

Physical Sciences November 2014 Memorandum

The massive increase in digital information in the last decade has created new requirements for institutional and technological structures and workforce skills. Preparing the Workforce for Digital Curation focuses on education and training needs to meet the demands for access to and meaningful use of digital information, now and in the future. This study identifies the various practices and spectrum of skill sets that comprise digital curation, looking in particular at human versus automated tasks. Additionally, the report examines the possible career path demands and options for professionals working in digital curation activities, and analyzes the economic benefits and societal importance of digital curation for competitiveness, innovation, and scientific advancement. Preparing the Workforce for Digital Curation considers the evolving roles and models of digital curation functions in research organizations, and their effects on employment opportunities and requirements. The recommendations of this report will help to advance digital curation and meet the demand for a trained workforce.

In the past few years, interest in plug-in electric vehicles (PEVs) has grown. Advances in battery and other technologies, new federal standards for carbon-dioxide emissions and fuel economy, state zero-emission-vehicle requirements, and the current administration's goal of putting millions of alternative-fuel vehicles on the road have all highlighted PEVs as a transportation alternative. Consumers are also beginning to recognize the advantages of PEVs over conventional vehicles, such as lower operating costs, smoother operation, and better acceleration; the ability to fuel up at home; and zero tailpipe emissions when the vehicle operates solely on its battery. There are, however, barriers to PEV deployment, including the vehicle cost, the short all-electric driving range, the long battery charging time, uncertainties about battery life, the few choices of vehicle models, and the need for a charging infrastructure to support PEVs. What should industry do to improve the performance of PEVs and make them more attractive to consumers? At the request of Congress, *Overcoming Barriers to Deployment of Plug-in Electric Vehicles* identifies barriers to the introduction of electric vehicles and recommends ways to mitigate these barriers. This report examines the characteristics and capabilities of electric vehicle technologies, such as cost, performance, range, safety, and durability, and assesses how these factors might create barriers to widespread deployment. *Overcoming Barriers to Deployment of Plug-in Electric Vehicles* provides an overview of the current status of PEVs and makes recommendations to spur the industry and increase the attractiveness of this promising technology for consumers. Through consideration of consumer behaviors, tax incentives, business models, incentive programs, and infrastructure needs, this book studies the state of the industry and makes recommendations to further its development and acceptance.

The Science of Armour Materials comprehensively covers the range of armor materials from steels and light alloys, through glasses and ceramics, to fibers, textiles, and protective apparel. The book also discusses aspects of analytical and numerical modeling, as well as laboratory-based high-strain rate testing and ballistic testing methodologies. Each chapter is written from an international perspective, including reviews of the current global literature, and incorporates case studies that focus upon real life applications, research outcomes, and lessons learned. The threat spectrum is restricted to small arms ammunition, high velocity fragments, and stab and spike attacks, as well as blast loadings. Features input from an editor who is an expert in his field: Dr. Ian Crouch, the author of over 80 publications in his field, with three patents to his name Provides systematic and comprehensive coverage of armor materials, modeling, and testing Offers a cross-disciplinary approach that brings together expertise in materials science and defense engineering Discusses aspects of analytical and numerical modeling, as well as laboratory-based high-strain rate testing and ballistic testing methodologies

In 1986 the Age Discrimination in Employment Act (ADEA) was amended to abolish mandatory

retirement for tenured faculty members in colleges and universities effective January 1, 1994. Will this "uncapping" of the retirement age adversely affect the vitality of academic departments or the prospects of advancement for younger scholars? In a definitive study of faculty retirement in the arts and sciences, Albert Rees and Sharon Smith seek to answer this question. Basing their conclusions on original data collected from thirty-three colleges and universities, they do much to resolve an issue that is a frequent subject of discussion in the academic world and in the press. Rees and Smith reveal that the ending of mandatory retirement will have much smaller effects than those generally anticipated--so small that there is no justification for efforts to have Congress continue exempting faculty members from the ADEA past 1994, the date that the exemption is now due to expire. In addition to their data on retirement patterns, the authors make use of surveys of senior faculty and retired faculty to explore attitudes toward retirement. Originally published in 1991. The Princeton Legacy Library uses the latest print-on-demand technology to again make available previously out-of-print books from the distinguished backlist of Princeton University Press. These editions preserve the original texts of these important books while presenting them in durable paperback and hardcover editions. The goal of the Princeton Legacy Library is to vastly increase access to the rich scholarly heritage found in the thousands of books published by Princeton University Press since its founding in 1905.

