

Reliability Reliability Engineering Principles Engineering

YEAH, REVIEWING A BOOKS **RELIABILITY RELIABILITY ENGINEERING PRINCIPLES ENGINEERING** COULD BE CREDITED WITH YOUR NEAR CONNECTIONS LISTINGS. THIS IS JUST ONE OF THE SOLUTIONS FOR YOU TO BE SUCCESSFUL. AS UNDERSTOOD, FINISHING DOES NOT RECOMMEND THAT YOU HAVE EXTRAORDINARY POINTS.

COMPREHENDING AS COMPETENTLY AS BARGAIN EVEN MORE THAN FURTHER WILL PAY FOR EACH SUCCESS. BORDERING TO, THE PROCLAMATION AS CAPABLY AS INSIGHT OF THIS RELIABILITY RELIABILITY ENGINEERING PRINCIPLES ENGINEERING CAN BE TAKEN AS WELL AS PICKED TO ACT.

THE SITE RELIABILITY WORKBOOK - BETSY BEYER 2018-07-25

IN 2016, GOOGLE'S SITE RELIABILITY ENGINEERING BOOK IGNITED AN INDUSTRY DISCUSSION ON WHAT IT MEANS TO RUN PRODUCTION SERVICES TODAY—AND WHY RELIABILITY CONSIDERATIONS ARE FUNDAMENTAL TO SERVICE DESIGN. NOW, GOOGLE ENGINEERS WHO WORKED ON THAT BESTSELLER INTRODUCE THE SITE RELIABILITY WORKBOOK, A HANDS-ON COMPANION THAT USES CONCRETE EXAMPLES TO SHOW YOU HOW TO PUT SRE PRINCIPLES AND PRACTICES TO WORK IN YOUR ENVIRONMENT. THIS NEW WORKBOOK NOT ONLY COMBINES PRACTICAL EXAMPLES FROM GOOGLE'S EXPERIENCES, BUT ALSO PROVIDES CASE STUDIES FROM GOOGLE'S CLOUD PLATFORM CUSTOMERS WHO UNDERWENT THIS JOURNEY. EVERNOTE, THE HOME DEPOT, THE NEW YORK TIMES, AND OTHER COMPANIES OUTLINE HARD-WON EXPERIENCES OF WHAT WORKED FOR THEM AND WHAT DIDN'T. DIVE INTO THIS WORKBOOK AND LEARN HOW TO FLESH OUT YOUR OWN SRE PRACTICE, NO MATTER WHAT SIZE YOUR COMPANY IS. YOU'LL LEARN: HOW TO RUN RELIABLE SERVICES IN ENVIRONMENTS YOU DON'T COMPLETELY CONTROL—LIKE CLOUD PRACTICAL APPLICATIONS OF HOW TO CREATE, MONITOR, AND RUN YOUR SERVICES VIA SERVICE LEVEL OBJECTIVES HOW TO CONVERT EXISTING OPS TEAMS TO SRE—INCLUDING HOW TO DIG OUT OF OPERATIONAL OVERLOAD METHODS FOR STARTING SRE FROM EITHER GREENFIELD OR BROWNFIELD

MAINTENANCE ENGINEERING (PRINCIPLES, PRACTICES AND MANAGEMENT) - SRIVASTAVA, SUSHIL KUMAR 2006

THIS BOOK IS HIGHLY USEFUL FOR THE STUDENTS OF B.E./B.TECH. OF PUNJAB TECHNOLOGICAL UNIVERSITY, JALANDHAR AND ALSO FOR THE OTHER TECHNOLOGICAL UNIVERSITIES OF INDIA AS PER NEW SYLLABUS. ACCORDINGLY, FEW SAMPLE QUESTION ARE GIVEN AT THE END OF EACH CHAPTER. THE CHAPTER AND TOPICS, COVERED IN THIS BOOK, ARE EXPECTED TO ENCOMPASS THE SYLLABUS THAT MAY BE NEEDED BY VARIOUS COLLEGES/ INSTITUTIONS IN MAINTENANCE FIELD. IT ALSO SERVES AS A REFERENCE BOOK FOR STUDENTS OF ALL OTHER ENGINEERING DISCIPLINES IN UNIVERSITIES, COLLEGES, INSTITUTIONS AND ALSO VAST NUMBERS OF ENGINEER, MANAGERS SUPERVIORS, TECHNOLOGISTS AND OTHER PERSONS WORKING IN OR ASSOCIATED WITH MAINTENANCE AND UPKEEP OF MACHINES, EQUIPMENTS AND

SYSTEMS IN ANY SHOP, PLANT OR INDUSTRY.

TELECOMMUNICATIONS ENGINEERING: PRINCIPLES AND PRACTICE - AMOAKOH GYASI-AGYEI 2019-06-19

THIS BOOK COVERS BASIC PRINCIPLES OF TELECOMMUNICATIONS AND THEIR APPLICATIONS IN THE DESIGN AND ANALYSIS OF MODERN NETWORKS AND SYSTEMS. AIMED TO MAKE TELECOMMUNICATIONS ENGINEERING EASILY ACCESSIBLE TO STUDENTS, THIS BOOK CONTAINS NUMEROUS WORKED EXAMPLES, CASE STUDIES AND REVIEW QUESTIONS AT THE END OF EACH SECTION. READERS OF THE BOOK CAN THUS EASILY CHECK THEIR UNDERSTANDING OF THE TOPICS PROGRESSIVELY. TO RENDER THE BOOK MORE HANDS-ON, MATLAB® SOFTWARE PACKAGE IS USED TO EXPLAIN SOME OF THE CONCEPTS. PARTS OF THIS BOOK ARE TAUGHT IN UNDERGRADUATE CURRICULUM, WHILE THE REST IS TAUGHT IN GRADUATE COURSES. TELECOMMUNICATIONS ENGINEERING: THEORY AND PRACTICE TREATS BOTH TRADITIONAL AND MODERN TOPICS, SUCH AS BLOCKCHAIN, OFDM, OFDMA, SC-FDMA, LPDC CODES, ARITHMETIC CODING, POLAR CODES AND NON-ORTHOGONAL MULTIPLE ACCESS (NOMA).

DESIGN FOR MAINTAINABILITY - LOUIS J. GULLO 2021-03-26

HOW TO DESIGN FOR OPTIMUM MAINTENANCE CAPABILITIES AND MINIMIZE THE REPAIR TIME DESIGN FOR MAINTAINABILITY OFFERS ENGINEERS A WIDE RANGE OF TOOLS AND TECHNIQUES FOR INCORPORATING MAINTAINABILITY INTO THE DESIGN PROCESS FOR COMPLEX SYSTEMS. WITH CONTRIBUTIONS FROM NOTED EXPERTS ON THE TOPIC, THE BOOK EXPLAINS HOW TO DESIGN FOR OPTIMUM MAINTENANCE CAPABILITIES WHILE SIMULTANEOUSLY MINIMIZING THE TIME TO REPAIR EQUIPMENT. THE BOOK CONTAINS A WEALTH OF EXAMPLES AND THE MOST UP-TO-DATE MAINTAINABILITY DESIGN PRACTICES THAT HAVE PROVEN TO RESULT IN BETTER SYSTEM READINESS, SHORTER DOWNTIMES, AND SUBSTANTIAL COST SAVINGS OVER THE ENTIRE SYSTEM LIFE CYCLE, THEREBY, DECREASING THE TOTAL COST OF OWNERSHIP. DESIGN FOR MAINTAINABILITY OFFERS A WEALTH OF DESIGN PRACTICES NOT COVERED IN TYPICAL ENGINEERING BOOKS, THUS ALLOWING READERS TO THINK OUTSIDE THE BOX WHEN DEVELOPING MAINTAINABILITY DESIGN REQUIREMENTS. THE BOOK'S PRINCIPLES AND PRACTICES CAN HELP

ENGINEERS TO DRAMATICALLY IMPROVE THEIR ABILITY TO COMPETE IN GLOBAL MARKETS AND GAIN WIDESPREAD CUSTOMER SATISFACTION. THIS IMPORTANT BOOK: OFFERS A COMPLETE OVERVIEW OF MAINTAINABILITY ENGINEERING AS A SYSTEM ENGINEERING DISCIPLINE INCLUDES CONTRIBUTIONS FROM AUTHORS WHO ARE RECOGNIZED LEADERS IN THE FIELD CONTAINS REAL-LIFE DESIGN EXAMPLES, BOTH GOOD AND BAD, FROM VARIOUS INDUSTRIES PRESENTS REALISTIC ILLUSTRATIONS OF GOOD MAINTAINABILITY DESIGN PRINCIPLES PROVIDES DISCUSSION OF THE INTERRELATIONSHIPS BETWEEN MAINTAINABILITY WITH OTHER RELATED DISCIPLINES EXPLORES TRENDING TOPICS IN TECHNOLOGIES WRITTEN FOR DESIGN AND LOGISTICS ENGINEERS AND MANAGERS, DESIGN FOR MAINTAINABILITY IS A COMPREHENSIVE RESOURCE CONTAINING THE MOST RELIABLE AND INNOVATIVE TECHNIQUES FOR IMPROVING MAINTAINABILITY WHEN DESIGNING A SYSTEM OR PRODUCT.

