

Q: What are the goals of the Outage Data Initiative?

A:
- Provide a Common Operating Picture (COP) of power outage information
- Engage all stakeholders, including local, state and federal officials
- Create an outage data standard
- Support implementation of standardized outage data

Q: Who is leading this initiative?

A: The Department of Energy Office of Electricity's Advanced Grid Research is championing this effort for the electric sector with Oak Ridge National Lab working to in.

Q: What problems or gaps is ODIN addressing? "Most utilities display outages on their websites…right?"

A: Many utilities display outage data on the web, while others only post to Twitter or Facebook. Some utilities do not share outage data information at all. There was no industry 'standard' or guidance on how to share this data. ODI was formed to create a standard, provide guidance to the industry, and assist in implementation.
- **Utilities** are limited by the _absence of a single data-driven platform_ that can improve situational awareness and coordination with mutual aid and storm managers through consistent electric grid outage data.
- **Emergency managers** are limited by the _inability to integrate_ outage data with other critical incident datasets for decision-making.
    - The **Emergency Management (EM) domain** works to improve decision-making by organizations that share information relating to emergency response and emergency management and to increase the ability to prepare for, respond to, and recover from emergency situations.
- **Other Stakeholders** access publicly available outage data through public websites. They are limited by:
    - Incomplete data
    - Delayed data
    - Unstandardized data and processes across local, state and national domains

o The inability to overlay outage data with incident information and visualize the full outage picture for their domain

These limitations delay and/or misinform executive decision making due to diminished understanding of incident impacts and degraded response operations.

Q: Are there platforms that already provide a Common Operating Picture for outages?

A: Some state emergency management agencies do receive outage data from utilities within their state and provide access to view that data. This data is collected in a variety of ways that are not robust and often not comprehensive.

Even though some states are attempting this, there is no coordination between states, and therefore regional and national COPs are not available. Coordination is important because storms and emergencies do not recognize utility, county, and state boundaries. Mutual aid often comes from neighboring states or from regions not affected by the emergency. ODIN will provide a national view of outages in one location.

Q: Why use a standard for data sharing?

A: Industry standards are "universal translators" that help...
- Lower future integration costs
- Enable efficient data exchange with many stakeholders (industry innovators and local, state, and federal agencies)
- Enable innovation, including Social Media Integration and Damage Assessment Applications
- Enable deeper data analytics for outage prediction resulting in improved system reliability

Q: What are the benefits of the Outage Data Initiative?

A:
- Creates a "universal translator" for customer outage data to…
  - Drive improved decision support
  - Help identify, quantify, and prioritize Emergency Response resources
  - Enhance (not replace) existing utility outage management systems and practices
- Creates a common operating picture ("Single pane of glass") for stakeholders to eliminate the need to consult multiple outage maps during extreme events
- Provide near real-time updates to
  - local, state, and federal emergency managers
  - critical infrastructure partners
  - neighboring utilities
  - smart cities

- Provides accurate and timely outage data leading to…
  - Improved decision support
  - Improved staging of utility crews and restoration equipment
  - Improved utility response and restoration activities
  - Improved dispatching of first responders for public safety
- Reduces unnecessary phone calls to utilities seeking status updates

Q: Who are the stakeholders?

A: Stakeholders include:
- All electric utilities
- Local, state and federal emergency managers
- Critical infrastructure partners
- The public

Q: Who will help implement the standard?

A: There are two groups that will be involved in implementing the standard.

Data Providers:
- Electric utilities - through their OMS or GIS provider

Data Subscribers:
- Local, state and federal emergency managers
- Critical infrastructure partners

Q: What does each stakeholder need to do to implement ODIN?

A: Responsibilities of each stakeholder…
- All electric utilities - originators of the outage data
  - Commitment to support and implement ODI (send timely outage data in the ODI or Multispeak format)
  - Participate in regional meetings with other utilities
- Electric utility OMS/GIS vendor - translates the data into ODI format
- Local, state and federal emergency managers - update systems to accept ODI format
- Critical infrastructure partners - update systems to accept ODI format
- The public - viewer of national power outage map

Q: How much effort does implementation require?

A: Effort associated with implementing ODIN depends solely on the stakeholder's effort to update stakeholder systems to conform to the new standard. The ODIN team is working with many utility OMS/GIS vendors to implement the ODI "universal translator" natively into their software. When this is completed, utilities that use these vendors will see a minimal level of effort to implement. For utilities

that have "home-grown" OMS systems, the effort may be higher, but support from the ODIN team is available at no charge. ODI Phase 2 utilities each spent less than 2 hours implementing changes.

Q: Is there a cost to implement?

A: There is no external cost to implement. The cost associated with implementing ODIN depends solely on the stakeholder's cost of updating stakeholders' systems to conform to the new standard.

Q: Is participation mandatory?

A: Participation is optional, but highly encouraged!

Q: We are interested! What are the next steps?

A: After your utility decides to participate and has the internal approvals,
- Respond to the DOE with a participation letter
- Start the data exchange process with the DOE vendor partners
  - DOE provides knowledgeable resources to help!
  - DOE can work directly with utility vendor(s) for the data exchange with minimal to no effort from the utility.

2   Technical Questions

Q: Do utilities need to adopt the latest product releases, or can a patch be applied to legacy versions of the OMS?

A: The ODIN team will work with each vendor on their standardization. Our goal is to have the outage data standard work with any version of the utility OMS.

Q: What are the "Use Cases" for sharing outage data?

