<u>Special Issue Devoted to Software from the Information Analysis Center (IAC) Program</u>

Information Analysis Center (IAC) Program Overview
by Lon R. Dean, Data & Analysis Center for Software (DACS)

What is an IAC?

IACs are formal organizations chartered by the DoD to facilitate utilization of existing scientific and technical information. The IACs are staffed by experienced technical area scientists, engineers, and information specialists. They establish and maintain comprehensive knowledge bases which include historical, technical, scientific, and other data and information collected on a worldwide basis. The information they maintain includes a wide range of valuable information pertinent to their respective technical communities. IACs also collect, maintain, and develop analytical tools and techniques including databases, models, and simulations. There are thirteen Defense Technical Information Center (DTIC) funded IACs. These are contractor operated and administratively managed by Office of the Program Manager, DoD Information Analysis Centers.

IAC Mission

The primary mission for DoD IACs is to collect, analyze, synthesize, and disseminate worldwide scientific and technical information in clearly defined, specialized fields or subject areas. A secondary mission is to promote standardization within their respective fields. The IACs have a broad mission to improve the productivity of scientists, engineers, managers, and technicians in the Defense community through timely dissemination of evaluated information.

Information Analysis Centers
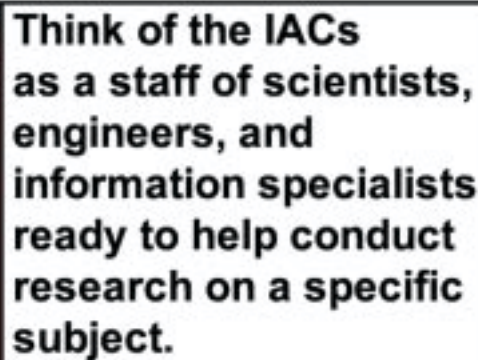
IAC Program Overview
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There are 22 DoD IACs. This newsletter is devoted to the 13 centers that are sponsored or co-sponsored by the Defense Technical Information Center (DTIC).

What do IACs Provide?

IACs provide easy access to essential, timely information. To improve your productivity, our Subject Matter Experts (SME) stay up to date on the latest developments in the scientific and technical communities. In their area of technical expertise (see each individual IAC's description in this newsletter) the IAC will find the answer to your scientific and technical questions. They will even evaluate the data and respond based on your specific needs. Think of the IACs as a staff of scientists, engineers and information specialists ready to help conduct research on a specific subject.

Each IAC focuses on a specific technical area. Each maintains knowledge bases of historical, technical, and scientific information related to their particular technical area. Not only do the IACs collect and store data from worldwide sources but they also create and distribute a wide range of software, models, and other analytical tools.

In addition to these services, each IAC publishes numerous technical documents, including databooks, state-of-the-art reports (SOAR), technology assessments, research directories and a newsletter focusing on the trends and

Think of the IACs as a staff of scientists, engineers, and information specialists ready to help conduct research on a specific subject.

developments in the specific IAC's technical focus area. This newsletter, *The DoD Software Tech News*, is the newsletter published by the Data & Analysis Center for Software (DACS) IAC.

Many IAC products and services are available free of charge or for a small cost recovery fee to cover things such as copying.

Technical Area Tasks (TATs)

Unlike other IAC products and services, TATs are separately funded work efforts over and above basic IAC products and services. TATs are very flexible in nature and can vary from a fraction of a staff year to many staff years. Costs can run from a few thousand dollars to several million.

These tasks may be ordered by any DoD component, U.S. government agency or department, subject to appropriate agreement.

For a complete IAC directory including phone numbers, addresses, Web Sites and E-mail addresses visit http://iac.dtic.mil.

Contact Information

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DTIC IACs make finding the right information at the right time easy.

Defense Technical Information Center (DTIC)

Overview

The Defense Technical Information Center (DTIC), a key element of the Department of Defense (DoD) Scientific and Technical Information Program, is the central DoD facility for providing access to and facilitating the exchange of scientific and technical information. DTIC is an element of the Defense Information Systems Agency.