GAS AND OIL RELIABILITY ENGINEERING - EDUARDO CALIXTO 2016-06-22

GAS AND OIL RELIABILITY ENGINEERING: MODELING AND ANALYSIS, SECOND EDITION, PROVIDES THE LATEST TACTICS AND PROCESSES THAT CAN BE USED IN OIL AND GAS MARKETS TO IMPROVE RELIABILITY KNOWLEDGE AND REDUCE COSTS TO STAY COMPETITIVE, ESPECIALLY WHILE OIL PRICES ARE LOW. UPDATED WITH RELEVANT ANALYSIS AND CASE STUDIES COVERING EQUIPMENT FOR BOTH ONSHORE AND OFFSHORE OPERATIONS, THIS REFERENCE PROVIDES THE ENGINEER AND MANAGER WITH MORE INFORMATION ON LIFETIME DATA ANALYSIS (LDA), SAFETY INTEGRITY LEVELS (SILs), AND ASSET MANAGEMENT. NEW CHAPTERS ON SAFETY, MORE COVERAGE ON THE LATEST SOFTWARE, AND TECHNIQUES SUCH AS ReBi (RELIABILITY-BASED INSPECTION), ReGBI (RELIABILITY GROWTH-BASED INSPECTION), RCM (RELIABILITY CENTERED MAINTENANCE), AND LDA (LIFETIME DATA ANALYSIS), AND ASSET INTEGRITY MANAGEMENT, MAKE THE BOOK A CRITICAL RESOURCE THAT WILL ARM ENGINEERS AND MANAGERS WITH THE BASIC RELIABILITY PRINCIPLES AND STANDARD CONCEPTS THAT ARE NECESSARY TO EXPLAIN THEIR USE FOR RELIABILITY ASSURANCE FOR THE OIL AND GAS INDUSTRY. PROVIDES THE LATEST TACTICS AND PROCESSES THAT CAN BE USED IN OIL AND GAS MARKETS TO IMPROVE RELIABILITY KNOWLEDGE AND REDUCE COSTS PRESENTS PRACTICAL KNOWLEDGE WITH OVER 20 NEW INTERNATIONALLY-BASED CASE STUDIES COVERING BOPs, OFFSHORE PLATFORMS, PIPELINES, VALVES, AND SUBSEA EQUIPMENT FROM VARIOUS LOCATIONS, SUCH AS AUSTRALIA, THE MIDDLE EAST, AND ASIA CONTAINS EXPANDED EXPLANATIONS OF RELIABILITY SKILLS WITH A NEW CHAPTER ON ASSET INTEGRITY MANAGEMENT, RELEVANT SOFTWARE, AND TECHNIQUES TRAINING, SUCH AS THERP, ASEP, RBI, FMEA, AND RAMS

PRACTICAL SITE RELIABILITY ENGINEERING - PETHURU RAJ CHELLIAH 2018-11-30

CREATE, DEPLOY, AND MANAGE APPLICATIONS AT SCALE USING SRE PRINCIPLES KEY FEATURES BUILD AND RUN HIGHLY AVAILABLE, SCALABLE, AND SECURE SOFTWARE EXPLORE ABSTRACT SRE IN A SIMPLIFIED AND STREAMLINED WAY ENHANCE THE RELIABILITY OF CLOUD ENVIRONMENTS THROUGH SRE ENHANCEMENTS BOOK DESCRIPTION SITE RELIABILITY ENGINEERING (SRE) IS BEING TOUTED AS THE MOST COMPETENT PARADIGM IN ESTABLISHING AND ENSURING NEXT-GENERATION HIGH-QUALITY SOFTWARE SOLUTIONS. THIS BOOK STARTS

BY INTRODUCING YOU TO THE SRE PARADIGM AND COVERS THE NEED FOR HIGHLY RELIABLE IT PLATFORMS AND INFRASTRUCTURES. AS YOU MAKE YOUR WAY THROUGH THE NEXT SET OF CHAPTERS, YOU WILL LEARN TO DEVELOP MICROSERVICES USING SPRING BOOT AND MAKE USE OF RESTFUL FRAMEWORKS. YOU WILL ALSO LEARN ABOUT GITHUB FOR DEPLOYMENT, CONTAINERIZATION, AND DOCKER CONTAINERS. PRACTICAL SITE RELIABILITY ENGINEERING TEACHES YOU TO SET UP AND SUSTAIN CONTAINERIZED CLOUD ENVIRONMENTS, AND ALSO COVERS ARCHITECTURAL AND DESIGN PATTERNS AND RELIABILITY IMPLEMENTATION TECHNIQUES SUCH AS REACTIVE PROGRAMMING, AND LANGUAGES SUCH AS BALLERINA AND RUST. IN THE CONCLUDING CHAPTERS, YOU WILL GET WELL-VERSED WITH SERVICE MESH SOLUTIONS SUCH AS ISTIO AND LINKERD, AND UNDERSTAND SERVICE RESILIENCE TEST PRACTICES, API GATEWAYS, AND EDGE/FOG COMPUTING. BY THE END OF THIS BOOK, YOU WILL HAVE GAINED EXPERIENCE ON WORKING WITH SRE CONCEPTS AND BE ABLE TO DELIVER HIGHLY RELIABLE APPS AND SERVICES. WHAT YOU WILL LEARN UNDERSTAND HOW TO ACHIEVE YOUR SRE GOALS GRASP DOCKER-ENABLED CONTAINERIZATION CONCEPTS LEVERAGE ENTERPRISE DEVOPS CAPABILITIES AND MICROSERVICES ARCHITECTURE (MSA) GET TO GRIPS WITH THE SERVICE MESH CONCEPT AND FRAMEWORKS SUCH AS ISTIO AND LINKERD DISCOVER BEST PRACTICES FOR PERFORMANCE AND RESILIENCY FOLLOW SOFTWARE RELIABILITY PREDICTION APPROACHES AND ENABLE PATTERNS UNDERSTAND KUBERNETES FOR CONTAINER AND CLOUD ORCHESTRATION EXPLORE THE END-TO-END SOFTWARE ENGINEERING PROCESS FOR THE CONTAINERIZED WORLD WHO THIS BOOK IS FOR PRACTICAL SITE RELIABILITY ENGINEERING HELPS SOFTWARE DEVELOPERS, IT PROFESSIONALS, DEVOPS ENGINEERS, PERFORMANCE SPECIALISTS, AND SYSTEM ENGINEERS UNDERSTAND HOW THE EMERGING DOMAIN OF SRE COMES HANDY IN AUTOMATING AND ACCELERATING THE PROCESS OF DESIGNING, DEVELOPING, DEBUGGING, AND DEPLOYING HIGHLY RELIABLE APPLICATIONS AND SERVICES.

ESTABLISHING SRE FOUNDATIONS - VLADYSLAV UKIS 2022-11-05

PIONEERED BY GOOGLE IN ITS QUEST TO CREATE MORE SCALABLE AND RELIABLE LARGE-SCALE SOFTWARE SYSTEMS, SITE RELIABILITY ENGINEERING (SRE) HAS ESTABLISHED ITSELF AS ONE OF TODAY'S FASTEST-GROWING AREAS OF INNOVATION IN DEVOPS AND SOFTWARE ENGINEERING. ESTABLISHING SRE FOUNDATIONS OFFERS A CONCISE AND PRACTICAL INTRODUCTION TO SRE THAT FOCUSES SPECIFICALLY ON HOW TO DRIVE SUCCESSFUL ADOPTION IN YOUR OWN SOFTWARE DELIVERY ORGANIZATION. IT PRESENTS A STEP-BY-STEP APPROACH TO ESTABLISHING THE RIGHT CULTURAL, ORGANIZATIONAL, TECHNICAL PROCESS FOUNDATIONS, GETTING TO A MINIMUM VIABLE SRE AS QUICKLY AS FEASIBLE, AND IMPROVING FROM THERE. DR. VLADYSLAV UKIS ILLUMINATES SRE'S CORE CONCEPTS AND RATIONALE, AND ANSWERS ESSENTIAL QUESTIONS SUCH AS: WHAT DOES IT TAKE TO DRIVE SRE ADOPTION WHERE DEVELOPMENT ORGANIZATIONS HAVEN'T DONE OPERATIONS BEFORE, AND OPS ORGANIZATIONS HAVEN'T CLOSELY COLLABORATED WITH THEM? WHAT IF YOUR OPERATIONS ORGANIZATION IS ALREADY STRUGGLING TO OPERATE ITS PRODUCTS? HOW CAN ORGANIZATIONAL BUY-IN FOR SRE BE ACHIEVED? HOW MUCH TIME WILL IT TAKE, AND HOW FAST CAN SRE BE ADOPTED AT SCALE? HOW CAN YOU BE EFFECTIVE IN LEADING AN

SRE INITIATIVE?

INTRODUCTION TO QUALITY AND RELIABILITY ENGINEERING - RENYAN JIANG 2015-05-20

THIS BOOK PRESENTS THE STATE-OF-THE-ART IN QUALITY AND RELIABILITY ENGINEERING FROM A PRODUCT LIFE-CYCLE STANDPOINT. TOPICS IN RELIABILITY INCLUDE RELIABILITY MODELS, LIFE DATA ANALYSIS AND MODELING, DESIGN FOR RELIABILITY AS WELL AS ACCELERATED LIFE TESTING AND RELIABILITY GROWTH ANALYSIS, WHILE TOPICS IN QUALITY INCLUDE DESIGN FOR QUALITY, ACCEPTANCE SAMPLING AND SUPPLIER SELECTION, STATISTICAL PROCESS CONTROL, PRODUCTION TESTS SUCH AS ENVIRONMENTAL STRESS SCREENING AND BURN-IN, WARRANTY AND MAINTENANCE. THE BOOK PROVIDES COMPREHENSIVE INSIGHTS INTO TWO CLOSELY RELATED SUBJECTS, AND INCLUDES A WEALTH OF EXAMPLES AND PROBLEMS TO ENHANCE READERS' COMPREHENSION AND LINK THEORY AND PRACTICE. ALL NUMERICAL EXAMPLES CAN BE EASILY SOLVED USING MICROSOFT EXCEL. THE BOOK IS INTENDED FOR SENIOR UNDERGRADUATE AND POSTGRADUATE STUDENTS IN RELATED ENGINEERING AND MANAGEMENT PROGRAMS SUCH AS MECHANICAL ENGINEERING, MANUFACTURING ENGINEERING, INDUSTRIAL ENGINEERING AND ENGINEERING MANAGEMENT PROGRAMS, AS WELL AS FOR RESEARCHERS AND ENGINEERS IN THE QUALITY AND RELIABILITY FIELDS. DR. RENYAN JIANG IS A PROFESSOR AT THE FACULTY OF AUTOMOTIVE AND MECHANICAL ENGINEERING, CHANGSHA UNIVERSITY OF SCIENCE AND TECHNOLOGY, CHINA.

