G Technology Readiness Levels Trl European Commission

This volume discusses both the latest experimental research in bioelectrosynthesis and current applications. Beginning with an introduction into the “electrification of biotechnology” as well as the underlying fundamentals, the volume then discusses a wide range of topics based on the interfacing of biotechnological and electrochemical reaction steps. It includes contributions on the different aspects of bioelectrochemical applications for synthesis purposes, i.e. the production of fine and platform chemicals based on enzymatically or microbially catalyzed reactions driven by electric energy. The volume finishes with a summary and outlook chapter which gives an overview of the current status of the field and future perspectives. Edited by experts in the field, and authored by a wide range of international researchers, this volume assesses how research from today’s lab bench can be developed into industrial applications, and is of interest to researchers in academia and industry.

The Technology Readiness Level (TRL) process is used to quantitatively assess the maturity of a given technology. The TRL process has been developed and successfully used by the Department of Defense (DOD) for development and deployment of new technology and systems for defense applications. In addition, NASA has also successfully used the TRL process to develop and deploy new systems for space applications. Advanced nuclear fuels and materials development is a critical technology needed for closing the nuclear fuel cycle. Because the deployment of a new nuclear fuel forms requires a lengthy and expensive research, development, and demonstration program, applying the TRL concept to the advanced fuel development program is very useful as a management and tracking tool. This report provides definition of the technology readiness level assessment process as defined for use in assessing nuclear fuel technology development for the Advanced Fuel Campaign (AFC).

Built in the 1940s, the Y-12 Nat. Security Complex, located in Oak Ridge, TN, is the NNSA primary site for enriched uranium activities. Because Y-12 facilities are outdated and deteriorating, NNSA is building a more modern facility -- known as the Uranium Processing Facility (UPF). NNSA plans to include more advanced technologies in the UPF to make uranium processing and component production safer. This report: (1) assessed NNSA's estimated cost and schedule for constructing the UPF; (2) determined the extent to which UPF will use new, experimental technologies, and identify resultant risks; and (3) determined the extent to which emerging changes in the nuclear weapons stockpile could affect the UPF project. A print on demand report.

Metal-air is a promising battery system that uses inexpensive metals for its negative electrode while unlimited, free and non-toxic oxygen is used for its positive electrode, however, only primary systems have been commercialized so far. Electrochemical Power Sources: Fundamentals, Systems, and Applications – Metal–Air Batteries: Present and Perspectives offers a comprehensive understanding of metal-air batteries as well as the solutions to the issues for overcoming the related difficulties of the secondary (rechargeable) system. Although metal-air batteries are widely studied as low-cost high-energy systems, their commercialization is limited to primary ones due to currently limited cycle life and insufficient reliability. For realization of the secondary systems, this book offers comprehensive understanding of metal-air batteries, including the details of both electrodes, electrolyte, cell/system, modelling and applications. Electrochemical Power Sources: Fundamentals, Systems, and Applications – Metal–Air Batteries: Present and Perspectives provides researchers, instructors, and students in electrochemistry, material science and environmental science; industry workers in cell manufacturing; and government officials in energy, environmental, power supply, and transportation with a valuable resource covering the most important topics of metal-air batteries and their uses. Outlines the general characteristics of metal-air compared with conventional batteries Offers a comprehensive understanding of various metal-air, featuring zinc, and lithium Contains comparisons and issues among various metal-air batteries and research efforts to solve them Includes applications and market prospects

This book contains a range of keynote papers and submitted papers presented at the 10th IFIP WG 9.2, 9.5, 9.6/11.7, 11.4, 11.6/SIG 9.2.2 International Summer School, held in Edinburgh, UK, in August 2015. The 14 revised full papers included in this volume were carefully selected from a total of 43 submissions and were subject to a two-step review process. In addition, the volume contains 4 invited keynote papers. The papers cover a wide range of topics: cloud computing, privacy-enhancing technologies, accountability, measuring privacy and understanding risks, the future of privacy and data protection regulation, the US privacy perspective, privacy and security, the PRISMS Decision System, engineering privacy, cryptography, surveillance, identity management, the European General Data Protection Regulation framework, communicating privacy issues to the general population, smart technologies, technology users' privacy preferences, sensitive applications, collaboration between humans and machines, and privacy and ethics.