How the FDA became the world's most powerful regulatory agency The U.S. Food and Drug Administration is the most powerful regulatory agency in the world. How did the FDA become so influential? And how exactly does it wield its extraordinary power? *Reputation and Power* traces the history of FDA regulation of pharmaceuticals, revealing how the agency's organizational reputation has been the primary source of its power, yet also one of its ultimate constraints. Daniel Carpenter describes how the FDA cultivated a reputation for competence and vigilance throughout the last century, and how this organizational image has enabled the agency to regulate an industry as powerful as American pharmaceuticals while resisting efforts to curb its own authority. Carpenter explains how the FDA's reputation and power have played out among committees in Congress, and with drug companies, advocacy groups, the media, research hospitals and universities, and governments in Europe and India. He shows how FDA regulatory power has influenced the way that business, medicine, and science are conducted in the United States and worldwide. Along the way, Carpenter offers new insights into the therapeutic revolution of the 1940s and 1950s; the 1980s AIDS crisis; the advent of oral contraceptives and cancer chemotherapy; the rise of antiregulatory conservatism; and the FDA's waning influence in drug regulation today. *Reputation and Power* demonstrates how reputation shapes the power and behavior of government agencies, and sheds new light on how that power is used and contested. Some images inside the book are unavailable due to digital copyright restrictions.

Treaties in Force is prepared by the Department of State for the purpose of providing information on treaties and other international agreements to which the United States has become a party and which are carried on the records of the Department of State as being in force as of its stated publication date, January 1, 2016. *Treaties in Force* is arranged in two sections: Section 1 includes bilateral treaties and other international agreements listed by country or other international entity with subject headings under each entry. Arrangements with territorial possessions of a country appear at the end of the entry for that country. In some cases, treaties and international agreements applicable to a territory prior to its independence are included in the entry for that country on the basis of its assumption of treaty obligations upon becoming independent, as noted at the beginning of the entry for that country. For convenience, some treaties and agreements concluded with countries whose name or statehood status has changed continue to be listed under the name in use at the time the agreement was concluded, if the title of the treaty or agreement has not been formally

amended. Section 2 lists multilateral treaties and other international agreements to which the United States is a party, arranged by subject. The depositary is the authoritative source for a current list of parties and information on other matters concerning the status of the agreement, and status information often changes. Information is provided on the depositary for the agreement in question, and contact information, including an Internet site is provided for the depositary where available. Related products: International & Foreign Affairs resources collection can be found here: <https://bookstore.gpo.gov/catalog/international-foreign-affairs>

The Office of the Under Secretary of Defense (Personnel & Readiness), referred to throughout this report as P&R, is responsible for the total force management of all Department of Defense (DoD) components including the recruitment, readiness, and retention of personnel. Its work and policies are supported by a number of organizations both within DoD, including the Defense Manpower Data Center (DMDC), and externally, including the federally funded research and development centers (FFRDCs) that work for DoD. P&R must be able to answer questions for the Secretary of Defense such as how to recruit people with an aptitude for and interest in various specialties and along particular career tracks and how to assess on an ongoing basis service members' career satisfaction and their ability to meet new challenges. P&R must also address larger-scale questions, such as how the current realignment of forces to the Asia-Pacific area and other regions will affect recruitment, readiness, and retention. While DoD makes use of large-scale data and mathematical analysis in intelligence, surveillance, reconnaissance, and elsewhere—exploiting techniques such as complex network analysis, machine learning, streaming social media analysis, and anomaly detection—these skills and capabilities have not been applied as well to the personnel and readiness enterprise. Strengthening Data Science Methods for Department of Defense Personnel and Readiness Missions offers and roadmap and implementation plan for the integration of data analysis in support of decisions within the purview of P&R.