A key element of the DoD Scientific and Technical Information Program, DTIC is the central facility for providing access to and facilitating the exchange of scientific and technical information. The DTIC Website describes the wide variety of products and services available from DTIC which are designed to assist our users in obtaining the information they need easily and quickly. DTIC's motto is "**providing the right information at the right time**."

Vision

To provide quality information infrastructure that permits individual use and collaborative efforts by providing authorized access to information worldwide; to maintain a central repository of Defense information; and, working together, DTIC's staff is the momentum behind DTIC's technological advances.

As an element of the Defense Information Systems Agency (DISA), in support of our nation's warfighters and the defense community who stands behind them, DTIC provides access to and facilitates the exchange of scientific and technical information thereby contributing to the management and conduct of Defense research, development, and acquisition efforts.

U.S. Government organizations and their contractors are eligible to register for DTIC's products and services. In addition, special arrangements for registration are made for participants in the Potential Defense Contractors, the University Research Support, the Historically Black Colleges and Universities, and the Small Business Innovation Research Programs. Because of the nature of the information that DTIC handles, users must qualify for service from DTIC. However, a significant portion of DTIC held information is available to the general public from the National Technical Information Service. Additionally, the DTIC Website provides several World Wide Web sites, including DefenseLINK, the official DoD Website, as well as anonymous ftp sites to anyone on the public Internet. These Internet services provide a wide array of information such as DoD press releases, DoD directives and instructions, and photographs.

Scope

The scope of DTIC's collection includes areas normally associated with Defense research; however, since DoD's interests are widespread, the collection also contains information on biology, chemistry, energy, environmental sciences, oceanography, computer sciences, sociology, logistics, and human factors engineering.

DTIC holdings include:

- Management Summaries
- DoD-sponsored Patent Applications
- DoD Directives and Instructions
- Technical Reports
- Conference Proceedings
- Mission Area Needs
- Studies and Analyses
- DoD-sponsored Software, Videos, and CD-ROMs
- Security Classification Guides
- Journal Articles
- Foreign Documents and Translations
- Command Histories

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URL: http://www.dtic.mil

DTIC also has a Manpower and Training Research Information System (MATRIS) site located in San Diego, CA, as well as regional offices located in Boston, MA; Dayton, OH; Albuquerque, NM; and El Segundo, CA.

Data & Analysis Center for Software (DACS)

Introduction

The DACS serves as the DoD Software Information Clearinghouse providing an authoritative source for state-of-the-art software information providing technical support for the software community.

The DACS technical area of focus is information technology(IT), software technology, and software engineering, in its broadest sense. The DACS is a central distribution hub for current, available data and information concerning IT, software engineering and software technology. DACS supports the development, testing, validation, and transitioning of software engineering technology.

The DACS serves as a gateway to software technology information by providing access to WWW resources, publishing technical reports, hosting seminars, publishing the *Software Tech News* newsletter, presenting courses, and performing technical studies for patrons of the Center.

The DACS is administratively managed by the Defense Technical Information Center (DTIC) under the DoD IAC Program. The DACS is technically managed by Air Force Research Laboratory - Information Directorate (AFRL/IF).

The DACS is managed and operated by ITT Industries, Advanced Engineering and Sciences Division, from their Rome, NY office.

Products & Services

DACS Databases

The DACS gathers software engineering experience data, as well as documented scientific and technical information. Scientific and Technical Information (STINFO) consists of documented information concerning the state-of-the-art and technology aspects of the computer software field. This information is stored in these databases for easy retrieval.

- **Software Engineering Bibliographic Database (SEBD) -** Over 300,000 citations searchable from the DACS Website
- **Software Life Cycle Experience Database (SLED) -** Five datasets are currently contained within SLED.
- **Return-On-Investment (ROI) Database -** Results from over 50 organizations are included in this database.

Software Tools

- **Goel-Okumoto Software Reliability Model -** An automated version of the Goel-Okumoto Model. Estimates remaining faults, cumulative

failures, and reliability; and optimal release time based on certain cost criteria.