PRACTICAL SITE RELIABILITY ENGINEERING - PETHURU RAJ CHELLIAH 2018-11-30

CREATE, DEPLOY, AND MANAGE APPLICATIONS AT SCALE USING SRE PRINCIPLES KEY FEATURES BUILD AND RUN HIGHLY AVAILABLE, SCALABLE, AND SECURE SOFTWARE EXPLORE ABSTRACT SRE IN A SIMPLIFIED AND STREAMLINED WAY ENHANCE THE RELIABILITY OF CLOUD ENVIRONMENTS THROUGH SRE ENHANCEMENTS BOOK DESCRIPTION SITE RELIABILITY ENGINEERING (SRE) IS BEING TOUTED AS THE MOST COMPETENT PARADIGM IN ESTABLISHING AND ENSURING NEXT-GENERATION HIGH-QUALITY SOFTWARE SOLUTIONS. THIS BOOK STARTS BY INTRODUCING YOU TO THE SRE PARADIGM AND COVERS THE NEED FOR HIGHLY RELIABLE IT PLATFORMS AND INFRASTRUCTURES. AS YOU MAKE YOUR WAY THROUGH THE NEXT SET OF CHAPTERS, YOU WILL LEARN TO DEVELOP MICROSERVICES USING SPRING BOOT AND MAKE USE OF RESTFUL FRAMEWORKS. YOU WILL ALSO LEARN ABOUT GITHUB FOR DEPLOYMENT, CONTAINERIZATION, AND DOCKER CONTAINERS. PRACTICAL SITE RELIABILITY ENGINEERING TEACHES YOU TO SET UP AND SUSTAIN CONTAINERIZED CLOUD ENVIRONMENTS, AND ALSO COVERS ARCHITECTURAL AND DESIGN PATTERNS AND RELIABILITY IMPLEMENTATION TECHNIQUES SUCH AS REACTIVE PROGRAMMING, AND LANGUAGES SUCH AS BALLERINA AND RUST. IN THE CONCLUDING CHAPTERS, YOU WILL GET WELL-VERSED WITH SERVICE MESH SOLUTIONS SUCH AS ISTIO AND LINKERD, AND UNDERSTAND SERVICE RESILIENCE TEST PRACTICES, API GATEWAYS, AND EDGE/FOG COMPUTING. BY THE END OF THIS BOOK, YOU WILL HAVE GAINED EXPERIENCE ON WORKING WITH SRE CONCEPTS AND BE ABLE TO DELIVER HIGHLY RELIABLE APPS AND SERVICES. WHAT YOU WILL LEARN UNDERSTAND HOW TO ACHIEVE YOUR SRE GOALS GRASP DOCKER-ENABLED CONTAINERIZATION CONCEPTS LEVERAGE ENTERPRISE DEVOPS CAPABILITIES AND MICROSERVICES ARCHITECTURE (MSA)

GET TO GRIPS WITH THE SERVICE MESH CONCEPT AND FRAMEWORKS SUCH AS ISTIO AND LINKERD DISCOVER BEST PRACTICES FOR PERFORMANCE AND RESILIENCY FOLLOW SOFTWARE RELIABILITY PREDICTION APPROACHES AND ENABLE PATTERNS UNDERSTAND KUBERNETES FOR CONTAINER AND CLOUD ORCHESTRATION EXPLORE THE END-TO-END SOFTWARE ENGINEERING PROCESS FOR THE CONTAINERIZED WORLD WHO THIS BOOK IS FOR PRACTICAL SITE RELIABILITY ENGINEERING HELPS SOFTWARE DEVELOPERS, IT PROFESSIONALS, DEVOPS ENGINEERS, PERFORMANCE SPECIALISTS, AND SYSTEM ENGINEERS UNDERSTAND HOW THE EMERGING DOMAIN OF SRE COMES HANDY IN AUTOMATING AND ACCELERATING THE PROCESS OF DESIGNING, DEVELOPING, DEBUGGING, AND DEPLOYING HIGHLY RELIABLE APPLICATIONS AND SERVICES.

PRINCIPLES OF LOADS AND FAILURE MECHANISMS - T TINGA 2013-02-01

FAILURE OF COMPONENTS OR SYSTEMS MUST BE PREVENTED BY BOTH DESIGNERS AND OPERATORS OF SYSTEMS, BUT KNOWLEDGE OF THE UNDERLYING MECHANISMS IS OFTEN LACKING. SINCE THE RELATION BETWEEN THE EXPECTED USAGE OF A SYSTEM AND ITS FAILURE BEHAVIOR IS UNKNOWN, UNEXPECTED FAILURES OFTEN OCCUR, WITH POSSIBLY SERIOUS FINANCIAL AND SAFETY CONSEQUENCES. PRINCIPLES OF LOADS AND FAILURE MECHANISMS. APPLICATIONS IN MAINTENANCE, RELIABILITY AND DESIGN PROVIDES A COMPLETE OVERVIEW OF ALL RELEVANT FAILURE MECHANISMS, RANGING FROM MECHANICAL FAILURES LIKE FATIGUE AND CREEP TO CORROSION AND ELECTRIC FAILURES. BOTH QUALITATIVE AND QUANTITATIVE DESCRIPTIONS OF THE MECHANISMS AND THEIR GOVERNING LOADS ENABLE A SOLID ASSESSMENT OF A SYSTEM'S RELIABILITY IN A GIVEN OR ASSUMED OPERATIONAL CONTEXT. MOREOVER, A UNIQUE RANGE OF APPLICATIONS OF THIS KNOWLEDGE IN THE FIELDS OF MAINTENANCE, RELIABILITY AND DESIGN ARE PRESENTED. THE BENEFITS OF UNDERSTANDING THE PHYSICS OF FAILURE ARE DEMONSTRATED FOR SUBJECTS LIKE CONDITION MONITORING, PREDICTIVE MAINTENANCE, PROGNOSTICS AND HEALTH MANAGEMENT, FAILURE ANALYSIS AND RELIABILITY ENGINEERING. FINALLY, THE ROLE OF THESE MECHANISMS IN DESIGN PROCESSES AND DESIGN FOR MAINTENANCE ARE ILLUSTRATED.

IMPORTANCE MEASURES IN RELIABILITY, RISK, AND OPTIMIZATION - WAY KUO 2012-05-10

THIS UNIQUE TREATMENT SYSTEMATICALLY INTERPRETS A SPECTRUM OF IMPORTANCE MEASURES TO PROVIDE A COMPREHENSIVE OVERVIEW OF THEIR APPLICATIONS IN THE AREAS OF RELIABILITY, NETWORK, RISK, MATHEMATICAL PROGRAMMING, AND OPTIMIZATION. INVESTIGATING THE PRECISE RELATIONSHIPS AMONG VARIOUS IMPORTANCE MEASURES, IT DESCRIBES HOW THEY ARE MODELLED AND COMBINED WITH OTHER DESIGN TOOLS TO ALLOW USERS TO SOLVE READILY MANY REAL-WORLD, LARGE-SCALE DECISION-MAKING PROBLEMS. PRESENTING THE STATE-OF-THE-ART IN NETWORK ANALYSIS, MULTISTATE SYSTEMS, AND APPLICATION IN MODERN SYSTEMS, THIS BOOK OFFERS A CLEAR AND COMPLETE INTRODUCTION TO THE TOPIC. THROUGH DESCRIBING THE RELIABILITY IMPORTANCE AND THE FUNDAMENTALS, IT COVERS ADVANCED TOPICS SUCH AS SIGNATURE OF COHERENT SYSTEMS, MULTI-LINEAR FUNCTIONS, AND NEW INTERPRETATION OF THE MATHEMATICAL

PROGRAMMING PROBLEMS. KEY HIGHLIGHTS: GENERALIZES THE CONCEPTS BEHIND IMPORTANCE MEASURES (SUCH AS SENSITIVITY AND PERTURBATION ANALYSIS, UNCERTAINTY ANALYSIS, MATHEMATICAL PROGRAMMING, NETWORK DESIGNS), ENABLING READERS TO ADDRESS LARGE-SCALE PROBLEMS WITHIN VARIOUS FIELDS EFFECTIVELY. COVERS A LARGE RANGE OF IMPORTANCE MEASURES, INCLUDING THOSE IN BINARY COHERENT SYSTEMS, BINARY MONOTONE SYSTEMS, MULTISTATE SYSTEMS, CONTINUUM SYSTEMS, REPAIRABLE SYSTEMS, AS WELL AS IMPORTANCE MEASURES OF PAIRS AND GROUPS OF COMPONENTS. DEMONSTRATES NUMERICAL AND PRACTICAL APPLICATIONS OF IMPORTANCE MEASURES AND THE RELATED METHODOLOGIES, INCLUDING RISK ANALYSIS IN NUCLEAR POWER PLANTS, CLOUD COMPUTING, SOFTWARE RELIABILITY AND MORE. PROVIDES THOROUGH COMPARISONS, EXAMPLES AND CASE STUDIES ON RELATIONS OF DIFFERENT IMPORTANCE MEASURES, WITH CONCLUSIVE RESULTS BASED ON THE AUTHORS' OWN RESEARCH. DESCRIBES RELIABILITY DESIGN SUCH AS REDUNDANCY ALLOCATION, SYSTEM UPGRADING AND COMPONENT ASSIGNMENT. THIS BOOK WILL BENEFIT RESEARCHERS AND PRACTITIONERS INTERESTED IN SYSTEMS DESIGN, RELIABILITY, RISK AND OPTIMIZATION, STATISTICS, MAINTENANCE, PROGNOSTICS AND OPERATIONS. READERS CAN DEVELOP FEASIBLE APPROACHES TO SOLVING VARIOUS OPEN-ENDED PROBLEMS IN THEIR RESEARCH AND PRACTICAL WORK. SOFTWARE DEVELOPERS, IT ANALYSTS AND RELIABILITY AND SAFETY ENGINEERS IN NUCLEAR, TELECOMMUNICATIONS, OFFSHORE AND CIVIL INDUSTRIES WILL ALSO FIND THE BOOK USEFUL.

RISK-BASED RELIABILITY ANALYSIS AND GENERIC PRINCIPLES FOR RISK REDUCTION - MICHAEL T. TODINOV 2006-11-03

THIS BOOK HAS BEEN WRITTEN WITH THE INTENTION TO FILL TWO BIG GAPS IN THE RELIABILITY AND RISK LITERATURE: THE RISK-BASED RELIABILITY ANALYSIS AS A POWERFUL ALTERNATIVE TO THE TRADITIONAL RELIABILITY ANALYSIS AND THE GENERIC PRINCIPLES FOR REDUCING TECHNICAL RISK. AN IMPORTANT THEME IN THE BOOK IS THE GENERIC PRINCIPLES AND TECHNIQUES FOR REDUCING TECHNICAL RISK. THESE HAVE BEEN CLASSIFIED INTO THREE MAJOR CATEGORIES: PREVENTIVE (REDUCING THE LIKELIHOOD OF FAILURE), PROTECTIVE (REDUCING THE CONSEQUENCES FROM FAILURE) AND DUAL (REDUCING BOTH, THE LIKELIHOOD AND THE CONSEQUENCES FROM FAILURE). MANY OF THESE PRINCIPLES (FOR EXAMPLE: AVOIDING CLUSTERING OF EVENTS, DELIBERATELY INTRODUCING WEAK LINKS, REDUCING SENSITIVITY, INTRODUCING CHANGES WITH OPPOSITE SIGN, ETC.) ARE DISCUSSED IN THE RELIABILITY LITERATURE FOR THE FIRST TIME. SIGNIFICANT SPACE HAS BEEN ALLOCATED TO COMPONENT RELIABILITY. IN THE LAST CHAPTER OF THE BOOK, SEVERAL APPLICATIONS ARE DISCUSSED OF A POWERFUL EQUATION WHICH CONSTITUTES THE CORE OF A NEW THEORY OF LOCALLY INITIATED COMPONENT FAILURE BY FLAWS WHOSE NUMBER IS A RANDOM VARIABLE. OFFERS A SHIFT IN THE EXISTING PARADIGM FOR CONDUCTING RELIABILITY ANALYSES. COVERS RISK-BASED RELIABILITY ANALYSIS AND GENERIC PRINCIPLES FOR REDUCING RISK. PROVIDES A NEW MEASURE OF RISK BASED ON THE DISTRIBUTION OF THE POTENTIAL LOSSES FROM FAILURE AS WELL AS THE BASIC PRINCIPLES FOR RISK-BASED DESIGN. INCORPORATES FAST ALGORITHMS FOR SYSTEM RELIABILITY ANALYSIS AND DISCRETE-EVENT SIMULATORS. INCLUDES THE