The rapid evolution of technology continuously changes the way people interact, work, and learn. By examining these advances from a sociological perspective, researchers can further understand the impact of cyberspace on human behavior, interaction, and cognition. Multigenerational Online Behavior and Media Use: Concepts, Methodologies, Tools, and Applications is a vital reference source covering the impact of social networking platforms on a variety of relationships, including those between individuals, governments, citizens, businesses, and consumers. The publication also highlights the negative behavioral, physical, and mental effects of increased online usage and screen time such as mental health issues, internet addiction, and body image. Showcasing a range of topics including online dating, smartphone dependency, and cyberbullying, this multi-volume book is ideally designed for sociologists, psychologists, computer scientists, engineers, communication specialists, academicians, researchers, and graduate-level students seeking current research on media usage and its behavioral effects.

Never be lost for words again with this stunning illustrated dictionary for children. Spilling over with thousands of words and definitions for you to pick and peruse, this is the go-to guide for anyone struggling with spellings and meanings. Minds can become muddled by strange spellings and perplexing pronunciations, but the Children's Illustrated Dictionary explains them all in simple and memorable detail. From abacus to zoom, each word is shown alongside eye-catching pictures, engaging illustrations, concise descriptions, and simple examples of usage. Clear navigation ensures you find the words you're looking for quickly and easily. Also included are entertaining word games, grammar sections, and a variety of vocabulary themes to build your understanding of language. Developed in close consultation with experts in children's language teaching, this dictionary is guaranteed to expand your knowledge and

broaden your horizons. If words don't come easy, this is the helping hand you need for school work and homework. For would-be writers and devoted bookworms, this is essential reference to keep by your side. Supports the Common Core State Standards. The National Institutes of Health (NIH) is the primary agency of the United States government responsible for biomedical and public health research. Founded in the late 1870s, NIH has produced extraordinary advances in the treatment of common and rare diseases and leads the world in biomedical research. It is a critical national resource that plays an important role in supporting national security. The 310-acre Bethesda campus supports some 20,000 employees and contractors, and it contains more than 12 million square feet of facilities divided amongst nearly 100 buildings, including the largest dedicated research hospital in the world. The Bethesda campus supports some of the most sophisticated and groundbreaking biomedical research in the world. However, while some new state-of-the-art buildings have been constructed in recent years, essential maintenance for many facilities and the campus overall has been consistently deferred for many years. The deteriorating condition of NIH's built environment is now putting its ability to fulfill its mission at substantial risk. Managing the NIH Bethesda Campus's Capital Assets for Success in a Highly Competitive Global Biomedical Research Environment identifies the facilities in greatest need of repair on the Bethesda campus and evaluates cost estimates to determine what investment is needed for the NIH to successfully accomplish its mission going forward.

This book aims to integrate, in a pedagogical and technical manner, with detailed derivations, all essential principles of fundamental theoretical physics as developed over the past 100 years. It covers: Quantum physics and Stability Problems in the Quantum World, Minkowski Spacetime Physics Particle Classifications and Underlying Symmetries, Symmetry Violations, Quantum Field Theory of Particle Interactions, Higgs Field Physics, Supersymmetry: A Theory with Mathematical Beauty Superstrings, Gravity and Supergravity, General Relativity Predictions, including Frame Dragging, Intricacies of Black Hole Physics, Perturbative and Non-perturbative Quantum Gravity Intricacies of Modern Cosmology, including Inflation and Power Spectrum If you are in the process of learning, or are lecturing on, any of the subjects above, then this is your book - irrespective of your specialty. With over-specialization and no time to master all the fields given above, students, and perhaps many physicists, may find it difficult to keep up with all the exciting developments going on, and are even less familiar with their underlying technicalities: e.g. they might have heard that the Universe is 13.8 billion years old, but have no idea on how this number is actually computed. This unique book will be of great value to graduate students, instructors and researchers interested in the intricacies and derivations of the many aspects of modern fundamental theoretical physics. And, although a graduate level book, some chapters may also be suitable for advanced undergraduates in their final year.

