

Interim Report on 21st Century Cyber-Physical Systems Education



Cyber-physical systems (CPS) are increasingly relied on to provide the functionality and value to products, systems, and infrastructure in sectors including transportation, health care, manufacturing, and electrical power generation and distribution. CPS are smart, networked systems with embedded sensors, computer processors, and actuators that sense and interact with the physical world; support real-time, guaranteed performance; and are often found in critical applications. Cyber-physical systems have the potential to provide much richer functionality, including efficiency, flexibility, autonomy, and reliability, than systems that are loosely coupled, discrete, or manually operated, but also can create vulnerability related to security and reliability. Advances in CPS could yield systems that can communicate and respond faster than humans; enable better control and coordination of large-scale systems, such as the electrical grid or traffic controls; improve the efficiency of systems; and enable advances in many areas of science. As CPS become more pervasive, so too will demand for a workforce with the capacity and capability to design, develop, and maintain them. Building on its research program in CPS, the National Science Foundation (NSF) has begun to explore requirements for education and training. As part of that exploration, NSF asked the National Research Council of the National Academies to study the topic. Two workshops were convened in 2014, on April 30 and October 2-3 in Washington, D.C., to explore the knowledge and skills required for CPS work, education, and training requirements and possible approaches to retooling engineering and computer science programs and curricula to meet these needs. Interim Report on 21st Century Cyber-Physical Systems Education highlights emerging themes and summarizes related discussions from the

workshops.

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Continued Review of the Tax Systems Modernization of the Internal Committee on 21st Century Cyber-Physical Systems Education and foster dialogue, and a brief interim report would be prepared to highlight emerging themes
Interim Report on 21st Century Cyber-Physical Systems Education Jul 8, 2015 Interim Report on 21st Century Cyber-Physical Systems Education explores current and future needs in education for a CPS-capable U.S. **Interim Report on 21st Century Cyber-Physical Systems Education** Toward 21st-Century Cyber-Physical Systems Education and a brief interim report would be prepared to highlight emerging themes and summarize related **Interim Report on 21st Century Cyber-Physical Systems Education** **Workshop on Cyber-Physical Systems Education - The National** Continuing Innovation in Information Technology: Workshop Report (2016) Interim Report on 21st Century Cyber-Physical Systems Education (2015). **Formats and Editions of Interim report on 21st century cyber-physical** Interim Report on 21st Century Cyber-Physical Systems Education highlights emerging themes and summarizes related discussions from the workshops. **Appendix A Biographies of Committee Members and Staff Interim** Review of the Tax Systems Modernization of the Internal Revenue Service: Interim Report . Cover Image: A 21st Century Cyber-Physical Systems Education **Interim Report on 21st Century Cyber-Physical Systems Education** Download a PDF of Interim Report on 21st Century Cyber-Physical Systems Education by the National Research Council for free. Description: Cyber-physical **Download Free PDF - The National Academies Press** Jun 18, 2013 Toward 21st Century Cyber-Physical Systems Education dialogue, yielding a brief interim report prepared to highlight emerging themes. **Appendix B Presentations to the Committee Interim Report on 21st Other Recent Reports of the Computer Science and** CPS-VO Education INTERIM REPORT ON 21ST CENTURY CYBER-PHYSICAL

SYSTEMS EDUCATION. Interim Report on 21st Century Cyber-Physical **publications - The National Academies of Sciences, Engineering** Interim Report on 21st Century Cyber-Physical Systems Education highlights emerging themes and summarizes related discussions from the workshops. **Interim Report on 21st Century Cyber-Physical Systems Education** Interim Report on 21st Century Cyber-Physical Systems Education highlights emerging themes and summarizes related discussions from the workshops. **Toward 21st-Century Cyber-Physical Systems Education** A 21st Century Cyber-Physical Systems Education examines the intellectual This report is intended to inform those who might support efforts to develop Continuing Innovation in Information Technology: Workshop Report summarizes Interim Report on 21st Century Cyber-Physical Systems Education. **NAE Website - A 21st Century Cyber-Physical Systems Education** Interim Report on 21st Century Cyber-Physical Systems Education, ???: Computer Science and Telecommunications Board, Division on Engineering and **Interim Report on 21st Century Cyber-Physical Systems Education** SOURCE: Adapted from National Research Council, 2015, Interim Report on 21st Century Cyber-Physical Systems Education, The National Academies Press, **2 Preliminary Observations** **Interim Report on 21st Century Cyber** National Academies of Sciences, Engineering, and Medicine, Interim Report on 21st Century Cyber-Physical Systems Education, The National Academies Press **Interim Report on 21st Century Cyber-Physical Systems Education** Apr 30, 2014 Workshop on 21st Century Cyber-Physical Systems Education: Defining A brief interim report will highlight emerging themes and summarize **Front Matter A 21st Century Cyber-Physical Systems Education** Interim Report on 21st Century Cyber-Physical Systems Education highlights emerging themes and summarizes related discussions from the workshops. **NSF Award Search: Award#1341078 - Toward 21st Century Cyber** Jul 8, 2015 Cyber-physical systems (CPS) are increasingly relied on to provide functionality and value to products, systems, and infrastructure in sectors **1 Summary of Presentations and Workshop Discussions** **Interim** Jun 26, 2015 Division on Engineering and Physical Sciences National Research Council Interim Report on 21st Century Cyber-Physical Systems Education. **Project: Toward 21st-Century Cyber-Physical Systems Education** CPS-VO Education INTERIM REPORT ON 21ST CENTURY CYBER-PHYSICAL SYSTEMS EDUCATION. Interim Report on 21st Century Cyber-Physical **Interim Report on 21st Century Cyber-Physical Systems Education** Download a PDF of A 21st Century Cyber-Physical Systems Education by the This report is intended to inform those who might support efforts to develop **none** Dec 27, 2016 A 21st Century Cyber-Physical Systems Education examines the This report is intended to inform those who might support efforts to develop **3 Paths to CPS Knowledge** **A 21st Century Cyber-Physical Systems** National Research Council, Division on Engineering and Physical Sciences, Computer Board, Committee on 21st Century Cyber-Physical Systems Education. **A 21st Century Cyber-Physical Systems Education** **The National** Interim Report on 21st Century Cyber-Physical Systems Education See more about Products, 21st century and Education. **Interim Report on 21st Century Cyber-Physical Systems Education** Interim Report on 21st Century Cyber-Physical Systems Education highlights emerging themes and summarizes related discussions from the workshops. **Cyber-Physical Systems CPS - The National Academies Press** **Interim Report on 21st Century Cyber-Physical Systems Education - Google Books Result** Interim Report on 21st Century Cyber-Physical Systems Education explores current and future needs in education for a CPS-capable U.S. workforce. The interim