PROBABILITY OF FAILURE OF A STRUCTURE WITH COMPLEX SHAPE EXPRESSED WITH A SIMPLE EQUATION

RELIABILITY ENGINEERING AND LIFE TESTING - V. N. A. NAIKAN 2008-12-12

THIS COMPACT AND EASY-TO-UNDERSTAND TEXT PRESENTS THE UNDERLYING PRINCIPLES AND PRACTICE OF RELIABILITY ENGINEERING AND LIFE TESTING. IT DESCRIBES THE VARIOUS TECHNIQUES AVAILABLE FOR RELIABILITY ANALYSIS AND PREDICTION AND EXPLAINS THE STATISTICAL METHODS NECESSARY FOR RELIABILITY MODELLING, ANALYSIS AND ESTIMATION. THE TEXT ALSO DISCUSSES IN DETAIL THE CONCEPTS OF LIFE TESTING, ITS CLASSIFICATION AND METHODOLOGIES AS WELL AS ACCELERATED LIFE TESTS, THE METHODOLOGIES AND MODELS OF STRESS RELATED FAILURE RATES EVALUATION, AND DATA ANALYSIS. BESIDES, IT ELABORATES ON THE PRINCIPLES, METHODS AND EQUIPMENT OF HIGHLY ACCELERATED LIFE TESTING AND HIGHLY ACCELERATED STRESS SCREENING. FINALLY, THE BOOK CONCLUDES WITH A DISCUSSION ON THE PARAMETRIC AS WELL AS NON-PARAMETRIC METHODS GENERALLY USED FOR RELIABILITY ESTIMATION, AND THE RECENT DEVELOPMENTS IN LIFE TESTING OF ENGINEERING COMPONENTS. KEY FEATURES THE BOOK IS UP-TO-DATE AND VERY MUCH RELEVANT TO THE PRESENT INDUSTRIAL, RESEARCH, DESIGN, AND DEVELOPMENT SCENARIOS. PROVIDES ADEQUATE TOOLS TO PREDICT THE SYSTEM RELIABILITY AT THE DESIGN STAGE, TO PLAN AND CONDUCT LIFE TESTING ON THE PRODUCTS AT VARIOUS STAGES OF DEVELOPMENT, AND TO USE THE LIFE TEST AND FIELD DATA TO ESTIMATE THE PRODUCT RELIABILITY. GIVES SUFFICIENTLY LARGE NUMBER OF WORKED-OUT EXAMPLES. PRIMARILY INTENDED AS A TEXTBOOK FOR THE POSTGRADUATE STUDENTS OF ENGINEERING (M.TECH., RELIABILITY ENGINEERING), THE BOOK WOULD ALSO BE QUITE USEFUL FOR RELIABILITY PRACTITIONERS, PROFESSIONAL ENGINEERS, AND RESEARCHERS.

DESIGNING FOR HUMAN RELIABILITY - RONALD W. MCLEOD 2015-03-21

INDUSTRY UNDERESTIMATES THE EXTENT TO WHICH BEHAVIOUR AT WORK IS INFLUENCED BY THE DESIGN OF THE WORKING ENVIRONMENT. DESIGNING FOR HUMAN RELIABILITY ARGUES THAT GREATER AWARENESS OF THE CONTRIBUTION OF DESIGN TO HUMAN ERROR CAN SIGNIFICANTLY ENHANCE HSE PERFORMANCE AND IMPROVE RETURN ON INVESTMENT. ILLUSTRATED WITH MANY EXAMPLES, DESIGNING FOR HUMAN RELIABILITY EXPLORES WHY WORK SYSTEMS ARE DESIGNED AND IMPLEMENTED SUCH THAT "DESIGN-INDUCED HUMAN ERROR" BECOMES MORE-OR-LESS INEVITABLE. MCLEOD DEMONSTRATES HOW WELL UNDERSTOOD PSYCHOLOGICAL PROCESSES CAN LEAD PEOPLE TO MAKE DECISIONS AND TO TAKE ACTIONS THAT OTHERWISE SEEM IMPOSSIBLE TO UNDERSTAND. DESIGNING FOR HUMAN RELIABILITY SETS OUT THIRTEEN KEY ELEMENTS TO DELIVER THE LEVELS OF HUMAN RELIABILITY EXPECTED TO ACHIEVE THE RETURN ON INVESTMENT SOUGHT WHEN DECISIONS ARE MADE TO INVEST IN PROJECTS. AND IT DEMONSTRATES HOW INVESTIGATION OF THE HUMAN CONTRIBUTION TO INCIDENTS CAN BE IMPROVED BY FOCUSING ON WHAT COMPANIES EXPECTED AND INTENDED WHEN THEY CHOSE TO RELY ON HUMAN PERFORMANCE AS A BARRIER, OR CONTROL, AGAINST INCIDENTS. RECOGNISE SOME 'HARD TRUTHS' OF HUMAN PERFORMANCE AND LEARN ABOUT THE IMPORTANCE OF APPLYING THE PRINCIPLES OF HUMAN FACTORS ENGINEERING ON CAPITAL PROJECTS. LEARN

FROM ANALYSIS OF REAL-WORLD INCIDENTS HOW DIFFERENCES BETWEEN 'FAST' AND 'SLOW' STYLES OF THINKING CAN LEAD TO HUMAN ERROR IN INDUSTRIAL PROCESSES LEARN HOW CONTROLS AND BARRIER AGAINST MAJOR INCIDENTS THAT RELY ON HUMAN PERFORMANCE CAN BE STRENGTHENED THROUGHOUT THE DESIGN AND DEVELOPMENT OF ASSETS AND EQUIPMENT

BUILDING SECURE AND RELIABLE SYSTEMS - HEATHER ADKINS 2020-03-16

CAN A SYSTEM BE CONSIDERED TRULY RELIABLE IF IT ISN'T FUNDAMENTALLY SECURE? OR CAN IT BE CONSIDERED SECURE IF IT'S UNRELIABLE? SECURITY IS CRUCIAL TO THE DESIGN AND OPERATION OF SCALABLE SYSTEMS IN PRODUCTION, AS IT PLAYS AN IMPORTANT PART IN PRODUCT QUALITY, PERFORMANCE, AND AVAILABILITY. IN THIS BOOK, EXPERTS FROM GOOGLE SHARE BEST PRACTICES TO HELP YOUR ORGANIZATION DESIGN SCALABLE AND RELIABLE SYSTEMS THAT ARE FUNDAMENTALLY SECURE. TWO PREVIOUS O'REILLY BOOKS FROM GOOGLE—SITE RELIABILITY ENGINEERING AND THE SITE RELIABILITY WORKBOOK—DEMONSTRATED HOW AND WHY A COMMITMENT TO THE ENTIRE SERVICE LIFECYCLE ENABLES ORGANIZATIONS TO SUCCESSFULLY BUILD, DEPLOY, MONITOR, AND MAINTAIN SOFTWARE SYSTEMS. IN THIS LATEST GUIDE, THE AUTHORS OFFER INSIGHTS INTO SYSTEM DESIGN, IMPLEMENTATION, AND MAINTENANCE FROM PRACTITIONERS WHO SPECIALIZE IN SECURITY AND RELIABILITY. THEY ALSO DISCUSS HOW BUILDING AND ADOPTING THEIR RECOMMENDED BEST PRACTICES REQUIRES A CULTURE THAT'S SUPPORTIVE OF SUCH CHANGE. YOU'LL LEARN ABOUT SECURE AND RELIABLE SYSTEMS THROUGH: DESIGN STRATEGIES RECOMMENDATIONS FOR CODING, TESTING, AND DEBUGGING PRACTICES STRATEGIES TO PREPARE FOR, RESPOND TO, AND RECOVER FROM INCIDENTS CULTURAL BEST PRACTICES THAT HELP TEAMS ACROSS YOUR ORGANIZATION COLLABORATE EFFECTIVELY

AFFORDABLE RELIABILITY ENGINEERING - WILLIAM R. WESSELS 2015-04-16

HOW CAN RELIABILITY ANALYSIS IMPACT YOUR COMPANY'S BOTTOM LINE? WHILE RELIABILITY INVESTIGATIONS CAN BE EXPENSIVE, THEY CAN ALSO ADD VALUE TO A PRODUCT THAT FAR EXCEEDS ITS COST. AFFORDABLE RELIABILITY ENGINEERING: LIFE-CYCLE COST ANALYSIS FOR SUSTAINABILITY & LOGISTICAL SUPPORT SHOWS READERS HOW TO ACHIEVE THE BEST COST FOR DESIGN DEVELOPMENT TESTING AND EVALUATION AND COMPARE OPTIONS FOR MINIMIZING COSTS WHILE KEEPING RELIABILITY ABOVE SPECIFICATIONS. THE TEXT IS BASED ON THE PREMISE THAT ALL SYSTEM SUSTAINMENT COSTS RESULT FROM PART FAILURE. IT EXAMINES PART FAILURE IN THE DESIGN AND SUSTAINMENT OF FIELDED PARTS AND OUTLINES A DESIGN CRITICALITY ANALYSIS PROCEDURE THAT REFLECTS SYSTEM DESIGN AND SUSTAINMENT. ACHIEVE THE BEST COST FOR LIFE-CYCLE SUSTAINMENT PROVIDING A FRAMEWORK FOR MANAGERS AND ENGINEERS TO DEVELOP AND IMPLEMENT A RELIABILITY PROGRAM FOR THEIR ORGANIZATIONS, THE AUTHORS PRESENT THE PRACTICING PROFESSIONAL WITH THE TOOLS NEEDED TO MANAGE A SYSTEM AT A HIGH RELIABILITY AT THE BEST COST. THEY INTRODUCE ANALYTICAL METHODS THAT PROVIDE THE METHODOLOGY FOR INTEGRATING PART RELIABILITY, FAILURE, MAINTAINABILITY, AND LOGISTIC MATH MODELS. IN ADDITION, THEY INCLUDE EXAMPLES ON HOW TO RUN RELIABILITY SIMULATIONS, HIGHLIGHT TOOLS THAT ARE COMMERCIALY AVAILABLE FOR SUCH ANALYSIS, AND EXPLAIN THE

PROCESS REQUIRED TO ENSURE A DESIGN WILL MEET SPECIFICATIONS AND MINIMIZE COSTS IN THE PROCESS. THIS TEXT: DEMONSTRATES HOW TO USE INFORMATION GATHERED FROM RELIABILITY INVESTIGATIONS PROVIDES ENGINEERS AND MANAGERS WITH AN UNDERSTANDING OF A RELIABILITY ENGINEERING PROGRAM SO THAT THEY CAN PERFORM RELIABILITY ANALYSES SEEKS TO RESOLVE UNCERTAINTY AND ESTABLISH THE VALUE OF RELIABILITY ENGINEERING AFFORDABLE RELIABILITY ENGINEERING: LIFE-CYCLE COST ANALYSIS FOR SUSTAINABILITY & LOGISTICAL SUPPORT FOCUSES ON RELIABILITY-CENTERED MAINTENANCE AND IS AN IDEAL RESOURCE FOR RELIABILITY ENGINEERS AND MANAGERS. THIS TEXT ENABLES RELIABILITY PROFESSIONALS TO DETERMINE THE LOWEST LIFE-CYCLE COSTS FOR PART SELECTION, DESIGN CONFIGURATION OPTIONS, AND THE IMPLEMENTATION OF MAINTENANCE PRACTICES, AS WELL AS SPARE PARTS STRATEGIES, AND LOGISTICAL RESOURCES.