This volume gathers the latest advances and innovations in the triple helix of university-industry-government relations, as presented by leading international researchers at the II International Triple Helix Summit 2018, held in Dubai, UAE on November 10-13, 2018, which brought together experts, practitioners and academics across disciplines that address the dynamics of government, industry and academia. It covers analysis, theory, measurements and empirical enquiry in all aspects of university-industry-government interactions, as well as the international bases and dimensions of triple helix relations, their impacts, and social, economic, political, cultural, health and environmental implications. It also examines the role of government/academia/industry in building innovation-based cities and nations, and in transforming nations into knowledge-based sustainable economies. The contributions, which were selected by means of a rigorous international peer-review process, highlight numerous exciting ideas that will spur novel research directions and foster multidisciplinary collaboration among different specialists.

Product and Process Design: Driving Innovation is a comprehensive textbook for students and industrial professionals. It treats the combined design of innovative products and their innovative manufacturing processes, providing specific methods for BSc, MSc, PDEng and PhD courses. Students, industrial innovators and managers are guided through all design steps in all innovation stages (discovery, concept, feasibility, development, detailed engineering, and implementation) to successfully obtain novel products and their novel processes. The authors' decades of innovation experience in industry, as well as in teaching BSc, MSc,

and post-academic product and process design courses, thereby including the latest design publications, culminate in this book.
This guidebook provides the necessary information for conducting a Technology Readiness Level (TRL) Assessment. TRL Assessments are a tool for determining the maturity of technologies and identifying next steps in the research process. This guidebook offers background on the TRL Scale, walks through every aspect of preparing for and conducting a TRL Assessment, and provides helpful tools and tips throughout. TRL Assessments are flexible evaluation tools and can be used in a variety of settings to fit the needs of the agency conducting them. Having a simple mechanism to determine and communicate technology maturity improves research outcomes and program management.
The LNCS journal Transactions on Large-Scale Data- and Knowledge-Centered Systems focuses on data management, knowledge discovery, and knowledge processing, which are core and hot topics in computer science. Since the 1990s, the Internet has become the main driving force behind application development in all domains. An increase in the demand for resource sharing across different sites connected through networks has led to an evolution of data- and knowledge-management systems from centralized systems to decentralized systems enabling large-scale distributed applications providing high scalability. Current decentralized systems still focus on data and knowledge as their main resource. Feasibility of these systems relies basically on P2P (peer-to-peer) techniques and the support of agent systems with scaling and decentralized control. Synergy between grids, P2P systems, and agent technologies is the key to data- and knowledge-centered systems in large-scale environments. This, the 29th issue of Transactions on Large-Scale Data- and Knowledge-Centered Systems, contains four revised selected regular papers. Topics covered include optimization and cluster validation processes for entity matching, business intelligence systems, and data profiling in the Semantic Web.
In January 2004, President George W. Bush announced the Vision for Space Exploration (VSE), which instructed NASA to "Extend human presence across the solar system, starting with a human return to the Moon by the year 2020, in preparation for human exploration of Mars and other destinations," among other objectives. As acknowledged in the VSE, significant technology development will be necessary to accomplish the goals it articulates. NASA's Exploration Technology Development Program (ETDP) is designed to support, develop, and ultimately provide the necessary technologies to meet the goals of the VSE. This book, a review of the ETDP, is broadly supportive of the intent and goals of the VSE, and finds the ETDP is making progress towards the stated goals of technology development. However, the ETDP is operating within significant constraints which limit its ability to successfully accomplish those goals-the still dynamic nature of the Constellation Program requirements, the constraints imposed by a limited budget, the aggressive time scale of early technology deliverables, and the desire to fully employ the NASA workforce.
The internationally recognised methodology for collecting and using R&D statistics, the OECD's Frascati Manual is an essential tool for statisticians and science and innovation policy makers worldwide. It includes definitions of basic concepts, data collection guidelines, and classifications ...