- **Tempus: A Software Process Improvement Measurement Tool -** Tempus reduces costs in achieving real-time performance budgets and improved change management with impact analysis while offering a better way to track size.
- **Measuring Return-On-Investment from Software Process Improvement Database -** A web style user interface provides ability to search the database identifying which types of goals (e.g., reduce cost, improve quality) the user wishes to understand, which types of improvements (e.g. inspections, cleanroom) are to be considered, and what period of time they wish considered for their query. The system will then collect all data that would be of interest and presents the data in an easy to understand format.
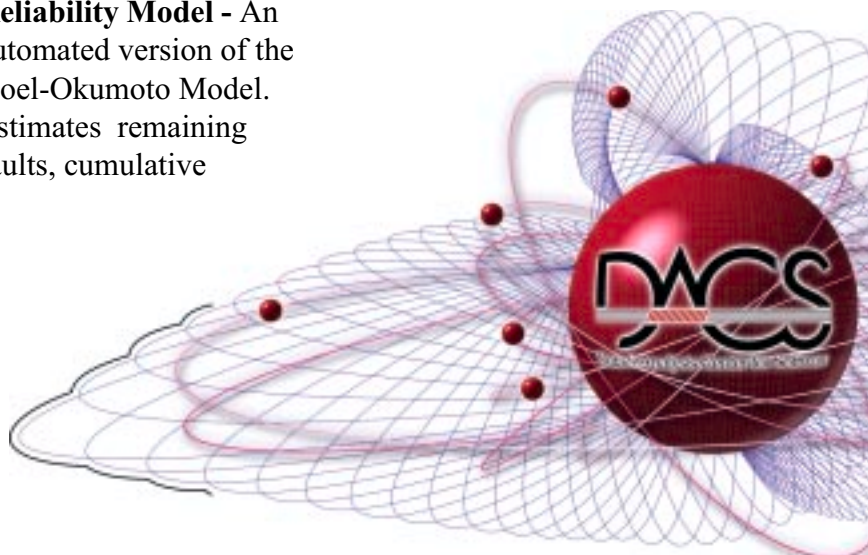
Publications

Technical Reports - The DACS creates and distributes several State-of-the-Art (SOAR) and other technical reports each year. These Software Technology reports cover many different topics including; Object-Oriented Database Management Systems, Software Process Improvement, Technology Transfer, Formal Methods, Software Measurement, Software Design Methods, Artificial Neural Networks, Software Prototyping, Requirements Engineering, Defect Tracking, Return on Investment, and Analyzing Quantitative Data.

DoD Software Tech News - This quarterly newsletter provides high level information on current software technology activities and on major DoD initiatives. Individual issues are devoted to specific topics such as: Software Measurement, High Performance Computing, Risk Management, Software Testing, DoD Technology Policies, Software Architecture and many others. The newsletter is mailed free to anyone within the United States and past issues are archived on the DACS Website.

DACS Website

Finding the best software engineering resources on the Internet in a timely, economical manner has just become easier. The DACS Website receives over 500,000 hits a month because we provide easy access to the information you need.

The DACS Website provides critical and timely information to the Warfighter, RDT&E and Information Technology Researcher, Program Manager, Acquisition Manager, Technologists, and Software Developer on topics of interest to the DoD community.

We do not just provide links to sites and then expect you to go discover the information yourself. We've gone to the sites, prequalified the information, organized the information, and have provided direct links for you to the information you need in an unbiased fashion. These resources have been arranged into over 30 Topic Areas that have been researched by the DACS for the Best Information on the Web.

The common theme of this website is to provide information and expertise to our users to improve personal productivity, improve organizational productivity, improve product quality and reliability, reduce development and rework costs, and utilize best practices.

The DACS has won over 20 awards for its website and has been featured in *Infoworld* and *Information Week* Magazines

Consulting Services

The DACS provides contract support to our customers in order to assist them in solving software engineering and software technology problems or in developing, instituting, or communicating improved methods.

The DACS has supported DoD and private customers in vastly diverse areas including; Acquisition Support, Analysis & Test Technologies, Artificial Neural Networks, Internet/Intranet Development, Metrics/ Measurement Assessments, Return on Investment Analysis, Software Engineering Training, Software Quality & Reliability, Technology Transition, Workflow Automation, and many others.