SAFETY AND RELIABILITY - SAFE SOCIETIES IN A CHANGING WORLD - STEIN HAUGEN 2018-06-15

SAFETY AND RELIABILITY - SAFE SOCIETIES IN A CHANGING WORLD COLLECTS THE PAPERS PRESENTED AT THE 28TH EUROPEAN SAFETY AND RELIABILITY CONFERENCE, ESREL 2018 IN TRONDHEIM, NORWAY, JUNE 17-21, 2018. THE CONTRIBUTIONS COVER A WIDE RANGE OF METHODOLOGIES AND APPLICATION AREAS FOR SAFETY AND RELIABILITY THAT CONTRIBUTE TO SAFE SOCIETIES IN A CHANGING WORLD. THESE METHODOLOGIES AND APPLICATIONS INCLUDE: - FOUNDATIONS OF RISK AND RELIABILITY ASSESSMENT AND MANAGEMENT - MATHEMATICAL METHODS IN RELIABILITY AND SAFETY - RISK ASSESSMENT - RISK MANAGEMENT - SYSTEM RELIABILITY - UNCERTAINTY ANALYSIS - DIGITALIZATION AND BIG DATA - PROGNOSTICS AND SYSTEM HEALTH MANAGEMENT - OCCUPATIONAL SAFETY - ACCIDENT AND INCIDENT MODELING - MAINTENANCE MODELING AND APPLICATIONS - SIMULATION FOR SAFETY AND RELIABILITY ANALYSIS - DYNAMIC RISK AND BARRIER MANAGEMENT - ORGANIZATIONAL FACTORS AND SAFETY CULTURE - HUMAN FACTORS AND HUMAN RELIABILITY - RESILIENCE ENGINEERING - STRUCTURAL RELIABILITY - NATURAL HAZARDS - SECURITY - ECONOMIC ANALYSIS IN RISK MANAGEMENT SAFETY AND RELIABILITY - SAFE SOCIETIES IN A CHANGING WORLD WILL BE INVALUABLE TO ACADEMICS AND PROFESSIONALS WORKING IN A WIDE RANGE OF INDUSTRIAL AND GOVERNMENTAL SECTORS: OFFSHORE OIL AND GAS, NUCLEAR ENGINEERING, AERONAUTICS AND AEROSPACE, MARINE TRANSPORT AND ENGINEERING, RAILWAYS, ROAD TRANSPORT, AUTOMOTIVE ENGINEERING, CIVIL ENGINEERING, CRITICAL INFRASTRUCTURES, ELECTRICAL AND ELECTRONIC ENGINEERING, ENERGY PRODUCTION AND DISTRIBUTION, ENVIRONMENTAL ENGINEERING, INFORMATION TECHNOLOGY AND TELECOMMUNICATIONS, INSURANCE AND FINANCE, MANUFACTURING, MARINE TRANSPORT, MECHANICAL ENGINEERING, SECURITY AND PROTECTION, AND POLICY MAKING.

HANDS-ON SITE RELIABILITY ENGINEERING - SHAMAYEL M. FAROOQUI 2021-07-06

A COMPREHENSIVE GUIDE WITH BASIC TO ADVANCED SRE PRACTICES AND HANDS-ON EXAMPLES. KEY FEATURES [?] DEMONSTRATES HOW TO EXECUTE SITE RELIABILITY ENGINEERING ALONG WITH FUNDAMENTAL CONCEPTS. [?] ILLUSTRATES REAL-WORLD EXAMPLES AND SUCCESSFUL TECHNIQUES TO PUT SRE INTO PRODUCTION. [?] INTRODUCES YOU TO

DEVOPS, ADVANCED TECHNIQUES OF SRE, AND POPULAR TOOLS IN USE. DESCRIPTION HANDS-ON SITE RELIABILITY ENGINEERING (SRE) BRINGS YOU A TAILOR-MADE GUIDE TO LEARN AND PRACTICE THE ESSENTIAL ACTIVITIES FOR THE SMOOTH FUNCTIONING OF ENTERPRISE SYSTEMS, RIGHT FROM DESIGNING TO THE DEPLOYMENT OF ENTERPRISE SOFTWARE PROGRAMS AND EXTENDING TO SCALABLE USE WITH COMPLETE EFFICIENCY AND RELIABILITY. THE BOOK EXPLORES THE FUNDAMENTALS AROUND SRE AND RELATED TERMS, CONCEPTS, AND TECHNIQUES THAT ARE USED BY SRE TEAMS AND EXPERTS. IT DISCUSSES THE ESSENTIAL ELEMENTS OF AN IT SYSTEM, INCLUDING MICROSERVICES, APPLICATION ARCHITECTURES, TYPES OF SOFTWARE DEPLOYMENT, AND CONCEPTS LIKE LOAD BALANCING. IT EXPLAINS THE BEST TECHNIQUES IN DELIVERING TIMELY SOFTWARE RELEASES USING CONTAINERIZATION AND CI/CD PIPELINE. THIS BOOK COVERS HOW TO TRACK AND MONITOR APPLICATION PERFORMANCE USING GRAFANA, PROMETHEUS, AND KIBANA ALONG WITH HOW TO EXTEND MONITORING MORE EFFECTIVELY BY BUILDING FULL-STACK OBSERVABILITY INTO THE SYSTEM. THE BOOK ALSO TALKS ABOUT CHAOS ENGINEERING, TYPES OF SYSTEM FAILURES, DESIGN FOR HIGH-AVAILABILITY, DEVSECOPS AND AIOps. WHAT YOU WILL LEARN [?] LEARN THE BEST TECHNIQUES AND PRACTICES FOR BUILDING AND RUNNING RELIABLE SOFTWARE. [?] EXPLORE OBSERVABILITY AND POPULAR METHODS FOR EFFECTIVE MONITORING OF APPLICATIONS. [?] WORKAROUND SLIs, SLOs, ERROR BUDGETS, AND ERROR BUDGET POLICIES TO MANAGE FAILURES. [?] LEARN TO PRACTICE CONTINUOUS SOFTWARE DELIVERY USING BLUE/GREEN AND CANARY DEPLOYMENTS. [?] EXPLORE CHAOS ENGINEERING, SRE BEST PRACTICES, DEVSECOPS AND AIOps. WHO THIS BOOK IS FOR THIS BOOK CATERES TO EXPERIENCED IT PROFESSIONALS, APPLICATION DEVELOPERS, SOFTWARE ENGINEERS, AND ALL THOSE WHO ARE LOOKING TO DEVELOP SRE CAPABILITIES AT THE INDIVIDUAL OR TEAM LEVEL. TABLE OF CONTENTS 1. UNDERSTAND THE WORLD OF IT 2. INTRODUCTION TO DEVOPS 3. INTRODUCTION TO SRE 4. IDENTIFY AND ELIMINATE TOIL 5. RELEASE ENGINEERING 6. INCIDENT MANAGEMENT 7. IT MONITORING 8. OBSERVABILITY 9. KEY SRE KPIs: SLAs, SLOs, SLIs, AND ERROR BUDGETS 10. CHAOS ENGINEERING 11. DEVSECOPS AND AIOps 12. CULTURE OF SITE RELIABILITY ENGINEERING

DESIGN FOR RELIABILITY - DEV G. RAHEJA 2012-07-20

A UNIQUE, DESIGN-BASED APPROACH TO RELIABILITYENGINEERING DESIGN FOR RELIABILITY PROVIDES ENGINEERS AND MANAGERSWITH A RANGE OF TOOLS AND TECHNIQUES FOR INCORPORATING RELIABILITYINTO THE DESIGN PROCESS FOR COMPLEX SYSTEMS. IT CLEARLY EXPLAINSHOW TO DESIGN FOR ZERO FAILURE OF CRITICAL SYSTEM FUNCTIONS,LEADING TO ENORMOUS SAVINGS IN PRODUCT LIFE-CYCLE COSTS AND ADRAMATIC IMPROVEMENT IN THE ABILITY TO COMPETE IN GLOBALMARKETS. READERS WILL FIND A WEALTH OF DESIGN PRACTICES NOT COVERED INTYPICAL ENGINEERING BOOKS, ALLOWING THEM TO THINK OUTSIDE THE BOXWHEN DEVELOPING RELIABILITY REQUIREMENTS. THEY WILL LEARN TOADDRESS HIGH FAILURE RATES ASSOCIATED WITH SYSTEMS THAT ARE NOTPROPERLY DESIGNED FOR RELIABILITY, AVOIDING EXPENSIVE ANDTIME-CONSUMING ENGINEERING CHANGES, SUCH AS EXCESSIVE TESTING,REPAIRS, MAINTENANCE, INSPECTION, AND LOGISTICS. SPECIAL FEATURES

OF THIS BOOK INCLUDE: A UNIFIED APPROACH THAT INTEGRATES IDEAS FROM COMPUTER SCIENCEAND RELIABILITY ENGINEERING TECHNIQUES APPLICABLE TO RELIABILITY AS WELL AS SAFETY ,MAINTAINABILITY, SYSTEM INTEGRATION, AND LOGISTIC ENGINEERING CHAPTERS ON DESIGN FOR EXTREME ENVIRONMENTS, DEVELOPINGRELIABLE SOFTWARE, DESIGN FOR TRUSTWORTHINESS, AND HALT INFLUENCEON DESIGN DESIGN FOR RELIABILITY IS A MUST-HAVE GUIDE FOR ENGINEERSAND MANAGERS IN R&D, PRODUCT DEVELOPMENT, RELIABILITYENGINEERING, PRODUCT SAFETY, AND QUALITY ASSURANCE, AS WELL ASANYONE WHO NEEDS TO DELIVER HIGH PRODUCT PERFORMANCE AT A LOWERCOST WHILE MINIMIZING SYSTEM FAILURE.

