
Editorial

Virgilio A. Centeno

Virginia Tech
Blacksburg, VA, USA
E-mail: vcenteno@vt.edu

Biographical notes: Virgilio A. Centeno obtained his MS and PhD degrees from Virginia Tech, USA. He worked as a Project Manager at Macrodyne Inc., from 1990 to 1997 in the development and application of the first commercial wide-area measurement units, better known as Phasor Measurement Units (PMUs). He is currently an Associate Professor at Virginia Tech, where his main research area is on protection applications of wide-area measurement devices for power systems. He is an IEEE senior member and the current President of CRIS, the International Institute for Critical Infrastructures.

1 Introduction

Certain technological infrastructures are critical for the well-being of modern societies. During the past several years electric power networks, communication networks, and computer networks have become so intimately interlinked that it is necessary to consider these infrastructures in an integrated framework. When catastrophic events such as natural disasters or terrorist attacks occur, the survivability and integrity of these infrastructures is of paramount importance to the recovery of the affected communities.

The CRIS Institute, with presence in Europe, North America and Asia, was constituted in January 2001 as an international association having scientific aims, with the objectives to promote, encourage and develop awareness and knowledge to increase the dependability of the critical infrastructures in society, mainly the power system, communication system and the computer network. With this aim CRIS has organised three international conferences on critical infrastructures, Beijing, China 2002, Grenoble, France 2004 and Arlington, VA 2006.

2 Contributions

This special issue presents the four best papers of the CRIS 2006 Conference in Arlington Virginia. The first paper summarises a study conducted by Bigger *et al.* in 2005 to document the impact among utilities and transportation system of the 2004 hurricane season. The study determines intra-dependencies within and interdependencies between the critical infrastructures that affect their operation and service.

The second paper by Rahman *et al.* presents a study that uses public failure reports to identify interdependencies among Communication and Information Technology Infrastructure (CITI) and other infrastructures based on factors, such as origin of failures, impact on spatial and temporal dimensions, effect on public safety, and propagation from CITI to other critical infrastructures and vice versa.

The third paper presents a methodology that uses subjective probability theory to assess the security of power system with respect to the possibility of terrorist activity. Tranchita *et al.* use the Colombian electrical infrastructure as a test system to validate their methodology.

The last paper uses graph theory based analysis to analyse the structural properties of a power grid to determine its robustness. Atkins *et al.* analysis on synthetic and real networks reveals that power grids are more vulnerable to targeted than random attacks due to the low three-like properties of the power grid.

The aims of the CRIS conferences is to bring together researchers, manufacturers of infrastructure hardware and software systems, and institutions involved in security and emergency management at local, national, and international levels, in order to exchange views on the lessons learned from previous catastrophic events and the technological innovations in these critical disciplines. We believe that these four papers best represent the aim of our conference to help promote the synergy among the experts in these fields providing the directions for the development and implementation of integrated infrastructures for the future will become clearer.

Acknowledgements

Special thanks to Professor Nouredine HadjSaid from INPG Grenoble, and Arun Phadke from Virginia Tech for their help on the selection of the papers for this journal. Thanks also to Lamine Mili for his guidance and assistance in organising this special issue.