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Human Systems Information Analysis Center (HSIAC)

Introduction

The Human Systems IAC, formerly CSERIAC, was established by the United States Department of Defense as a government owned-contractor operated facility in 1988 at Wright Patterson Air Force Base, Ohio. The Human Systems IAC is administered by the Defense Technical Information Analysis Center (DTIC), Defense Information Systems Agency (DISA), Ft. Belvoir, Virginia, technically managed by the U.S. Air Force Research Laboratory Human Effectiveness Directorate (AFRL/HE), Wright-Patterson Air Force Base, Ohio, and operated by Booz, Allen & Hamilton, Mclean, Virginia.

HSIAC deals with the human component of a system using a total system approach. The total system includes not only the prime mission equipment but also the people who operate, maintain, and support the system.

The Human Systems Information Analysis Center (Human Systems IAC) is the gateway to worldwide sources of up-to-date human systems information for designers, engineers, researchers, and human factors specialists. Human Systems IAC provides a variety of products and services to government, industry, and academia to promote the use of ergonomics in the design of human-operated equipment.

Human Systems IAC provides "The Right Human Factors Information at the Right Time." What is Human Systems Technology?

Researchers, designers, and engineers must accommodate a number of difficult physical and mechanical variables when they design and produce equipment. They also must account for the capabilities and limitations of the human beings who will manufacture, operate, and maintain that equipment.

Human systems technologies encompass a diverse and dynamic field drawing upon the knowledge and skills of the physical, medical, and social sciences. This field includes data, theories, and practices obtained from a variety of disciplines such as industrial ergonomics, human factors, cognitive psychology, experimental psychology, social psychology, and applied medicine. The synthesis of these disciplines provides designers with information concerning equipment intended to be operated and maintained by humans in sea, land, air, and space environments.

Mission

The HSIAC provides the research, development, and acquisition communities with "The Right Human Factors Information at the Right Time." To achieve this, the Human Systems IAC deals with the human component of a system using a total system approach. This method includes not just the prime mission equipment, but also the people who operate, maintain, and support the

system; training and training devices; and the systems' operational and support infrastructure. DoD policy stresses the importance of optimizing total system performance and minimizing the life-cycle cost of ownership through a total system approach to acquisition management.

Advancements in technology have generated a vast amount of archived technical information. Finding this information is a difficult task. While computer networks and on-line databases help, the researcher, scientist, or engineer still has the time-consuming task of sorting and analyzing a huge amount of data to get the information needed. But help is available. The Human Systems IAC is staffed with human factors experts who have specialized training in data collection and analysis techniques. It relieves researchers, designers, and engineers of the burden of locating, sorting, and analyzing data.

In addition, HSIAC locates, creates, and distributes a wide range of human factors software, models, and other analytical tools. Human Systems IAC also develops and distributes technical publications, including handbooks, data books, state-of-the-art reports (SOARs), critical reviews, technology assessments, and research directories. The Human Systems IAC newsletter *Gateway* keeps the technical community aware of technology trends and developments; it is distributed free-of-charge to all who request it.

Products and Services

Software

HSIAC locates, creates, and distributes a wide range of human factors software, including:

Anthropometry & Biomechanics

Anthropometric Data Analysis Sets: Data useful for resolving human accommodation issues during equipment design

Computerized Biomechanical Man-model (COMBIMAN): Human-computer model of a seated operator

Crew Chief: Human-computer model of a maintenance technician

Human Workload Assessment

NASA Task Load Index (TLX): A multi-dimensional rating procedure to collect subjective workload assessments of operator(s) working with human-machine systems

Subjective Workload Assessment Technique (SWAT): A subjective workload scaling method to quantify the workload associated with various activities

Workload Consultant for Field Evaluation (WC FIELDE): A decision support system that assists a user in the selection of workload assessment techniques

Observational Data Analysis

Activity Catalog Tool (ACT): A tool for tracking and recording human activity in a natural setting or studying pre-recorded videotape

MacSHAPA 1.1: A software environment that supports observational data analysis, including the analysis of videotape

Tools For Automated Knowledge Engineering (TAKE): Uses concept maps to represent, record, and explore knowledge domains

Reference

Computer Aided Systems Human Engineering Performance Visualization System (CASHE:PVS): Allows users to explore and experience a multitude of topics concerning human performance in complex systems

Contact Information

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Information Assurance Technology Analysis Center (IATAC)

Introduction

In today's globally networked environment, DoD systems are increasingly vulnerable to information warfare (IW) attacks from adversaries with readily available, easy-to-use, low-cost technologies. Compounding the challenge is the exponential growth of information, data, and technology. Securing information systems requires an in-depth understanding of the complexity of networks, the specialized nature of cyber threats, and the full spectrum of emerging technologies available to counter such threats.