CONCISE RELIABILITY FOR ENGINEERS - JAROSLAV MEN[?] [?] k 2016-04-13

OUR LIFE IS STRONGLY INFLUENCED BY THE RELIABILITY OF THE THINGS WE USE, AS WELL AS OF PROCESSES AND SERVICES. FAILURES CAUSE LOSSES IN THE INDUSTRY AND SOCIETY. METHODS FOR RELIABILITY ASSESSMENT AND OPTIMIZATION ARE THUS VERY IMPORTANT. THIS BOOK EXPLAINS THE FUNDAMENTAL CONCEPTS AND TOOLS. IT IS DIVIDED INTO TWO PARTS. CHAPTERS 1 TO 10 EXPLAIN THE BASIC TERMS AND METHODS FOR THE DETERMINATION OF RELIABILITY CHARACTERISTICS, WHICH CREATE THE BASE FOR ANY RELIABILITY EVALUATION. IN THE SECOND PART (CHAPTERS 11 TO 23) ADVANCED METHODS ARE EXPLAINED, SUCH AS FAILURE MODES AND EFFECTS ANALYSIS AND FAULT TREE ANALYSIS, LOAD-RESISTANCE INTERFERENCE METHOD, THE MONTE CARLO SIMULATION TECHNIQUE, COST-BASED RELIABILITY OPTIMIZATION, RELIABILITY TESTING, AND METHODS BASED ON BAYESIAN APPROACH OR FUZZY LOGIC FOR PROCESSING OF VAGUE INFORMATION. THE BOOK IS WRITTEN IN A READABLE WAY AND PRACTICAL EXAMPLES HELP TO UNDERSTAND THE TOPICS. IT IS COMPLEMENTED WITH REFERENCES AND A LIST OF STANDARDS, SOFTWARE AND SOURCES OF INFORMATION ON RELIABILITY.

RELIABILITY ENGINEERING HANDBOOK - DIMITRI KECECIOGLU 2002

DESIGNED TO BE USED IN ENGINEERING EDUCATION AND INDUSTRIAL PRACTICE, THIS BOOK PROVIDES A COMPREHENSIVE PRESENTATION OF RELIABILITY ENGINEERING FOR OPTIMIZED DESIGN ENGINEERING OF PRODUCTS, PARTS, COMPONENTS AND EQUIPMENT.

RELIABILITY VERIFICATION, TESTING, AND ANALYSIS IN ENGINEERING DESIGN - GARY WASSERMAN 2002-11-27

STRIKING A BALANCE BETWEEN THE USE OF COMPUTER-AIDED ENGINEERING PRACTICES AND CLASSICAL LIFE TESTING, THIS REFERENCE EXPOUNDS ON CURRENT THEORY AND METHODS FOR DESIGNING RELIABILITY TESTS AND ANALYZING RESULTANT DATA THROUGH VARIOUS EXAMPLES USING MICROSOFT® EXCEL, MINITAB, WINSMITH, AND RELIASOFT SOFTWARE ACROSS MULTIPLE INDUSTRIES. THE BOOK DISC

DESIGN FOR SAFETY - LOUIS J. GULLO 2018-02-20

A ONE-STOP REFERENCE GUIDE TO DESIGN FOR SAFETY PRINCIPLES AND APPLICATIONS DESIGN FOR SAFETY (DFSA) PROVIDES DESIGN ENGINEERS AND ENGINEERING MANAGERS WITH A RANGE OF TOOLS AND TECHNIQUES FOR INCORPORATING SAFETY INTO THE DESIGN PROCESS FOR COMPLEX SYSTEMS. IT EXPLAINS HOW TO DESIGN FOR MAXIMUM SAFE CONDITIONS AND

MINIMUM RISK OF ACCIDENTS. THE BOOK COVERS SAFETY DESIGN PRACTICES, WHICH WILL RESULT IN IMPROVED SAFETY, FEWER ACCIDENTS, AND SUBSTANTIAL SAVINGS IN LIFE CYCLE COSTS FOR PRODUCERS AND USERS. READERS WHO APPLY DfSA PRINCIPLES CAN EXPECT TO HAVE A DRAMATIC IMPROVEMENT IN THE ABILITY TO COMPETE IN GLOBAL MARKETS. THEY WILL ALSO FIND A WEALTH OF DESIGN PRACTICES NOT COVERED IN TYPICAL ENGINEERING BOOKS—ALLOWING THEM TO THINK OUTSIDE THE BOX WHEN DEVELOPING SAFETY REQUIREMENTS. DESIGN SAFETY IS ALREADY A HIGH DEMAND FIELD DUE TO ITS IMPORTANCE TO SYSTEM DESIGN AND WILL BE EVEN MORE VITAL FOR ENGINEERS IN MULTIPLE DESIGN DISCIPLINES AS MORE SYSTEMS BECOME INCREASINGLY COMPLEX AND LIABILITIES INCREASE. THEREFORE, RISK MITIGATION METHODS TO DESIGN SYSTEMS WITH SAFETY FEATURES ARE BECOMING MORE IMPORTANT. DESIGNING SYSTEMS FOR SAFETY HAS BEEN A HIGH PRIORITY FOR MANY SAFETY-CRITICAL SYSTEMS—ESPECIALLY IN THE AEROSPACE AND MILITARY INDUSTRIES. HOWEVER, WITH THE EXPANSION OF TECHNOLOGICAL INNOVATIONS INTO OTHER MARKET PLACES, INDUSTRIES THAT HAD NOT PREVIOUSLY CONSIDERED SAFETY DESIGN REQUIREMENTS ARE NOW USING THE TECHNOLOGY IN APPLICATIONS. DESIGN FOR SAFETY: COVERS TRENDING TOPICS AND THE LATEST TECHNOLOGIES PROVIDES TEN PARADIGMS FOR MANAGING AND DESIGNING SYSTEMS FOR SAFETY AND USES THEM AS GUIDING THEMES THROUGHOUT THE BOOK LOGICALLY DEFINES THE PARAMETERS AND CONCEPTS, SETS THE SAFETY PROGRAM AND REQUIREMENTS, COVERS BASIC METHODOLOGIES, INVESTIGATES LESSONS FROM HISTORY, AND ADDRESSES SPECIALTY TOPICS WITHIN THE TOPIC OF DESIGN FOR SAFETY (DfSA) SUPPLEMENTS OTHER BOOKS IN THE SERIES ON QUALITY AND RELIABILITY ENGINEERING DESIGN FOR SAFETY IS AN IDEAL BOOK FOR NEW AND EXPERIENCED ENGINEERS AND MANAGERS WHO ARE INVOLVED WITH DESIGN, TESTING, AND MAINTENANCE OF SAFETY CRITICAL APPLICATIONS. IT IS ALSO HELPFUL FOR ADVANCED UNDERGRADUATE AND POSTGRADUATE STUDENTS IN ENGINEERING. DESIGN FOR SAFETY IS THE SECOND IN A SERIES OF “DESIGN FOR” BOOKS. DESIGN FOR RELIABILITY WAS THE FIRST IN THE SERIES WITH MORE PLANNED FOR THE FUTURE.

OFFSHORE RISK ASSESSMENT - JAN-ERIK VINNEM 2013-03-14

OFFSHORE RISK ASSESSMENT IS THE FIRST BOOK TO DEAL WITH QUANTIFIED RISK ASSESSMENT (QRA) AS APPLIED SPECIFICALLY TO OFFSHORE INSTALLATIONS AND OPERATIONS. RISK ASSESSMENT TECHNIQUES HAVE BEEN USED FOR SOME YEARS IN THE OFFSHORE OIL AND GAS INDUSTRY, AND THEIR USE IS SET TO EXPAND INCREASINGLY AS THE INDUSTRY MOVES INTO NEW AREAS AND FACES NEW CHALLENGES IN OLDER REGIONS. THE BOOK STARTS WITH A THOROUGH DISCUSSION OF RISK ANALYSIS METHODOLOGY. SUBSEQUENT CHAPTERS ARE DEVOTED TO ANALYTICAL APPROACHES TO ESCALATION, ESCAPE, EVACUATION AND RESCUE ANALYSIS OF SAFETY AND EMERGENCY SYSTEMS. SEPARATE CHAPTERS ANALYZE THE MAIN HAZARDS OF OFFSHORE STRUCTURES: FIRE, EXPLOSION, COLLISION AND FALLING OBJECTS. RISK MITIGATION AND CONTROL ARE THEN DISCUSSED, FOLLOWED BY AN OUTLINE OF AN ALTERNATIVE APPROACH TO RISK MODELLING THAT FOCUSES ESPECIALLY ON THE RISK OF SHORT-DURATION ACTIVITIES. NOT ONLY DOES

THE BOOK DESCRIBE THE STATE OF THE ART OF QRA, IT ALSO IDENTIFIES WEAKNESSES AND AREAS THAT NEED DEVELOPMENT. READERSHIP: BESIDES BEING A COMPREHENSIVE REFERENCE FOR ACADEMICS AND STUDENTS OF MARINE/OFFSHORE RISK ASSESSMENT AND MANAGEMENT, THE BOOK SHOULD ALSO BE OWNED BY PROFESSIONALS IN THE INDUSTRY, CONTRACTORS, SUPPLIERS, CONSULTANTS AND REGULATORY AUTHORITIES.