This book addresses a range of topics in design, such as universal design, design for all, digital inclusion, universal usability, and accessibility of technologies regardless of people’s age, financial situation, education, geographic location, culture and language. It especially focuses on accessibility for people with auditory, cognitive, neurological, and visual impairments, ageing populations, and mobility for those with special physical needs. The book explores some of the overlaps between inclusive design and web accessibility to help managers, designers, developers, policy makers, and researchers optimize their efforts in these areas. Based on the AHFE 2017 International Conference on Design for Inclusion, held on July 17–21, 2017 in Los Angeles, California, USA, it discusses new design technologies and highlights the disparate needs of the individuals within a community. Thanks to its multidisciplinary approach, the book represents a useful resource for readers with various backgrounds, providing them a timely, practice-oriented guide to design for inclusion.

Railway Transportation Systems covers the entire range of railway passenger systems, from conventional and high-speed intercity systems to suburban, regional, operating on steep gradients, and urban ones. It also examines in depth freight railway systems transporting conventional loads, heavy loads, and dangerous goods. For each system, the text provides a definition; an overview of its evolution and examples of good practice; the main design, construction, and operational characteristics; and the preconditions for its selection. Additionally, it offers a general overview of safety, interfaces with the environment, forces acting on the track, and techniques that govern the stability and guidance of railway vehicles. This new edition brings two new chapters. One concerns pre-feasibility studies of urban rail projects, and the other analyses the operation of railway systems under specific weather conditions and natural phenomena. New material examines dilemmas, trends and innovations in rail freight transportation; a new definition for high-speed rail; a number of case studies; and an update of cutting-edge technologies. It is ideal for graduate students, engineers, consultants, manufacturers, and transport company executives who need a reference and guide.

Product and Process DesignDriving InnovationWalter de Gruyter GmbH & Co KG

Foreword by: James W. Bilbro Technology maturity: What is it, and why is it important? For more than ten years, the Government Accountability Office (GAO) has criticized federal agencies for a history of cost and schedule overruns on a significant portion of their procurement programs. GAO has repeatedly reported that the use of immature technologies in programs is a primary cause for these overruns. In spite of these repeated reports, the problems in government procurement have not improved. In fact, recent reports indicate that the problems are getting worse. One cause of this worsening situation might be that, while GAO identified lack of technology maturity as a problem, they did not tell how to measure technology maturity, or conversely, its lack. This groundbreaking work attempts to fill this gap by examining the current state of technology maturity measurement, pointing out strengths and weaknesses of available measures, and proposing a complete technology maturity assessment as a potential solution. The book also includes a discussion of risk during technology development.

Cell Biology: Translational Impact in Cancer Biology and Bioinformatics provides insight into the implications for cell cycle regulation and cell proliferation in cancer growth and dissemination. Offering guidance for techniques and tools to help with diagnosis, this publication provides users with a broad view of this research area, and is also useful for both early and experienced researchers across cell biology, cancer research, molecular biology, and in clinical and translational science. Offers insight into how cell cycle and cell division relates to cancer biology Emphasizes flow cytometry and other cell biology techniques for diagnosis Includes recommendations for integration and analyzation of molecular and clinical data

Have design to cost (DTC) goals been identified? What is the current Technology Readiness Level (TRL) for each program or project item or area? What resources and tools would be helpful? Has scientific feasibility of proposed technology been fully demonstrated? To whom (users, customers, industry) is this invention dedicated? Defining, designing, creating, and implementing a process to solve a challenge or meet an objective is the most valuable role... In EVERY group, company, organization and department. Unless you are talking a one-time, single-use project, there should be a process. Whether that process is managed and implemented by humans, AI, or a combination of the two, it needs to be designed by someone with a complex enough perspective to ask the right questions. Someone capable of asking the right questions and step back and say, 'What are we really trying to accomplish here? And is there a different way to look at it?' This Self-Assessment empowers people to do just that - whether their title is entrepreneur, manager, consultant, (Vice-)President, CxO etc... - they are the people who rule the future. They are the person who asks the right questions to make Technology Readiness Level investments work better. This Technology Readiness Level All-Inclusive Self-Assessment enables You to be that person. All the tools you need to an in-depth Technology Readiness Level Self-Assessment. Featuring 974 new and updated case-based questions, organized into seven core areas of process design, this Self-Assessment will help you identify areas in which Technology Readiness Level improvements can be made. In using the questions you will be better able to: - diagnose Technology Readiness Level projects, initiatives, organizations, businesses and processes using accepted diagnostic standards and practices - implement evidence-based best practice strategies aligned with overall goals - integrate recent advances in Technology Readiness Level and process design strategies into practice according to best practice guidelines Using a Self-Assessment tool known as the Technology Readiness Level Scorecard, you will develop a clear picture of which Technology Readiness Level areas need attention. Your purchase includes access details to the Technology Readiness Level self-assessment dashboard download which gives you your dynamically prioritized projects-ready tool and shows your organization exactly what to do next. You will receive the following contents with New and Updated specific criteria: - The latest quick edition of the book in PDF - The latest complete edition of the book in PDF, which criteria correspond to the criteria in... - The Self-Assessment Excel Dashboard - Example pre-filled Self-Assessment Excel Dashboard to get familiar with results generation - In-depth and specific Technology Readiness Level Checklists - Project management checklists and templates to assist with implementation INCLUDES LIFETIME SELF ASSESSMENT UPDATES Every self assessment comes with Lifetime Updates and Lifetime Free Updated Books. Lifetime Updates is an industry-first feature which allows you to receive verified self assessment updates, ensuring you always have the most accurate information at your fingertips.