Advances in digital technologies have provided ample positive impacts to modern society; however, in addition to such benefits, these innovations have inadvertently created a new venue for criminal activity to generate. Combating Violent Extremism and Radicalization in the Digital Era is an essential reference for the latest research on the utilization of online tools by terrorist organizations to communicate with and recruit potential extremists and examines effective countermeasures employed by law enforcement agencies to defend against such threats. Focusing on perspectives from

the social and behavioral sciences, this book is a critical source for researchers, analysts, intelligence officers, and policy makers interested in preventive methods for online terrorist activities.

In this Book we cover most important topic from previous Month with detailed Analysis Helpfull in prepration of UPSC,SSC and many other Exams

This White Paper describes the state of astrobiology in Europe today and its relation to the European society at large. With contributions from authors in twenty countries and over thirty scientific institutions worldwide, the document illustrates the societal implications of astrobiology and the positive contribution that astrobiology can make to European society. The White paper has two main objectives: 1. It recommends the establishment of a European Astrobiology Institute (EAI) as an answer to a series of challenges relating to astrobiology but also European research, education and the society at large. 2. It also acknowledges the societal implications of astrobiology, and thus the role of the social sciences and humanities in optimizing the positive contribution that astrobiology can make to the lives of the people of Europe and the challenges they face. This book is recommended reading for science policy makers, the interested public, and the astrobiology community.

The mission of the United States Army is to fight and win our nation's wars by providing prompt, sustained land dominance across the full range of military operations and spectrum of conflict in support of combatant commanders. Accomplishing this mission rests on the ability of the Army to equip and move its forces to the battle and sustain them while they are engaged. Logistics provides the backbone for Army combat operations. Without fuel, ammunition, rations, and other supplies, the Army would grind to a halt. The U.S. military must be prepared to fight anywhere on the globe and, in an era of coalition warfare, to logistically support its allies. While aircraft can move large amounts of supplies, the vast majority must be carried on ocean going vessels and unloaded at ports that may be at a great distance from the battlefield. As the wars in Afghanistan and Iraq have shown, the costs of convoying vast quantities of supplies is tallied not only in economic terms but also in terms of lives lost in the movement of the materiel. As the ability of potential enemies to interdict movement to the battlefield and interdict movements in the battlespace increases, the challenge of logistics grows even larger. No matter how the nature of battle develops, logistics will remain a key factor. Force Multiplying Technologies for Logistics Support to Military Operations explores Army logistics in a global, complex environment that includes the increasing use of antiaccess and area-denial tactics and technologies by potential adversaries. This report describes new technologies and systems that would reduce the demand for logistics and meet the demand at the point of need, make maintenance more efficient, improve inter- and intratheater mobility, and improve near-real-time, in-transit visibility. Force Multiplying Technologies also explores options for the Army to operate with the other services and improve its support of Special Operations Forces. This report provides a logistics-centric research and development investment strategy and illustrative examples of how improved logistics could look in the future.

The American economy faces two deep problems: expanding innovation and raising the rate of quality job creation. Both have roots in a neglected problem: the resistance of Legacy economic sectors to innovation. While the U.S. has focused its policies on breakthrough innovations to create new economic frontiers like information technology

and biotechnology, most of its economy is locked into Legacy sectors defended by technological/ economic/ political/ social paradigms that block competition from disruptive innovations that could challenge their models. Americans like to build technology "covered wagons" and take them "out west" to open new innovation frontiers; we don't head our wagons "back east" to bring innovation to our Legacy sectors. By failing to do so, the economy misses a major opportunity for innovation, which is the bedrock of U.S. competitiveness and its standard of living. Technological Innovation in Legacy Sectors uses a new, unifying conceptual framework to identify the shared features underlying structural obstacles to innovation in major Legacy sectors: energy, air and auto transport, the electric power grid, buildings, manufacturing, agriculture, health care delivery and higher education, and develops approaches to understand and transform them. It finds both strengths and obstacles to innovation in the national innovation environments - a new concept that combines the innovation system and the broader innovation context - for a group of Asian and European economies. Manufacturing is a major Legacy sector that presents a particular challenge because it is a critical stage in the innovation process. By increasingly offshoring production, the U.S. is losing important parts of its innovation capacity. "Innovate here, produce here," where the U.S. took all the gains of its strong innovation system at every stage, is being replaced by "innovate here, produce there," which threatens to lead to "produce there, innovate there." To bring innovation to Legacy sectors, authors William Bonvillian and Charles Weiss recommend that policymakers focus on all stages of innovation from research through implementation. They should fill institutional gaps in the innovation system and take measures to address structural obstacles to needed disruptive innovations. In the specific case of advanced manufacturing, the production ecosystem can be recreated to reverse "jobless innovation" and add manufacturing-led innovation to the U.S.'s still-strong, research-oriented innovation system.