RELIABILITY METHODS FOR ENGINEERS - K. S. KRISHNAMOORTHY 1992

RELIABILITY ENGINEERING - KAILASH C. KAPUR 2014-03-21

AN INTEGRATED APPROACH TO PRODUCT DEVELOPMENT RELIABILITY ENGINEERING PRESENTS AN INTEGRATED APPROACH TO THE DESIGN, ENGINEERING, AND MANAGEMENT OF RELIABILITY ACTIVITIES THROUGHOUT THE LIFE CYCLE OF A PRODUCT, INCLUDING CONCEPT, RESEARCH AND DEVELOPMENT, DESIGN, MANUFACTURING, ASSEMBLY, SALES, AND SERVICE. CONTAINING ILLUSTRATIVE GUIDES THAT INCLUDE WORKED PROBLEMS, NUMERICAL EXAMPLES, HOMEWORK PROBLEMS, A SOLUTIONS MANUAL, AND CLASS-TESTED MATERIALS, IT DEMONSTRATES TO PRODUCT DEVELOPMENT AND MANUFACTURING PROFESSIONALS HOW TO DISTRIBUTE KEY RELIABILITY PRACTICES THROUGHOUT AN ORGANIZATION. THE AUTHORS EXPLAIN HOW TO INTEGRATE RELIABILITY METHODS AND TECHNIQUES IN THE SIX SIGMA PROCESS AND DESIGN FOR SIX SIGMA (DFSS). THEY ALSO DISCUSS RELATIONSHIPS BETWEEN WARRANTY AND RELIABILITY, AS WELL AS LEGAL AND LIABILITY ISSUES. OTHER TOPICS COVERED INCLUDE: RELIABILITY ENGINEERING IN THE 21ST CENTURY PROBABILITY LIFE DISTRIBUTIONS FOR RELIABILITY ANALYSIS PROCESS CONTROL AND PROCESS CAPABILITY FAILURE MODES, MECHANISMS, AND EFFECTS ANALYSIS HEALTH MONITORING AND PROGNOSTICS RELIABILITY TESTS AND RELIABILITY ESTIMATION RELIABILITY ENGINEERING PROVIDES A COMPREHENSIVE LIST OF REFERENCES ON THE TOPICS COVERED IN EACH CHAPTER. IT IS AN INVALUABLE RESOURCE FOR THOSE INTERESTED IN GAINING FUNDAMENTAL KNOWLEDGE OF THE PRACTICAL ASPECTS OF RELIABILITY IN DESIGN, MANUFACTURING, AND TESTING. IN ADDITION, IT IS USEFUL FOR IMPLEMENTATION AND MANAGEMENT OF RELIABILITY PROGRAMS.

SITE RELIABILITY ENGINEERING - NIALL RICHARD MURPHY 2016-03-23

THE OVERWHELMING MAJORITY OF A SOFTWARE SYSTEM'S LIFESPAN IS SPENT IN USE, NOT IN DESIGN OR IMPLEMENTATION. SO, WHY DOES CONVENTIONAL WISDOM INSIST THAT SOFTWARE ENGINEERS FOCUS PRIMARILY ON THE DESIGN AND DEVELOPMENT OF LARGE-SCALE COMPUTING SYSTEMS? IN THIS COLLECTION OF ESSAYS AND ARTICLES, KEY MEMBERS OF GOOGLE'S SITE RELIABILITY TEAM EXPLAIN HOW AND WHY THEIR COMMITMENT TO THE ENTIRE LIFECYCLE HAS ENABLED THE COMPANY TO SUCCESSFULLY BUILD, DEPLOY, MONITOR, AND MAINTAIN SOME OF THE LARGEST SOFTWARE SYSTEMS IN THE WORLD. YOU'LL LEARN THE PRINCIPLES AND PRACTICES THAT ENABLE GOOGLE ENGINEERS TO MAKE SYSTEMS MORE SCALABLE, RELIABLE, AND EFFICIENT—LESSONS DIRECTLY APPLICABLE TO YOUR ORGANIZATION. THIS BOOK IS DIVIDED INTO FOUR SECTIONS: INTRODUCTION—LEARN WHAT SITE RELIABILITY ENGINEERING IS AND WHY IT DIFFERS FROM CONVENTIONAL IT INDUSTRY PRACTICES PRINCIPLES—EXAMINE THE PATTERNS, BEHAVIORS, AND AREAS OF CONCERN THAT

INFLUENCE THE WORK OF A SITE RELIABILITY ENGINEER (SRE) PRACTICES—UNDERSTAND THE THEORY AND PRACTICE OF AN SRE'S DAY-TO-DAY WORK: BUILDING AND OPERATING LARGE DISTRIBUTED COMPUTING SYSTEMS MANAGEMENT—EXPLORE GOOGLE'S BEST PRACTICES FOR TRAINING, COMMUNICATION, AND MEETINGS THAT YOUR ORGANIZATION CAN USE

SEEKING SRE - DAVID N. BLANK-EDELMAN 2018-08-21

ORGANIZATIONS BIG AND SMALL HAVE STARTED TO REALIZE JUST HOW CRUCIAL SYSTEM AND APPLICATION RELIABILITY IS TO THEIR BUSINESS. THEY'VE ALSO LEARNED JUST HOW DIFFICULT IT IS TO MAINTAIN THAT RELIABILITY WHILE ITERATING AT THE SPEED DEMANDED BY THE MARKETPLACE. SITE RELIABILITY ENGINEERING (SRE) IS A PROVEN APPROACH TO THIS CHALLENGE. SRE IS A LARGE AND RICH TOPIC TO DISCUSS. GOOGLE LED THE WAY WITH SITE RELIABILITY ENGINEERING, THE WILDLY SUCCESSFUL O'REILLY BOOK THAT DESCRIBED GOOGLE'S CREATION OF THE DISCIPLINE AND THE IMPLEMENTATION THAT'S ALLOWED THEM TO OPERATE AT A PLANETARY SCALE. INSPIRED BY THAT EARLIER WORK, THIS BOOK EXPLORES A VERY DIFFERENT PART OF THE SRE SPACE. THE MORE THAN TWO DOZEN CHAPTERS IN *SEEKING SRE* BRING YOU INTO SOME OF THE IMPORTANT CONVERSATIONS GOING ON IN THE SRE WORLD RIGHT NOW. LISTEN AS ENGINEERS AND OTHER LEADERS IN THE FIELD DISCUSS: DIFFERENT WAYS OF IMPLEMENTING SRE AND SRE PRINCIPLES IN A WIDE VARIETY OF SETTINGS HOW SRE RELATES TO OTHER APPROACHES SUCH AS DEVOPS SPECIALTIES ON THE CUTTING EDGE THAT WILL SOON BE COMMONPLACE IN SRE BEST PRACTICES AND TECHNOLOGIES THAT MAKE PRACTICING SRE EASIER THE IMPORTANT BUT RARELY EXPLORED HUMAN SIDE OF SRE DAVID N. BLANK-EDELMAN IS THE BOOK'S CURATOR AND EDITOR.

RELIABILITY TECHNOLOGY - NORMAN PASCOE 2011-03-08

A UNIQUE BOOK THAT DESCRIBES THE PRACTICAL PROCESSES NECESSARY TO ACHIEVE FAILURE FREE EQUIPMENT PERFORMANCE, FOR QUALITY AND RELIABILITY ENGINEERS, DESIGN, MANUFACTURING PROCESS AND ENVIRONMENTAL TEST ENGINEERS. THIS BOOK STUDIES THE ESSENTIAL REQUIREMENTS FOR SUCCESSFUL PRODUCT LIFE CYCLE MANAGEMENT. IT IDENTIFIES KEY CONTRIBUTORS TO FAILURE IN PRODUCT LIFE CYCLE MANAGEMENT AND PARTICULAR EMPHASIS IS PLACED UPON THE IMPORTANCE OF THOROUGH MANUFACTURING PROCESS CAPABILITY REVIEWS FOR BOTH IN-HOUSE AND OUTSOURCED MANUFACTURING STRATEGIES. THE READERS' ATTENTION IS ALSO DRAWN TO THE MANY HAZARDS TO WHICH A NEW PRODUCT IS EXPOSED FROM THE COMMENCEMENT OF MANUFACTURE THROUGH TO END OF LIFE DISPOSAL. REVOLUTIONARY IN FOCUS, AS IT DESCRIBES HOW TO ACHIEVE FAILURE FREE PERFORMANCE RATHER THAN HOW TO PREDICT AN ACCEPTABLE PERFORMANCE FAILURE RATE (RELIABILITY TECHNOLOGY RATHER THAN RELIABILITY ENGINEERING) AUTHOR HAS OVER 40 YEARS EXPERIENCE IN THE FIELD, AND THE TEXT IS BASED ON CLASSROOM TESTED NOTES FROM THE RELIABILITY TECHNOLOGY COURSE HE TAUGHT AT MASSACHUSETTS INSTITUTE OF TECHNOLOGY (MIT), USA CONTAINS GRAPHICAL INTERPRETATIONS OF MATHEMATICAL MODELS TOGETHER WITH DIAGRAMS, TABLES OF PHYSICAL CONSTANTS, CASE STUDIES AND UNIQUE WORKED EXAMPLES

APPLIED RELIABILITY ENGINEERING - MARVIN L. ROUSH 2006

COMPLEX SYSTEM RELIABILITY - ALBERT MYERS 2010-09-30

COMPLEX SYSTEM RELIABILITY PRESENTS A STATE-OF-THE-ART TREATMENT OF COMPLEX MULTI-CHANNEL SYSTEM RELIABILITY ASSESSMENT AND PROVIDES THE REQUISITE TOOLS, TECHNIQUES AND ALGORITHMS REQUIRED FOR DESIGNING, EVALUATING AND OPTIMIZING ULTRA-RELIABLE REDUNDANT SYSTEMS. CRITICAL TOPICS THAT MAKE COMPLEX SYSTEM RELIABILITY A UNIQUE AND DEFINITIVE RESOURCE INCLUDE: * REDUNDANT SYSTEM ANALYSIS FOR K-OUT-OF-N SYSTEMS (INCLUDING COMPLEX SYSTEMS WITH EMBEDDED K-OUT-OF-N STRUCTURES) INVOLVING BOTH PERFECT AND IMPERFECT FAULT COVERAGE; * IMPERFECT FAULT COVERAGE ANALYSIS TECHNIQUES, INCLUDING ALGORITHMS FOR ASSESSING THE RELIABILITY OF REDUNDANT SYSTEMS IN WHICH EACH ELEMENT IS SUBJECT TO A GIVEN COVERAGE VALUE (ELEMENT LEVEL COVERAGE) OR IN WHICH THE SYSTEM USES VOTING TO AVOID THE EFFECTS OF A FAILED ELEMENT (FAULT LEVEL COVERAGE); AND * STATE-OF-THE-ART BINARY DECISION DIAGRAM ANALYSIS TECHNIQUES, INCLUDING THE LATEST AND MOST EFFICIENT ALGORITHMS FOR THE RELIABILITY ASSESSMENT OF LARGE, COMPLEX REDUNDANT SYSTEMS. THIS PRACTICAL PRESENTATION INCLUDES NUMEROUS FULLY WORKED EXAMPLES THAT PROVIDE DETAILED EXPLANATIONS OF BOTH THE UNDERLYING DESIGN PRINCIPLES AND THE TECHNIQUES (SUCH AS COMBINATORIAL, RECURSIVE AND BINARY DECISION DIAGRAM ALGORITHMS) USED TO OBTAIN QUANTITATIVE RESULTS. MANY OF THE WORKED EXAMPLES ARE BASED ON THE DESIGN OF MODERN DIGITAL FLY-BY-WIRE CONTROL SYSTEM TECHNOLOGY. COMPLEX SYSTEM RELIABILITY PROVIDES IN-DEPTH COVERAGE OF SYSTEMS SUBJECT TO EITHER PERFECT OR IMPERFECT FAULT COVERAGE AND ALSO THE MOST RECENT TECHNIQUES FOR CORRECTLY ASSESSING THE RELIABILITY OF REDUNDANT SYSTEMS THAT USE MID-VALUE-SELECT VOTING AS THEIR PRIMARY MEANS OF REDUNDANCY MANAGEMENT. IT IS A VALUABLE RESOURCE FOR THOSE INVOLVED IN THE DESIGN AND RELIABILITY ASSESSMENT OF HIGHLY RELIABLE SYSTEMS, PARTICULARLY IN THE AEROSPACE AND AUTOMOTIVE SECTORS.

