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## Abstract

[Forewarning of Failure in Complex Systems](#)—Robert K. Abercrombie, Lee M. Hively, Stacy J. Prowell, Bob G. Schlicher, and Frederick T. Sheldon—all of Oak Ridge National Laboratory

As the critical infrastructures of the United States have become more and more dependent on public and private networks, the potential for widespread national impact resulting from disruption or failure of these networks has also increased. Securing the nation's critical infrastructures requires protecting not only their physical systems but, just as important, the cyber portions of the systems on which they rely.

A failure is inclusive of random events, design flaws, and instabilities caused by cyber (and/or physical) attack. One such domain is failure in critical equipment. A second is aging bridges. We discuss the workings of such a system in the context of the necessary sensors, command and control and data collection as well as the cyber security efforts that would support this system. Their application and the implications of this computing architecture are also discussed, with respect to our nation's aging infrastructure.

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