There is a clear conspiracy to deny the existence of UFOs. The mainstream media has misinformed us for years about UFO studies conducted by highly regarded scientists associated with some of the finest universities in the country. There is significant evidence that the U.S. government has covered up the alien presence through misinformation, distortion, obfuscation, and ridicule. Some prominent, politically connected scientists have engaged in the cover up. And a few professional writers have helped to successfully label any scientists who have been persuaded by the evidence and brave enough to take a stand as unscientific charlatans, fanatics, and kooks. Fact, Fiction, and Flying Saucers examines the wealth of archival documents that clearly demonstrate this cooperative disinformation effort and refute the false claims made by these professional scoffers. Friedman and Marden set the record straight by examining politically motivated misinformation and presenting the compelling evidence that separates fact from fiction. They reveal: The most compelling UFO evidence, including a variety of large-scale scientific studies. The current state of UFOlogy and what the future holds. The media's role in disclosure and denial. The government scientists whose job it is to deny. The Air Force, FBI, CIA, and NSA's involvement.

Closing in the present day with a discussion of the 2017 March for Science and the prospects for science and science diplomacy in the Trump era, the book demonstrates the continued hold of Cold War thinking on ideas about science and politics in the United States.

The congressionally mandated report A New Foundation for the Nuclear Enterprise (the "Augustine-Mies" report), released in November 2014, concluded that "the existing governance structures and many of the practices of the [nuclear security] enterprise are inefficient and ineffective, thereby putting the entire enterprise at risk over the long term." Following the release of the Augustine-Mies report, the National Defense Authorization Act for Fiscal Year 2016 called for DOE to develop an implementation plan for responding to the recommendations in that and similar reports. The NDAA also called for a 4 1/2-year study, joint between the National Academies of Sciences, Engineering, and Medicine and the National Academy of Public Administration, to evaluate the implementation plan, to track the actions proposed in that plan, and to assess progress. This report is the third in a series of reports to be issued over 2017-2020 as part of that study.

The National Nanotechnology Initiative (NNI) is a multiagency, multidisciplinary federal initiative comprising a collection of research programs and other activities funded by the participating agencies and linked by the vision of "a future in which the ability to understand and control matter at the nanoscale leads to a revolution in technology and industry that benefits society." As first stated in the 2004 NNI strategic plan, the participating agencies intend to make progress in realizing that vision by working toward four goals. Planning, coordination, and management of the NNI are carried out by the interagency Nanoscale Science, Engineering, and Technology (NSET) Subcommittee of the National Science and Technology Council (NSTC) Committee on Technology (CoT) with support from the National Nanotechnology Coordination Office (NNCO). Triennial Review of the National Nanotechnology Initiative is the latest National Research Council review of the NNI, an assessment called for by the 21st Century Nanotechnology Research and Development Act of 2003. The overall objective of the review is to make recommendations to the NSET Subcommittee and the NNCO that will improve the NNI's value for basic and applied research and for development of applications in nanotechnology that will provide economic, societal, and national security benefits to the United States. In its assessment, the committee found it important to understand in some detail-and to describe in its report-the NNI's structure and organization; how the NNI fits within the larger federal research enterprise, as well as how it can and should be organized for management purposes; and the initiative's various stakeholders and their roles with respect to research. Because technology transfer, one of the four NNI goals, is dependent on management and coordination, the committee chose to address the topic of technology transfer last, following its discussion of definitions of success and metrics for assessing progress toward achieving the four goals and management and coordination. Addressing its tasks in this order would, the committee hoped, better reflect the logic of its approach to review of the NNI. Triennial Review of the National Nanotechnology Initiative also provides concluding remarks in the last chapter.