A: Currently there are 11 use cases in 3 categories.
Standardization of data exchange:

- UC 1: Within a utility (Detailed outage data)
- UC 2: Between utilities (Generalized outage data)
- UC 3: With emergency management agencies (More accurate, granular outage data)
- UC 4: With media/public (Public outage map)
- UC 5: With other infrastructure providers (e.g. Cellular, Joint utility providers)
- UC 6: With end-point devices (e.g. AMI meters, streetlights and traffic lights)

Visualization:

- UC 7: Integration of Social Media for outage reporting to/from customers
- UC 8: Integration of Augmented Reality, Drones, mobile platforms, and WMS with GIS & OMS for damage assessment

Optimization:

- UC 9: Analysis of outage reporting codes
- UC 10: Standardized outage reporting
- UC 11: Improved Post-Storm Analysis "report card"

Q: How is standardization accomplished?

A: The level of interoperability required for ODIN can only be achieved by standardizing the customer outage status information from Outage Management Systems into one of two key standard formats: Common Information Model (CIM), also known as IEC 61968-3, and MultiSpeak.

Q: What's the mechanism for accomplishing the standard?

A: Outage data sharing is made possible with an API, which translates the message to the CIM and/or Multispeak standard. Then the translated data is published in multiple formats (XML, JSON) via a secure web service call.
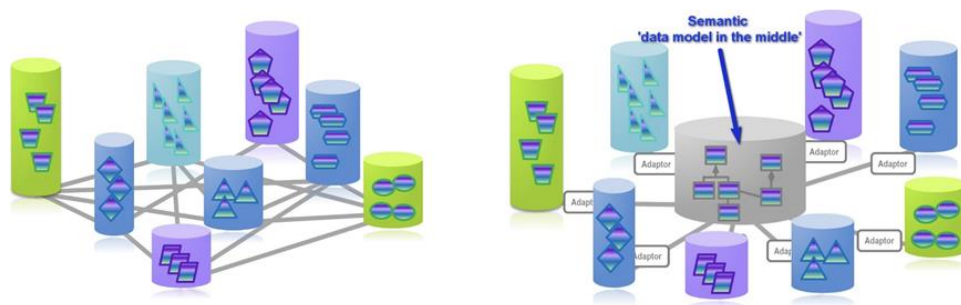
Q: Why use the Common Information Model (CIM) standard (IEC 61968-3)?

A:
- It is widely recognized and accepted as an international standard
- IEC 61968 is an International Standard that is continuously maintained (IEC TC57, WG14)
- Implementations based on the CIM data model are in place at many US and International utilities
- For more information see: http://iectc57.ucaiug.org

Q: Why use the Multispeak standard?

A:
- It is widely recognized and accepted as an international standard
- Developed by National Rural Electric Cooperative Association (NRECA) in collaboration with key industry vendors
- Often found in applications used by municipal and cooperative electric utilities.
- More information and specification available at www.MultiSpeak.org

Q: What level of outage data detail is needed?

A:
- Latitude/Longitude or polygon (Preferred)
- County level (Minimum)
- Zip-code level (Optional)
- For publicly available information – NO customer information
- Estimated Time of Restoration – if provided at an 'incident' level

Q: How is the data secured?

A: Oak Ridge National Laboratory (ORNL) is a Department of Energy Federally Funded Research & Development Center (FFRDC) and will be hosting and securing the data.
ORNL recognizes the importance of data safety and security. The Information Technology Services Division (ITSD) at ORNL supports and maintains the ODIN infrastructure using the latest federal cybersecurity standards. [should we add details about security here?]

Q: How frequently is the data updated?

A: Data refresh timing depends on the utility. Current participants are refreshing the data
1. Real-time / near-real time: when OMS data is refreshed
2. Fixed interval such as 5, 10, 15 minutes
3. If using multiple feeds, dependent upon subscriber
   a. Private (Emergency Management feed) - real time preferred
   b. Public feed - 15 minutes delay

3   The ODIN Project

Q: What has already been completed as part of the ODIN effort?

A: Phase 1 of the Outage Data Initiative (ODI) in 2018 led to successful integration of a statewide power outage map for Washington state using ODI. Phase 2 expanded integration and an ongoing Phase 3 is

targeting the entire nation connecting with utilities, outage management system (OMS) vendors and state Emergency Managers to adopt ODI standards to improve interoperability among grid stakeholders.

Q: Who was involved in initial phases?

A:
- Utilities Involved:
  - Avista
  - Seattle City Light
  - Mason PUD 3
  - Clallam County PUD
  - Orcas Power & Light Co-Op (OPALCO)
  - Douglas PUD
  - Benton PUD
  - Tacoma Public Utilities
  - Snohomish County PUD
  - Central Lincoln PUD (OR State)
  - Pend Oreille PUD
- OMS Vendors involved:
  - National Information Solutions Cooperative (NISC)
  - CGI
  - DataVoice
  - ESRI
- Partners
  - Electric Power Research Institute (EPRI)
  - DataCapable
  - National Rural Electric Cooperative Association (NRECA)
  - Washington State Department of Commerce

Q: What is left to do as part of the ODIN effort?

A: We are beginning Phase 3 – Nationwide.
- Nationwide implementation of the standard
- Additional utilities and regions being engaged
- Inviting vendors to demonstrate ODI compliance
- Planning a series of regional Energy/Power Outage Data workshops
- The additional value derived through EAGLE-I integration
- Enable analytics both internally and externally
- Cost analysis using detailed outage related information, preventive maintenance
- Outage predictions using historical data