IATAC provides DoD information assurance (IA) knowledge to make decisions regarding the defense of networks and information systems.

IATAC has been established under the direction of the Defense Technical Information Center and the integrated sponsorship of the Office of the Director of Defense Research and Engineering (ODDR&E); Assistant to Secretary of Defense/Command, Communications, & Control Information (ASD/C3I); the Joint Staff; and Defense Information Systems Agency (DISA) whose missions direct the DoD's responses, developments, and operations regarding IA.

Mission

IATAC provides DoD with emerging scientific and technical information in support of Defensive Information Operations. IATAC's mission is to provide a DoD central point of access for information on Information Assurance (IA) emerging technologies. These technologies include system vulnerabilities, research and development, models, and analyses to support the effective defense against Information Warfare attacks. IATAC focuses on all defensive activities related to the use of information, information-based processes, and information systems.

Areas of Expertise

IATAC's areas of expertise extends across a wide spectrum of IA related subjects with corresponding in-depth capabilities.

- Certification & Accreditation
- Computer Forensics
- Data Embedding
- Information Assurance
- Information Operations
- Infrastructure Assurance
- Malicious Code Detection
- Operations Security
- Penetration Testing
- Public Key Infrastructure
- Vulnerability Assessment
- IA/IO Wargame/Exercise Development and more

Capabilities

o Research and Analysis

o Studies and Reports

o Policy and Doctrine

o Training and Exercises

o Meetings and Conferences

Products and Services

IATAC collects, stores, analyzes, and disseminates IA Scientific & Technical Information (STI) for DoD. Our products and publications include the following.

Databases

- **IA Tools Database -** Fast access on intrusion detection, firewalls, and vulnerability analysis
- **Subject Matter Experts (SME) Database -** Provides point-of-contact information for various technical experts within the IA community
- **Bibliographic Database -** Holds IA policies, directives, reports, and briefings (classified and unclassified)
- **Infrastructure Database -** Identifies DoD infrastructure-related documents

Publications

- **IA Newsletter -** Features timely articles from the IA community (published on a quarterly basis)

- **IA Digest -** A composite of relevant IA articles... an IA "Early Bird" (published on a monthly basis)

- **IA Tools Reports -** Identifies and indexes all tools currently held within the IA Tools Database (e.g., intrusion detection, vulnerability analysis, firewalls)

- **Critical Reviews and Technology Assessments (CR/TA) -** Evaluates and synthesizes the latest information from R&D results and compares assessments of technologies and/or methodologies based on specific technical characteristics (e.g., computer forensics, biometrics)

- **State-of-the-Art Reports (SOAR) -** Provides in depth analyses and a comprehensive assessment of IA technologies (e.g., IA applications of data embedding, malicious code detection initiatives).

Services

IATAC is designed to support emerging warfighter requirements with a variety of services:

- **Inquiry Services.** Inquiry services are organized into four categories.

o Basic - answer IA questions requiring less than eight technical hours requested via E-mail or the telephone (no cost to DoD organizations).

o Extended - search information sources, conduct analysis, determine analytical techniques to meet inquiries requiring 8-24 hours.

o Search and Summary - identify literature specific to the inquiry and provide copies of the most pertinent documents requiring 24-40 technical hours.

o Review and Analysis - provide in-depth analysis and synthesis of relevant literature and laboratory research on a particular subject requiring 40-80 technical hours.

- **Technical Area Tasks (TATs) -** provide a foundation upon which studies, analyses, and other STI activities may be built. TATs are analytical and technical in nature and exceed 80 hours of support.

- **Training Courses/Workshops -** on and off-site courses educating audiences on a wide range of IA issues (e.g., penetration testing, computer forensics).