Housing for Special Groups contains the proceedings of an international seminar held in the Netherlands on November 8-13, 1976 under the auspices of the Committee on Housing, Building and Planning of the United Nations Economic Commission for Europe. The seminar provided a forum for discussing the special housing requirements of certain groups, including the elderly and the handicapped. The emphasis is on the scope and size of special housing problems and their likely future evolution, as well as

the general lines of approach adopted by various countries to tackle these problems. The discussions are organized around three themes: specific housing needs in relation to overall housing policy; social principles, including financial aid; and architectural, planning, and technical aspects. The issues covered include the right to housing and the integration of such housing into the community and the avoidance of segregation; the possibility of housing choice; the relationship between the life-cycle of households and housing needs; and the architecture, planning, and technical aspects of housing for special groups in western Europe and eastern Europe. The possibilities offered both by new production and by alterations to existing buildings are considered. This monograph will be of interest to housing officials and policymakers.

Going Digital in Latvia analyses recent developments in Latvia's digital economy, reviews policies related to digitalisation and make recommendations to increase policy coherence in this area, based on the OECD Going Digital Integrated Policy Framework. Encyclopedia of Pharmacy Practice and Clinical Pharmacy covers definitions, concepts, methods, theories and applications of clinical pharmacy and pharmacy practice. It highlights why and how this field has a significant impact on healthcare. The work brings baseline knowledge, along with the latest, most cutting-edge research. In addition, new treatments, algorithms, standard treatment guidelines, and pharmacotherapies regarding diseases and disorders are also covered. The book's main focus lies on the pharmacy practice side, covering pharmacy practice research, pharmacovigilance, pharmacoeconomics, social and administrative pharmacy, public health pharmacy, pharmaceutical systems research, the future of pharmacy, and new interventional models of pharmaceutical care. By providing concise expositions on a broad range of topics, this book is an excellent resource for those seeking information beyond their specific areas of expertise. This outstanding reference is essential for anyone involved in the study of pharmacy practice. Provides a 'one-stop' resource for access to information written by world-leading scholars in the field Meticulously organized, with articles split into three clear sections, it is the ideal resource for students, researchers and professionals to find relevant information Contains concise and accessible chapters that are ideal as an authoritative introduction for non-specialists and readers from the undergraduate level upwards Includes multimedia options, such as hyperlinked references and further readings, cross-references and videos

The original charter of the Space Science Board was established in June 1958, 3 months before the National Aeronautics and Space Administration (NASA) opened its doors. The Space Science Board and its successor, the Space Studies Board (SSB), have provided expert external and independent scientific and programmatic advice to NASA on a continuous basis from NASA's inception until the present. The SSB has also provided such advice to other executive branch agencies, including the National Oceanic and Atmospheric Administration (NOAA), the National Science Foundation (NSF), the U.S. Geological Survey (USGS), the Department of Defense, as well as to Congress. Space Studies Board Annual Report 2013 covers a message from the chair of the SSB, Charles F. Kennel. This report also explains the origins of the Space Science Board, how the Space Studies Board functions today, the SSB's collaboration with other National Research Council units, assures the quality of the SSB reports, acknowledges the audience and sponsors, and expresses the necessity to enhance the

outreach and improve dissemination of SSB reports. This report will be relevant to a full range of government audiences in civilian space research - including NASA, NSF, NOAA, USGS, and the Department of Energy, as well members of the SSB, policy makers, and researchers.

By examining a suite of over 90 indicators for 9 major US fishery ecosystem jurisdictions, the authors systematically track the progress the country has made towards advancing EBFM and making it an operational reality, lessons which are applicable to oceans globally.

High-performance electronics are key to the U.S. Air Force's (USAF's) ability to deliver lethal effects at the time and location of their choosing. Additionally, these electronic systems must be able to withstand not only the rigors of the battlefield but be able to perform the needed mission while under cyber and electronic warfare (EW) attack. This requires a high degree of assurance that they are both physically reliable and resistant to adversary actions throughout their life cycle from design to sustainment. In 2016, the National Academies of Sciences, Engineering, and Medicine convened a workshop titled Optimizing the Air Force's Acquisition Strategy of Secure and Reliable Electronic Components, and released a summary of the workshop. This publication serves as a follow-on to provide recommendations to the USAF acquisition community.