"Over recent decades, a wide variety of studies and assessment reports has portrayed a stark picture of humanity's detrimental impacts on our planet's life and environmental health. Climate change is at the heart of many of these impacts. This cannot be allowed to continue, given the relentless human population growth and ever-expanding energy and resource consumption. We have but one planet, and its ecosystem services are essential to our survival. But the doomsday scenario can still be averted; humanity stands at a crossroads where it must take the route of sustainable behavior. Decisive action can still make a significant difference to climate change. This is humanity's greatest challenge. To have any chance of success, however, the time to act can be delayed no longer. Instead, it is right now: today is the future. This book documents a wealth of ways to adjust the trajectory of climate change. It outlines measures to drive massive reductions of greenhouse gas emissions, to remove greenhouse gases from the atmosphere, and to reflect part of the incoming energy from the Sun. For all measures, the book evaluates both advantages and disadvantages. Finally, it discusses the need to protect ourselves from impacts that have become inevitable already, and looks at how society may be driven to get the job done. In short, this book provides powerful facts and arguments to support informed choices"--

This book constitutes the refereed proceedings of the 10th IFIP WG 11.11 International Conference on Trust Management, IFIPTM 2016, held in Darmstadt, Germany, in July 2016. The 7 revised full papers and 7 short papers presented together with an invited paper were carefully reviewed and selected from 26 submissions. The papers cover a wide range of topics including trust architecture, trust modeling, trust metrics and computation, reputation and privacy, security and trust, sociotechnical aspects of trust, and attacks on trust and reputation systems.

Shortly after the events of September 11, 2001, the U.S. Army asked the National Research Council (NRC) for a series of reports on how science and technology could assist the Army meet its Homeland defense obligations. The first report, Science and Technology for Army Homeland Securityâ€"Report 1, presented a survey of a road range of technologies and recommended applying Future Force technologies to homeland security wherever possible. In particular, the report noted that the Army should play a major role in providing emergency command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities and that the technology and architecture needed for homeland security C4ISR was compatible with that of the Armyâ€™s Future Force. This second report focuses on C4ISR and how it can facilitate the Armyâ€™s efforts to assist the Department of Homeland Security (DHS) and emergency responders meet a catastrophic event.

This book constitutes the thoroughly refereed post-conference proceedings of the Third Annual Privacy Forum, APF 2015, held in Luxembourg, Luxembourg, in October 2015. The 11 revised full papers presented in this volume were carefully reviewed and selected from 24 submissions. The topics focus on privacy by design (PbD), i.e. the attempt to combine technical and organizational measures to ensure the basic rights of the individual. The papers are organized in three sessions: measuring privacy; rules and principles; legal and economic perspectives on privacy.

To quantitatively assess the maturity of a given technology, the Technology Readiness Level (TRL) process is used. The TRL process has been developed and successfully used by the Department of Defense (DOD) for development and deployment of new technology and systems for defense applications. In addition, NASA has also successfully used the TRL process to develop and deploy new systems for space applications. Transmutation fuel development is a critical technology needed for closing the nuclear fuel cycle. Because the deployment of a new nuclear fuel forms requires a lengthy and expensive research, development, and demonstration program, applying the TRL concept to the transmutation fuel development program is very useful as a management and tracking tool. This report provides definition of the technology readiness level assessment process as defined for use in assessing nuclear fuel technology development for the Transuranic Fuel Development Campaign.