- **Conference/Event Planning -** total event support, including classified and unclassified occasions, pre-event, promotional materials, on site, and post-event activities.

Contact Information

Infrared Information Analysis Center (IRIA)

Introduction

The Infrared Information Analysis Center (IRIA) was established in 1954 at the Willow Run Laboratories to facilitate the exchange of information within the Department of Defense (DoD) infrared community. The center is now a DoD Information Analysis Center (IAC) sponsored by the Defense Technical Information Center and monitored by the Associate Director for Science and Technology, Army Night Vision and Electronic Sensors Directorate.

Mission

IRIA's mission is to collect, analyze, and disseminate information on infrared and electro-optical (IR/EO) technology with an emphasis on military applications.

Products and Services

IRIA administeres the following symposia:

- National Military Sensing Symposium (formerly IRIS)
- Active Systems
- Infrared Countermeasures
- Infrared Detectors
- Infrared Materials
- Passive Sensors
- Missile Defense- Models, Environment, and Atmospheres
- National Symposium on Sensor and Data Fusion
- Camouflage, Concealment and Deception
- Battlefield Acoustic and Seismic Sensing
- Tri-Service Radar Symposium

In addition to core functions and IRIS administration, IRIA performs a wide variety of technical area tasks to meet the needs of the DoD, other government agencies, and commercial sponsors.

IRIA also operates a comprehensive library holding approximately 50,000 infrared/electro-optical technical documents. An associated bibliographic database is maintained to respond to technical and bibliographic inquiries from qualified users.

Subject coverage in the electro-optical technology area includes:

- sources of electromagnetic radiation from the ultraviolet through far infrared spectral regions;
- radiation characteristics of natural and human-made targets;
- optical properties of materials; detection materials & elements;
- information processing as it pertains to sensory collection of data;
- masers and lasers;
- imaging systems such as forward looking infrared (FLIR), scanners,
- staring systems, and image tubes;
- optical systems and components;
- detector and system coolers;
- atmospheric absorption, emission, and scattering;
- search, homing, tracking, ranging, countermeasures, reconnaissance, and
- other military infrared and laser systems.

Publications

IRIA prepares and disseminates a variety of special publications, including handbooks, data books, state-of-the-art reports, critical reviews, technical assessments, newsletters, and announcements. The Infrared and Electro-Optical Systems Handbook, an eight-volume, unclassified document released by the IRIA Center in July 1993, is the foremost publication in the IR/EO technical area.

IRIA collects and publishes the minutes and proceedings of the annual IRIS and the meetings of the specialty groups of IRIS listed above. The proceedings of these meetings constitute a comprehensive record of recent scientific and technical advances in the military infrared and electro-optical fields. IRIA also provides associated incidental technical and administrative support for these meetings.

Contact Information

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Manufacturing Technology Information Analysis Center (MTIAC)

Introduction

The Manufacturing Technology Information Analysis Center (MTIAC) is a Department of Defense (DoD) Information Analysis Center, sponsored by the Defense Technical Information Center (DTIC), and operated by IIT Research Institute. MTIAC promotes the exchange of manufacturing technology information and supports DoD Manufacturing Technology (ManTech) program objectives.

Manufacturing technology is the foundation of the production capabilities of the U.S. industrial base. The U.S. industrial base supports both civilian and defense needs, and MTIAC assists all components of this manufacturing community.

Manufacturing technology is a broad discipline that includes all aspects of the manufacturing cycle, from design through production and to include post-production support. The MTIAC staff engineers and information professionals have the knowledge and experience to support the varied requirements of all components of the industrial base.

Mission

MTIAC fulfills its mission to operate as a full-service IAC through a combination of engineering expertise and technology transfer capability. MTIAC draws directly on the technical resources of the IIT Research Institute, and numerous affiliated organizations to offer broad-based technical support to MTIAC users. MTIAC has more than 10 years of experience in all aspects of technology transfer. This experience is in traditional areas of information dissemination - inquiry response, technical reports, and newsletters as well as more innovative approaches - Internet, predictive modeling, and customer-tailored programs. MTIAC also provides program technical support, organization of technical symposia, and industrial base surveys.

