

# National Infrastructure Advisory Council

January 19, 2007

The Honorable George W. Bush  
President of the United States  
The White House  
1600 Pennsylvania Avenue, N.W.  
Washington, DC

Dear Mr. President:

We are pleased to submit the final report and recommendations of the National Infrastructure Advisory Council (NIAC) study on the Convergence of Cyber and Physical Technologies and Related Management Challenges. The NIAC would like to thank Ms. Margaret Grayson, President of Grayson and Associates, Mr. George Conrades, Executive Chairman of Akamai Technologies, and Mr. Greg Peters, Partner of Collective IQ, for their leadership in this study, as well as the members of the study group and external reviewers for their dedicated efforts.

At its October 2005 meeting, the NIAC convened a Working Group to investigate the ongoing convergence of physical and cyber technologies for control systems and their consolidated network management. The NIAC, in consultation with the White House, chose to study this topic because the infrastructure services that control systems operate are vital to our Nation's economic health, and it is imperative that we secure these systems and infrastructures from any potential cyber attack.

Until recently, control systems were not vulnerable to cyber attack because the information technology (IT) networks that carried business systems were not physically connected to control systems networks and therefore the two systems did not communicate. As technology and business practices evolve, control systems have converged with IT networks and systems. Many companies have created connections to their control systems but may remain unaware of the exposure created by these connections. Control systems present unique challenges for security management, despite some apparent commonality with IT systems. Strategic planning and coordination among public and private sector infrastructure protection partners is vital to address the risks created by this convergence.

For this study, the NIAC focused its efforts on identifying areas of potential control systems vulnerability and on developing policy recommendations that would enable effective public-private partnerships to improve the cyber security posture of these critical infrastructure systems. In light of our report's findings, the Council respectfully submits recommendations to address five key areas for your consideration:

- A framework and approach for improving **Executive Leadership Awareness of the cyber threat to critical infrastructure control systems**. Executive Awareness is critical to achieving all action for needed control systems cyber security.

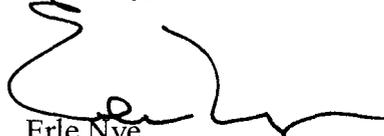
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Page 2

- Seven detailed recommendations to **improve information sharing regarding cyber risks to critical infrastructure control systems**. Properly informed executive decisions by infrastructure protection partners in the public and private sectors are dependent upon improved understanding and communication of information on threats, incidents, and vulnerabilities.
- Recommendations to **improve government leadership priorities for strategic planning and coordination**. DHS and the Sector Specific Agencies (SSAs), in coordination with the National Laboratories, are working to develop cyber security solutions for these systems, but strategic planning and coordination could benefit from higher-level agency coordination and private-sector feedback in the funding prioritization process.
- A sector specific approach and recommendations for **developing and supporting appropriate market conditions to develop control systems cyber security technologies and products**. The control systems market is distinctly different than the IT market, and it is in the early stages of a transition toward developing the needed market drivers for cyber security solutions.
- Goals and recommendations needed to change the mindset of critical infrastructure operators and **establish cyber security as a critical aspect of their recognized operational goals of availability, reliability, and safety**.

Mr. President, on behalf of my fellow NIAC members, we thank you for the opportunity to serve our country through participation in this Council.

Sincerely,



Erle Nye  
*Chairman Emeritus, TXU Corp.*  
*Chairman, NIAC*

cc The Honorable Dick Cheney, Vice President  
Frances Fragos Townsend, Assistant to the President for Homeland Security and Counterterrorism  
The Honorable Michael Chertoff, Secretary of the Department of Homeland Security