Has the technology reached a minimum Technology Readiness Level (TRL) 4 or higher? Project criteria: Technology push or market pull? Have design requirements been derived from system requirements? Has system requirements specification document been completed? will the consumer accept products that have been processed with this technology? Defining, designing, creating, and implementing a process to solve a challenge or meet an objective is the most valuable role... In EVERY group, company, organization and department. Unless you are talking a one-time, single-use project, there should be a process. Whether that process is managed and implemented by humans, AI, or a combination of the two, it needs to be designed by someone with a complex enough perspective to ask the right questions. Someone capable of asking the right questions and step back and say, 'What are we really trying to accomplish here? And is there a different way to look at it?' This Self-Assessment empowers people to do just that - whether their title is entrepreneur, manager, consultant, (Vice-)President, CxO etc... - they are the people who rule the future. They are the person who asks the right questions to make Technology readiness level investments work better. This Technology readiness level All-Inclusive Self-Assessment enables You to be that person. All the tools you need to an in-depth Technology readiness level Self-Assessment. Featuring 1017 new and updated case-based questions, organized into seven core areas of process design, this Self-Assessment will help you identify areas in which Technology readiness level improvements can be made. In using the questions you will be better able to: - diagnose Technology readiness level projects, initiatives, organizations, businesses and processes using accepted diagnostic standards and practices - implement evidence-based best practice strategies aligned with overall goals - integrate recent advances in Technology readiness level and process design strategies into practice according to best practice guidelines Using a Self-Assessment tool known as the Technology readiness level Scorecard, you will develop a clear picture of which Technology readiness level areas need attention. Your purchase includes access details to the Technology readiness level self-assessment dashboard download which gives you your dynamically prioritized projects-ready tool and shows your organization exactly what to do next. You will receive the following contents with New and Updated specific criteria: - The latest quick edition of the book in PDF - The latest complete edition of the book in PDF, which criteria correspond to the criteria in... - The Self-Assessment Excel Dashboard - Example pre-filled Self-Assessment Excel Dashboard to get familiar with results generation - In-depth and specific Technology readiness level Checklists - Project management checklists and templates to assist with implementation INCLUDES LIFETIME SELF ASSESSMENT UPDATES Every self assessment comes with Lifetime Updates and Lifetime Free Updated Books. Lifetime Updates is an industry-first feature which allows you to receive verified self assessment updates, ensuring you always have the most accurate information at your fingertips.

OUTLINE: DoD Life Cycle - NASA Life Cycle - Generic Life Cycle - Technology Readiness Levels - Exceptions - Product Life Cycle - Product and Technology Life Cycles Together. CONCLUSION: Technology Maturity Measures Where You are in the Technology Life Cycle - There are Several Different Definitions of the Technology Life Cycle - DoD - NASA - Whale Chart - Technology Readiness Level (TRL) is One

Measure of Technology Maturity - Some Technologies Are Exceptions to Life Cycle - Basic Technologies - Infrastructure Technologies - Technology and Product Life Cycles are Different.

Developments in Renewable Energies Offshore contains the papers presented at the 4th International Conference on Renewable Energies Offshore (RENEW 2020, Lisbon, Portugal, 12 - 15 October 2020). The book covers a wide range of topics, including: resource assessment; wind energy; wave energy; tidal energy; ocean energy devices; multiuse platforms; PTO design; grid connection; economic assessment; materials and structural design; installation planning and maintenance planning. The book will be invaluable to professionals and academics involved or interested in Offshore Engineering, and Renewable and Wind Energy.

In recent years carbon dioxide has played an increasingly important role in biomass processing. This book presents the state-of-the-art of a range of diverse approaches for the use of carbon dioxide in biomass valorisation. The book explores cutting-edge research and important advances in green high-pressure technologies. It gives an overview of the most relevant and promising applications of high-pressure CO_2-based technologies in biomass processing from the perspective of the biorefinery concept. Demonstrating the interdisciplinary aspects of high-pressure technologies from biology, chemistry and biochemical engineering areas, this book brings researchers and industrialists up to date with the latest advances in this field, including novel technologies for energy; biochemicals and materials production; and green chemical engineering processes.