Scope

- Above the Shop Floor Systems
- Agile Manufacturing
- Artificial Intelligence
- Benchmarking
- Best Commercial Practices
- Computer Aided Manufacturing
- Computer Aided Design
- Computer Integrated Manufacturing
- Concurrent Engineering
- Factory Automation
- Integrated Product & Process Development
- Machine Tools
- Manufacturing Economics & Finance
- Pollution Mitigation
- Production Methods
- Production Processes
- Productivity
- Robotics
- Simulation
- Tooling

Product Sample

Directory of Manufacturing Research Centers - This directory includes descriptions of more that 200 U.S. Centers engaged in manufacturing related research. Each of these centers not only performs research, but also is available in some capacity to the overall manufacturing community. The directory includes, for each center, the location, mission, key personnel, sponsorship, and technical scope.

DoD Manufacturing Technology Archives - MTIAC has acquired and archived a wide range of DoD Manufacturing Technology (ManTech) publications. These include meeting and conference proceedings from the tri-services, ManTech Project Books, Committee and Sub Committee reports, technical reports, newsletters, informational brochures, and other miscellaneous publications.

For a complete list of current products contact MTIAC at the address listed below.

Contact Information

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Nondestructive Testing Information Analysis Center (NTIAC)

NTIAC
Nondestructive Testing Information Analysis Center

Introduction

NTIAC provides technical expertise, authoritative analysis, engineering services, and laboratory support in responding to DoD, other Government agency, and industry requests and needs in areas related to Nondestructive Evaluation (NDE). Present day advanced technology requires materials, components, and structures of unprecedented efficiency, operating nearly at their ultimate capability; at the same time, approaches are being sought to cut costs by extending the life of many aging structures and operating systems. As a result, there are increasing requirements for capabilities to test, inspect, and evaluate nondestructively to ensure quality, reliability and safety.

NTIAC specializes in all aspects of nondestructive evaluation, inspection, and testing in the broadest possible sense. NTIAC applies NDE technology to meet DoD, other government agency, and industry needs: in designing new advanced materials and processes, for on-line process control during the manufacture of advanced materials and systems, for in-service inspection to increase life expectancy, and to provide a basis for condition based maintenance decisions.

NTIAC has compiled a *Nondestructive Evaluation (NDE) Capabilities Data Book* which consolidates and organizes available reference data for demonstrated NDE performance capabilities into a single source. The Data Book contains over 400 Probability of Detection (POD) curves dealing with a large variety of nondestructive evaluation applications, such as cracks in J85 seventh stage compressor disk bolt holes and cracks in aircraft aluminum lap splice joints. The Data Book is an excellent source of information for selecting options for use of NDE to assure fracture critical structural integrity design requirements and in life cycle maintenance operations. The Data Book is available from NTIAC in both hard copy and CD formats. The CD format contains all of the measurement data used to construct the POD curves. Although the POD plots are based on "hit/miss" data using a log-logistic analysis, users can apply other statistical analysis programs to the raw data. The POD information in the Data Book can be used with life assessment programs such as NASA/FLAGRO to perform damage tolerance analyses.

The Nondestructive Testing Information Analysis Center (NTIAC) is a full-service Information Analysis Center sponsored by the Defense Technical Information Center (DTIC) and operated under contract by Texas Research Institute Austin, Inc. (TRI/Austin) in Austin, Texas.

Goals and Objectives

NTIAC's mission is to increase the productivity of the nation's scientists, engineers, and technical managers involved in nondestructive testing, evaluation, and inspection (NDT/E/I) by providing broad information analysis services of technical excellence.