Through an examination of case studies, agency briefings, and existing reports, and drawing on personal knowledge and direct experience, the Committee on Assessment of Impediments to Interagency Cooperation on Space and Earth Science Missions found that candidate projects for multiagency collaboration in the development and implementation of Earth-observing or space science missions are often intrinsically complex and, therefore costly, and that a multiagency approach to developing these missions typically results in additional complexity and cost. Advocates of collaboration have sometimes underestimated the difficulties and associated costs and risks of dividing responsibility and accountability between two or more partners; they also discount the possibility that collaboration will increase the risk in meeting performance objectives. This committee's principal recommendation is that agencies should conduct Earth and space science projects independently unless: It is judged that cooperation will result in significant added scientific value to the project over what could be achieved by a single agency alone; or Unique capabilities reside within one agency that are necessary for the mission success of a project managed by another agency; or The project is intended to transfer from research to operations necessitating a change in responsibility from one agency to another during the project; or There are other compelling reasons to pursue collaboration, for example, a desire to build capacity at one of the cooperating agencies. Even when the total project cost may increase, parties may still find collaboration attractive if their share of a mission is more affordable than funding it alone. In these cases, alternatives to interdependent reliance on another government agency should be considered. For example, agencies may find that buying

services from another agency or pursuing interagency coordination of spaceflight data collection is preferable to fully interdependent cooperation.

The Bulk Collection of Signals Intelligence: Technical Options study is a result of an activity called for in Presidential Policy Directive 28 (PPD-28), issued by President Obama in January 2014, to evaluate U.S. signals intelligence practices. The directive instructed the Office of the Director of National Intelligence (ODNI) to produce a report within one year "assessing the feasibility of creating software that would allow the intelligence community more easily to conduct targeted information acquisition rather than bulk collection." ODNI asked the National Research Council (NRC) -- the operating arm of the National Academy of Sciences and National Academy of Engineering -- to conduct a study, which began in June 2014, to assist in preparing a response to the President. Over the ensuing months, a committee of experts appointed by the Research Council produced the report.

This proceedings volume contains selected papers presented at the 2014 International Conference on Informatics, Networking and Intelligent Computing, held in Shenzhen, China. Contributions cover the latest developments and advances in the field of Informatics, Networking and Intelligent Computing. In response to the Chief of Naval Operations (CNO), the National Research Council appointed a committee operating under the auspices of the Naval Studies Board to study the national security implications of climate change for U.S. naval forces. In conducting this study, the committee found that even the most moderate current trends in climate, if continued, will present new national security challenges for the U.S. Navy, Marine Corps, and Coast Guard. While the timing, degree, and consequences of future climate change impacts remain uncertain, many changes are already underway in regions around the world, such as in the Arctic, and call for action by U.S. naval leadership in response. The terms of reference (TOR) directed that the study be based on Intergovernmental Panel on Climate Change (IPCC) scenarios and other peer-reviewed assessment. Therefore, the committee did not address the science of climate change or challenge the scenarios on which the committee's findings and recommendations are based. National Security Implications of Climate Change for U.S. Naval Forces addresses both the near- and long-term implications for U.S. naval forces in each of the four areas of the TOR, and provides corresponding findings and recommendations. This report and its conclusions are organized around six discussion areas--all presented within the context of a changing climate.

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The internet is established in most households worldwide and used for entertainment purposes, shopping, social networking, business activities, banking, telemedicine, and more. As more individuals and businesses use this essential tool to connect with each other and consumers, more private data is exposed to criminals ready to exploit it for their gain. Thus, it is essential to continue discussions involving policies that regulate and monitor these activities, and anticipate new laws that should be implemented in order to protect users. *Cyber Law, Privacy, and Security: Concepts, Methodologies, Tools, and Applications* examines current internet and data protection laws and their impact on user experience and cybercrime, and explores the need for further policies that protect user identities, data, and privacy. It also offers the latest methodologies and applications in the areas of digital security and threats. Highlighting a range of topics such as online privacy and security, hacking, and online threat protection, this multi-volume book is ideally designed for IT specialists, administrators, policymakers, researchers, academicians, and upper-level students.