Challenges and Innovations in Ocean In-Situ Sensors: Measuring Inner Ocean Processes and Health in the Digital Age highlights collaborations of industry and academia in identifying the key challenges and solutions related to ocean observations. A new generation of sensors is presented that addresses the need for higher reliability (e.g. against biofouling), better integration on platforms in terms of size and communication, and data flow across domains (in-situ, space, etc.). Several developments are showcased using a broad diversity of measuring techniques and technologies. Chapters address different sensors and approaches for measurements, including applications, quality monitoring and initiatives that will guide the need for monitoring. Integrates information across key marine and maritime sectors and supports regional policy requirements on monitoring programs Offers tactics for enabling early detection and more effective monitoring of the marine environment and implementation of appropriate management actions Presents new technologies driving the next generation of sensors, allowing readers to understand new capabilities for monitoring and opportunities for another generation of sensors Includes a global vision for ocean monitoring that fosters a new perspective on the direction of ocean measurements

This report summarizes the results of an effort to establish a framework for assigning and communicating technology readiness levels (TRLs) for the modeling and simulation (ModSim) capabilities at Sandia National Laboratories. This effort was undertaken as a special assignment for the Weapon Simulation and Computing (WSC) program office led by Art Hale, and lasted from January to September 2006. This report summarizes the results, conclusions, and recommendations, and is intended to help guide the program office in their decisions about the future direction of this work. The work was broken out into several distinct phases, starting with establishing the scope and definition of the assignment. These are characterized in a set of key assertions provided in the body of this report. Fundamentally, the assignment involved establishing an intellectual framework for TRL assignments to Sandia's modeling and simulation capabilities, including the development and testing of a process to conduct the assignments. To that end, we proposed a methodology for both assigning and understanding the TRLs, and outlined some of the restrictions that need to be placed on this process and the expected use of the result. One of the first assumptions we overturned was the notion of a "static" TRL--rather we concluded that problem context was essential in any TRL assignment, and that leads to dynamic results (i.e., a ModSim tool's readiness level depends on how it is used, and by whom). While we leveraged the classic TRL results from NASA, DoD, and Sandia's NW program, we came up with a substantially revised version of the TRL definitions, maintaining consistency with the classic level definitions and the Predictive Capability Maturity Model (PCMM) approach. In fact, we substantially leveraged the foundation the PCMM team provided, and augmented that as needed. Given the modeling and simulation TRL definitions and our proposed assignment methodology, we conducted four "field trials" to examine how this would work in practice. The results varied substantially, but did indicate that establishing the capability dependencies and making the TRL assignments was manageable and not particularly time consuming. The key differences arose in perceptions of how this information might be used, and what value it would have (opinions ranged from negative to positive value). The use cases and field trial results are included in this report. Taken together, the results suggest that we can make reasonably reliable TRL assignments, but that using those without the context of the information that led to those results (i.e., examining the measures suggested by the PCMM table, and extended for ModSim TRL purposes) produces an oversimplified result--that is, you cannot really boil things down to just a scalar value without losing critical information.

A collection of 25 papers presented at the 11th International Symposium on Ceramic Materials and Components for Energy and Environmental Applications (CMCEE-11), June 14-19, 2015 in Vancouver, BC, Canada. Paper in this volume were presented in the below six symposia from Track 1 on the topic of Ceramics for Energy Conversion, Storage, and Distribution Systems: High-Temperature Fuel Cells and Electrolysis Ceramic-Related Materials, Devices, and Processing for Heat-to-Electricity Direct Conversion Material Science and Technologies for Advanced Nuclear Fission and Fusion Energy Advanced Batteries and Supercapacitors for Energy Storage Applications Materials for Solar Thermal Energy Conversion and Storage High Temperature Superconductors: Materials, Technologies, and Systems

This open access book constitutes the refereed post-conference proceedings of the 9th IFIP WG 5.5 International Precision Assembly Seminar, IPAS 2020, held virtually in December 2020. The 16 revised full papers and 10 revised short papers presented together with 1 keynote paper were carefully reviewed and selected from numerous submissions. The papers address topics such as assembly design and planning; assembly operations; assembly cells and systems; human centred assembly; and assistance methods in assembly.