Products and Services

- Computerized, bibliographic database of over 50,000 NDT articles, reports, and other documents

- On-call, broad technical expertise from almost 100 professional and support personnel at Texas Research International

- Access to dozens of electronic information resources, including bulletin boards, libraries, and Internet

- Direct access to NDT database

- Handbooks and data books

- Expert assistance for literature searches

- Current awareness (NTIAC Newsletter)

- Organization of NDT symposia and conferences

- Publication of NDE related documents including State of the Art Reports

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Reliability Analysis Center (RAC)

Introduction

The Reliability Analysis Center (RAC) has been the DoD's recognized center of excellence in the engineering disciplines of reliability, maintainability, supportability and quality (RMSQ) for over 30 years. RAC provides unbiased technical support in these engineering disciplines during the acquisition, development and operational phases of military and commercial resulting in lower life cycle costs and increased readiness. RAC's broad-based resources include the largest failure databases and library dedicated to RMSQ. RAC currently has over 60 technical reports and software tools to assist the manager, practitioner, and designer effectively address sustainment of complex systems. Over 15,000 people have benefited from the broad range of training programs designed to transition lessons learned and practical experience to the decision-maker. RAC's staff of over 50 engineers and scientists, coupled with our expert network, is dedicated to providing turnkey technical solutions tailored to meet your needs, from your simplest technical questions to complex RMSQ problems.

Scope

RAC's scope is the reliability, maintainability, quality and supportability of microcircuits, semiconductors, electromechanical and mechanical parts, and equipment/systems employing these parts.

Mission

The mission of the Reliability Analysis Center (RAC) is to provide technical expertise and information in the engineering disciplines of reliability, maintainability, supportability and quality and to facilitate their cost-effective implementation throughout all phases of the product or system life cycle.

Technical Subjects

- Reliability Program Management
- Reliability Data Collection and Analysis
- Reliability Modeling and Prediction
- Parts Control Programs and Part Qualification
- Reliability Problem Solving, Failure Reporting and Corrective Action Systems (FRACAS), and Reverse Engineering
- Systems/Equipment Lifetime Extension Analysis
- Failure Mode, Effects & Criticality Analysis (FMECA)
- Fault Tree Analysis (FTA)
- Worst Case Circuit Analysis (WCCA)
- Testability and Maintainability Analysis
- Reliability-Centered Maintenance (RCM)
- Electrostatic Discharge (ESD) Susceptibility Analysis
- Reliability/Maintainability Test Planning and Control
- Environmental Stress Screening (ESS) Planning
- Mechanical Reliability and Maintainability
- Finite Element Analysis (FEA)
- Quantitative Services
- Total Quality Management
- Environmental Characterization
- Component Obsolescence

Products and Services

Software Engineering Process Group Handbook

The Capability Maturity Model for Software (CMM) is a powerful tool for evaluating and for improving software. Its five levels, 18 key process areas, and over 300 practices provide a complex structure that needs to be closely examined to determine the underlying capability of an organization. Based upon this understanding of an organization's strengths and weaknesses, the software improvement teams, called Software Engineering Process Groups, can identify and prioritize those critical activities required for improvement. This Handbook offers a step-by-step road map to this software improvement process.

Introduction to Software Reliability

Today's products and systems are becoming more and more software intensive. Often, the reliability of the software has been ignored in the development process, with analyses and other normal reliability tasks assuming that the software has a reliability of one (perfectly reliable). This has often been the case because of the hardware-oriented background of practicing reliability personnel and their lack of understanding of software development. This publication acquaints reliability practitioners with the fundamentals of software development as they apply to

system reliability, enabling consideration of "total system" reliability rather than just addressing hardware. Different software development processes are discussed along with models and differences between hardware and software reliability definitions and concepts.

System Software Reliability Training Course

This training course is tailored for reliability engineers, systems engineers, quality assurance engineers, and software engineers and testers. Featuring hands-on software reliability measurement, analyses and design, it is intended for those individuals responsible for measuring, analyzing, designing, automating, implementing or ensuring software reliability for either commercial or government programs. Practical approaches are stressed with many examples included. It is not necessary to have a software background or a reliability background to attend the course, however, either or both are helpful.

PRISM© System Reliability Assessment Software

RAC's PRISM© is an integrated software tool for assessing system reliability. PRISM© incorporates:

- The next generation of component reliability models derived from RAC's extensive failure rate database.

- Comprehensive searchable database of observed field failure rates.

- System development process grading methodology to assess the impact of both good and bad processes on inherent system reliability.

- Graphical system breakdown structure that provides intuitive insight into the reliability assessment process.

- Diverse set of tabular and graphical output reports to pinpoint visibility of high failure rate drivers.

- Software reliability estimation model to estimate failure contribution from software architecture.

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