Science, engineering, and technology permeate nearly every facet of modern life and hold the key to solving many of humanity's most pressing current and future challenges. The United States' position in the global economy is declining, in part because U.S. workers lack fundamental knowledge in these fields. To address the critical issues of U.S. competitiveness and to better prepare the workforce, *A Framework for K-12 Science Education* proposes a new approach to K-12 science education that will capture students' interest and provide them with the necessary foundational knowledge in the field. *A Framework for K-12 Science Education* outlines a broad set of expectations for students in science and engineering in grades K-12. These expectations will inform the development of new standards for K-12 science education and, subsequently, revisions to curriculum, instruction, assessment, and professional development for educators. This book identifies three dimensions that convey the core ideas and practices around which science and engineering education in these grades should be built. These three dimensions are: crosscutting concepts that unify the study of science

through their common application across science and engineering; scientific and engineering practices; and disciplinary core ideas in the physical sciences, life sciences, and earth and space sciences and for engineering, technology, and the applications of science. The overarching goal is for all high school graduates to have sufficient knowledge of science and engineering to engage in public discussions on science-related issues, be careful consumers of scientific and technical information, and enter the careers of their choice. A Framework for K-12 Science Education is the first step in a process that can inform state-level decisions and achieve a research-grounded basis for improving science instruction and learning across the country. The book will guide standards developers, teachers, curriculum designers, assessment developers, state and district science administrators, and educators who teach science in informal environments.

Cooking French focuses on classic recipes and basi

"The field trips in this guidebook are associated with the GSA Rocky Mountain-Cordilleran Joint Section Meeting, which will take place in Bozeman, Montana, in May 2014"--

Openness and sharing of information are fundamental to the progress of science and to the effective functioning of the research enterprise. The advent of scientific journals in the 17th century helped power the Scientific Revolution by allowing researchers to communicate across time and space, using the technologies of that era to generate reliable knowledge more quickly and efficiently. Harnessing today's stunning, ongoing advances in information technologies, the global research enterprise and its stakeholders are moving toward a new open science ecosystem. Open science aims to ensure the free availability and usability of scholarly publications, the data that result from scholarly research, and the methodologies, including code or algorithms, that were used to generate those data. Open Science by Design is aimed at overcoming barriers and moving toward open science as the default approach across the research enterprise. This report explores specific examples of open science and discusses a range of challenges, focusing on stakeholder perspectives. It is meant to provide guidance to the research enterprise and its stakeholders as they build strategies for achieving open science and take the next steps.

An Assessment of the Communications Technology Laboratory at the National Institute of Standards and Technology: Fiscal Year 2019 is an independent technical assessment of the quality of the National Institute of Standards and Technology's (NIST's) Communications Technology Laboratory (CTL). It reviews the organization's technical programs, the portfolio of scientific expertise within the organization, the adequacy of the organization's facilities, equipment, and human resources, and the effectiveness by which the organization disseminates its program outputs. This report focuses on CTL priority areas such as public safety communications, trusted spectrum testing, and Next Generation Wireless (5G and Beyond). It also assesses the extent to which CTL applied the

recommendations from a 2015 National Academies' report, which describes many of the critical uses of radio communications, provides lab-specific recommendations, and highlights important research priorities for the Boulder, Colorado communications technology laboratory of the Department of Commerce laboratory. This new report also describes the current activities of the Boulder telecommunications laboratories, its strengths and weaknesses as an organization, and its plans for the near future

In 2013 the Institute of Medicine (IOM) Roundtable on Population Health Improvement organized a workshop to discuss opportunities to foster a health in all policies approach in non-health sectors such as housing, transportation, defense, education, and others. Much of the discussion focused on public-sector organizations, and roundtable members saw the need for further discussion of the role of the private sector, both as stakeholder and partner. On June 4, 2015, the roundtable convened a follow-up workshop focused on applying a health lens to the role and potential of businesses in improving economic well-being and community health outcomes. Participants explored what businesses can offer the movement to improve population health and areas of potential, as well as models for how businesses can impact the determinants of health, and developed a platform for discussing how to promote and support health in all business practices, policies, and investments. This report summarizes the presentations and discussions from the workshop.

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