U.S. Department of Transportation
Federal Highway Administration

Clarus — America's 21st Century Surface Transportation Weather Observing and Forecasting System

Clarus (which is Latin for "Clear") is an initiative to develop and demonstrate an integrated surface transportation weather observing, forecasting and data management system, and to establish a partnership to create a Nationwide Surface Transportation Weather Observing and Forecasting System. The objective of *Clarus* is to provide information to all transportation managers and users to alleviate the affects of adverse weather (e.g., fatalities, injuries and delay).

FEDERAL HIGHWAY ADMINISTRATION
ROAD WEATHER MANAGEMENT

HOTO-1, Room 3408
400 Seventh Street, SW
Washington, D.C. USA 20590

Paul Pisano
Technical Lead
Phone: 202-366-1301
Fax: 202-366-3225
E-mail: Paul.Pisano@dot.gov

James Pol
ITS Coordinator
Phone: 202-366-4374
Fax: 202-493-2027
E-mail: James.Pol@dot.gov

The Surface Transportation Weather Problem

Users of the surface transportation system need more timely, accurate and relevant road condition and weather information. There were over 1.4 million weather-related crashes in 2001, leaving over 615,000 injured and over 6,900 dead [Source: NHTSA Fatality Analysis Reporting System (FARS) and General Estimates System (GES)]. Delay caused by adverse weather has reached nearly 1 billion hours per year [Source: Traffic Congestion and Reliability: Linking Solutions to Problems. Cambridge Systematics, Inc. and Texas Transportation Institute. July 2004]. In order to reduce the effects of adverse weather, the nation's network of weather and road condition observations must be modernized and integrated, and this data must be disseminated to the public and to surface transportation system operators.

The *Clarus* Solution

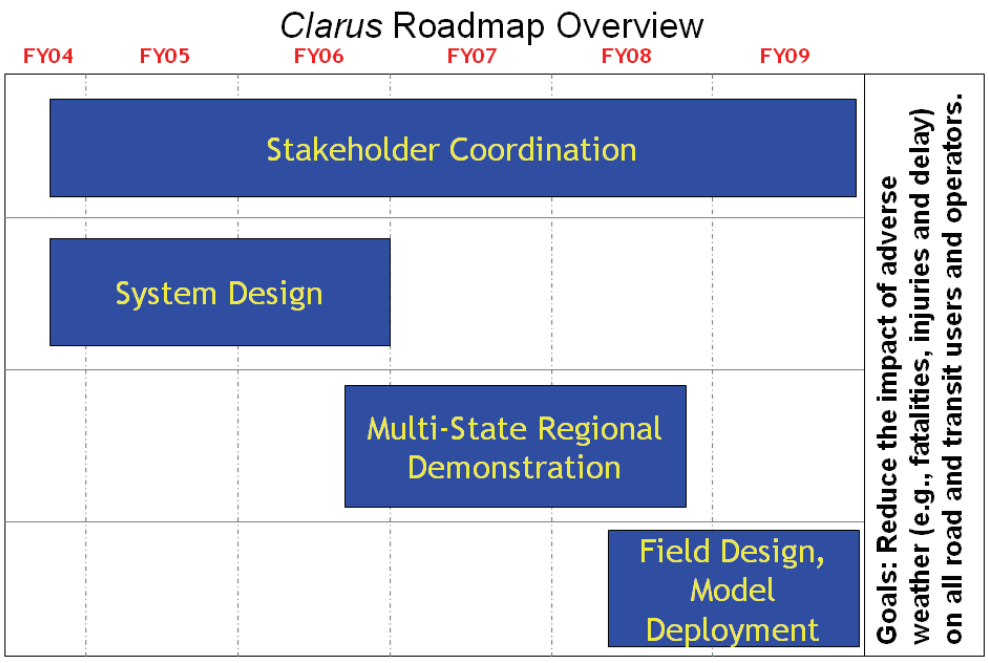
- Develop partnerships between the surface transportation and weather communities to leverage and share resources for both research and operations.
- Strengthen ties among federal agencies such as the Federal Highway Administration (FHWA) and the National Oceanic and Atmospheric Administration (NOAA) that have similar objectives.
- Demonstrate a framework to collect the nation's current and future surface transportation weather and road condition observations, and provide quality data as input to advanced weather models to serve as the basis for value-added products.
- Establish an instrumented test bed to host new cutting edge technologies for fixed, mobile and remote sensing.
- Establish an Initiative Coordinating Committee to guide the development and deployment efforts.

Potential Benefits

- Stable and reliable access to surface transportation weather related observations
- Continuous quality control of observations with direct feedback to transportation agencies
- Standards in data formats, communications and network architectures
- Real-time data for weather and traffic models and decision support systems
- Application of new technologies, such as:
  - Vehicle-based sensors
  - Video cameras for acquiring visibility and road condition information
  - Remote sensors such as low cost, low power, high-resolution weather radars

Initiative Coordinating Committee (ICC)

The ICC will serve as an interdisciplinary source of expertise and guidance. ICC participants will consist of personnel from the FHWA, State DOTs, NOAA, other federal agencies, the private sector and academia. Meetings of the ICC will occur at least annually during the six year initiative. If interested in participating, contact Paul Pisano or James Pol:
Paul.Pisano@fhwa.dot.gov
James.Pol@fhwa.dot.gov



Milestones

- **Create the ICC:** Establish stakeholder ownership and consensus in system design to support the concepts and objectives of the initiative.
- **System Design:** Work across the surface transportation and weather communities, build a consensus for a concept of operations, analyze the gaps in present day observation networks, and recommend solutions for an extensible, robust architecture to support 21st Century transportation operations.
- **Demonstrations:** Implement regional multi-state data collection systems with real-time quality control functionality, feedback to transportation agencies and an Internet data portal where both current and archived data can be retrieved.
- **Research:** Create instrumented corridors to promote and test cutting edge observational technologies including fixed, mobile, and remote sensors.
- **Evaluation:** Evaluate and revise the system designs until a blueprint for a deployable nationwide surface transportation weather observing system has been created.
- **Deployment:** Provide support implementation and continued development of the nationwide network. Promote use of the data for new products and services. Educate the users to the advantages of the new products. Monitor the impact on transportation safety and mobility.

U.S. Department of Transportation
Federal Highway Administration
Publication No. FHWA-HOP-04-037
EDL No. 14050