This revised, updated second edition provides an accessible, practical overview of major areas of technical development and clinical application in the field of neurorehabilitation movement therapy. The initial section provides a rationale for technology application in movement therapy by summarizing recent findings in neuroplasticity and motor learning. The following section then explains the state of the art in human-machine interaction requirements for clinical rehabilitation practice. Subsequent sections describe the ongoing revolution in robotic therapy for upper extremity movement and for walking, and then describe other emerging technologies including electrical stimulation, virtual reality, wearable sensors, and brain-computer interfaces. The promises and limitations of these technologies in neurorehabilitation are discussed. Throughout the book the chapters provide detailed practical information on state-of-the-art clinical applications of these devices following stroke, spinal cord injury, and other neurologic disorders. The text is illustrated throughout with photographs and schematic diagrams which serve to clarify the

information for the reader. Neurorehabilitation Technology, Second Edition is a valuable resource for neurologists, biomedical engineers, roboticists, rehabilitation specialists, physiotherapists, occupational therapists and those training in these fields.
Advances in Renewable Energies Offshore is a collection of the papers presented at the 3rd International Conference on Renewable Energies Offshore (RENEW 2018) held in Lisbon, Portugal, on 8-10 October 2018. The 104 contributions were written by a diverse international group of authors and have been reviewed by an International Scientific Committee. The book is organized in the following main subject areas: - Modelling tidal currents - Modelling waves - Tidal energy devices (design, applications and experiments) - Tidal energy arrays - Wave energy devices (point absorber, multibody, applications, control, experiments, CFD, coastal OWC, OWC and turbines) - Wave energy arrays - Wind energy devices - Wind energy arrays - Maintenance and reliability - Combined platforms - Moorings, and - Flexible materials Advances in Renewable Energies Offshore collects recent developments in these fields, and will be of interest to academics and professionals involved in the above mentioned areas.
The Future Combat System (FCS) program is the centerpiece of the Army's effort to transition to a lighter, more agile, and more capable combat force. The law requires the DoD to hold a milestone review of the FCS program, now planned for 2009. This report addresses: (1) what knowledge will likely be available in key areas for the review; and (2) the challenges that lie ahead following the review. To meet these objectives, the auditor reviewed key documents, performed analysis, attended demonstrations and design reviews, and interviewed DoD officials. Illustrations.
Artificial Intelligence (AI) offers the potential to transform our lives in radical ways. However, not only do we lack the tools to determine what achievements will be attained in the near future, but we even underestimate what various technologies in AI are capable of today. Certainly, the translation from scientific papers and benchmark performance to products is faster in AI than in other non-digital sectors. However, it is often the case that research breakthroughs do not directly translate to a technology that is ready to use in real-world environments. This document describes an example-based methodology to categorise and assess several AI technologies, by mapping them onto Technology Readiness Levels (TRL) (e.g., maturity and availability levels). We first interpret the nine TRLs in the context of AI and identify different categories in AI to which they can be assigned. We then introduce new bidimensional plots, called readiness-vs-generality charts, where we see that higher TRLs are achievable for low-generality technologies focusing on narrow or specific abilities, while low TRLs are still out of reach for more general capabilities. We include numerous examples of AI technologies in a variety of fields, and show their readiness-vs-generality charts, serving as a base for a broader discussion of AI technologies. Finally, we use the dynamics of several AI technology at different generality levels and moments of time to forecast some short-term and mid-term trends for AI.
In early 2002, the Communications Electronics Command (CECOM) Manager of the Army Tactical Wireless Network Assurance (TWNA) Science and Technology Objective (STO) FY03-07, hereafter referred to as STO, requested assistance from the Software Engineering Institute (SEI) in improving STO methods for assessing the maturity of new information assurance technologies. The

STO was seeking to use technology maturity, as measured by the Technology Readiness Levels (TRLs) scale, as a metric in its decision-making process for selecting new technologies for STO development and maturation, technologies that would eventually be transitioned to Army tactical programs. This report describes the results of the SEI study of the feasibility of (a) using TRLs in STO technology screening, (b) developing or acquiring a TRL tool, and (c) implementing a TRL tool.