DATABASE RELIABILITY ENGINEERING - LAINE CAMPBELL 2017-10-26

THE INFRASTRUCTURE-AS-CODE REVOLUTION IN IT IS ALSO AFFECTING DATABASE ADMINISTRATION. WITH THIS PRACTICAL BOOK, DEVELOPERS, SYSTEM ADMINISTRATORS, AND JUNIOR TO MID-LEVEL DBAs WILL LEARN HOW THE MODERN PRACTICE OF SITE RELIABILITY ENGINEERING APPLIES TO THE CRAFT OF DATABASE ARCHITECTURE AND OPERATIONS. AUTHORS LAINE CAMPBELL AND CHARITY MAJORS PROVIDE A FRAMEWORK FOR PROFESSIONALS LOOKING TO JOIN THE RANKS OF TODAY'S DATABASE RELIABILITY ENGINEERS (DBRE). YOU'LL BEGIN BY EXPLORING CORE OPERATIONAL CONCEPTS THAT DBREs NEED TO MASTER. THEN YOU'LL EXAMINE A WIDE RANGE OF DATABASE PERSISTENCE OPTIONS, INCLUDING HOW TO IMPLEMENT KEY TECHNOLOGIES TO PROVIDE RESILIENT, SCALABLE, AND PERFORMANT DATA STORAGE AND RETRIEVAL. WITH A FIRM FOUNDATION IN DATABASE RELIABILITY ENGINEERING, YOU'LL BE READY TO DIVE INTO THE ARCHITECTURE AND OPERATIONS OF ANY MODERN DATABASE. THIS BOOK COVERS: SERVICE-LEVEL REQUIREMENTS AND RISK MANAGEMENT BUILDING AND EVOLVING AN ARCHITECTURE FOR OPERATIONAL VISIBILITY INFRASTRUCTURE ENGINEERING AND INFRASTRUCTURE MANAGEMENT HOW TO

FACILITATE THE RELEASE MANAGEMENT PROCESS DATA STORAGE, INDEXING, AND REPLICATION IDENTIFYING DATASTORE CHARACTERISTICS AND BEST USE CASES DATASTORE ARCHITECTURAL COMPONENTS AND DATA-DRIVEN ARCHITECTURES

RELIABILITY ENGINEERING - SINGIRESU S. RAO 2014

RELIABILITY ENGINEERING IS INTENDED FOR USE AS AN INTRODUCTION TO RELIABILITY ENGINEERING, INCLUDING THE ASPECTS ANALYSIS, DESIGN, TESTING, PRODUCTION AND QUALITY CONTROL OF ENGINEERING COMPONENTS AND SYSTEMS. NUMEROUS ANALYTICAL AND NUMERICAL EXAMPLES AND PROBLEMS ARE USED TO ILLUSTRATE THE PRINCIPLES AND CONCEPTS. EXPANDED EXPLANATIONS OF THE FUNDAMENTAL CONCEPTS ARE GIVEN THROUGHOUT THE BOOK, WITH EMPHASIS ON THE PHYSICAL SIGNIFICANCE OF THE IDEAS. THE MATHEMATICAL BACKGROUND NECESSARY IN THE AREA OF PROBABILITY AND STATISTICS IS COVERED BRIEFLY TO MAKE THE PRESENTATION COMPLETE AND SELF-CONTAINED. SOLVING PROBABILITY AND RELIABILITY PROBLEMS USING MATLAB AND EXCEL IS ALSO PRESENTED.

SITE RELIABILITY ENGINEERING - BETSY BEYER 2016

THE OVERWHELMING MAJORITY OF A SOFTWARE SYSTEM'S LIFESPAN IS SPENT IN USE, NOT IN DESIGN OR IMPLEMENTATION. SO, WHY DOES CONVENTIONAL WISDOM INSIST THAT SOFTWARE ENGINEERS FOCUS PRIMARILY ON THE DESIGN AND DEVELOPMENT OF LARGE-SCALE COMPUTING SYSTEMS? IN THIS COLLECTION OF ESSAYS AND ARTICLES, KEY MEMBERS OF GOOGLE'S SITE RELIABILITY TEAM EXPLAIN HOW AND WHY THEIR COMMITMENT TO THE ENTIRE LIFECYCLE HAS ENABLED THE COMPANY TO SUCCESSFULLY BUILD, DEPLOY, MONITOR, AND MAINTAIN SOME OF THE LARGEST SOFTWARE SYSTEMS IN THE WORLD. YOU'LL LEARN THE PRINCIPLES AND PRACTICES THAT ENABLE GOOGLE ENGINEERS TO MAKE SYSTEMS MORE SCALABLE, RELIABLE, AND EFFICIENT--LESSONS DIRECTLY APPLICABLE TO YOUR ORGANIZATION. THIS BOOK IS DIVIDED INTO FOUR SECTIONS: INTRODUCTION--LEARN WHAT SITE RELIABILITY ENGINEERING IS AND WHY IT DIFFERS FROM CONVENTIONAL IT INDUSTRY PRACTICES PRINCIPLES--EXAMINE THE PATTERNS, BEHAVIORS, AND AREAS OF CONCERN THAT INFLUENCE THE WORK OF A SITE RELIABILITY ENGINEER (SRE) PRACTICES--UNDERSTAND THE THEORY AND PRACTICE OF AN SRE'S DAY-TO-DAY WORK: BUILDING AND OPERATING LARGE DISTRIBUTED COMPUTING SYSTEMS MANAGEMENT--EXPLORE GOOGLE'S BEST PRACTICES FOR TRAINING, COMMUNICATION, AND MEETINGS THAT YOUR ORGANIZATION CAN USE

PRINCIPLES OF RELIABILITY - ERICH PIERUSCHKA 1963

97 THINGS EVERY SRE SHOULD KNOW - EMIL STOLARSKY 2020-11-16

SITE RELIABILITY ENGINEERING (SRE) IS MORE RELEVANT THAN EVER. KNOWING HOW TO KEEP SYSTEMS RELIABLE HAS BECOME A CRITICAL SKILL. WITH THIS PRACTICAL BOOK, NEWCOMERS AND OLD HATS ALIKE WILL EXPLORE A BROAD RANGE OF CONVERSATIONS HAPPENING IN SRE. YOU'LL GET ACTIONABLE ADVICE ON SEVERAL TOPICS, INCLUDING HOW TO ADOPT SRE, WHY SLOs MATTER, WHEN YOU NEED TO UPGRADE YOUR INCIDENT RESPONSE, AND HOW MONITORING AND OBSERVABILITY DIFFER. EDITORS JAIME WOO AND EMIL STOLARSKY, CO-FOUNDERS OF INCIDENT LABS, HAVE COLLECTED 97 CONCISE AND USEFUL TIPS FROM ACROSS

THE INDUSTRY, INCLUDING TRUSTED BEST PRACTICES AND NEW APPROACHES TO KNOTTY PROBLEMS. YOU'LL GROW AND REFINE YOUR SRE SKILLS THROUGH SOUND ADVICE AND THOUGHT-PROVOKING QUESTIONS THAT DRIVE THE DIRECTION OF THE FIELD. SOME OF THE 97 THINGS YOU SHOULD KNOW: "TEST YOUR DISASTER PLAN"--TANYA REILLY "INTEGRATING EMPATHY INTO SRE TOOLS"--DANIELLA NIYONKURU "THE BEST ADVICE I CAN GIVE TO TEAMS"--NICOLE FORSGREN "WHERE TO SRE"--FATEMA BOXWALA "FACING THAT FIRST PAGE"--ANDREW LOUIS "I HAVE AN ERROR BUDGET, NOW WHAT?"--ALEX HIDALGO "GET YOUR WORK RECOGNIZED: WRITE A BRAG DOCUMENT"--JULIA EVANS AND KARLA BURNETT **SEMICONDUCTOR LASER ENGINEERING, RELIABILITY AND DIAGNOSTICS** - PETER W. EPPERLEIN 2013-03-18

THIS REFERENCE BOOK PROVIDES A FULLY INTEGRATED NOVEL APPROACH TO THE DEVELOPMENT OF HIGH-POWER, SINGLE-TRANSVERSE MODE, EDGE-EMITTING DIODE LASERS BY ADDRESSING THE COMPLEMENTARY TOPICS OF DEVICE ENGINEERING, RELIABILITY ENGINEERING AND DEVICE DIAGNOSTICS IN THE SAME BOOK, AND THUS CLOSING THE GAP IN THE CURRENT BOOK LITERATURE. DIODE LASER FUNDAMENTALS ARE DISCUSSED, FOLLOWED BY AN ELABORATE DISCUSSION OF PROBLEM-ORIENTED DESIGN GUIDELINES AND TECHNIQUES, AND BY A SYSTEMATIC TREATMENT OF THE ORIGINS OF LASER DEGRADATION AND A THOROUGH EXPLORATION OF THE ENGINEERING MEANS TO ENHANCE THE OPTICAL STRENGTH OF THE LASER. STABILITY CRITERIA OF CRITICAL LASER CHARACTERISTICS AND KEY LASER ROBUSTNESS FACTORS ARE DISCUSSED ALONG WITH CLEAR DESIGN CONSIDERATIONS IN THE CONTEXT OF RELIABILITY ENGINEERING APPROACHES AND MODELS, AND TYPICAL PROGRAMS FOR RELIABILITY TESTS AND LASER PRODUCT QUALIFICATIONS. NOVEL, ADVANCED DIAGNOSTIC METHODS ARE REVIEWED TO DISCUSS, FOR THE FIRST TIME IN DETAIL IN BOOK LITERATURE, PERFORMANCE- AND RELIABILITY-IMPACTING FACTORS SUCH AS TEMPERATURE, STRESS AND MATERIAL INSTABILITIES. FURTHER KEY FEATURES INCLUDE: PRACTICAL DESIGN GUIDELINES THAT CONSIDER ALSO RELIABILITY RELATED EFFECTS, KEY LASER ROBUSTNESS FACTORS, BASIC LASER FABRICATION AND PACKAGING ISSUES; DETAILED DISCUSSION OF DIAGNOSTIC INVESTIGATIONS OF DIODE LASERS, THE FUNDAMENTALS OF THE APPLIED APPROACHES AND TECHNIQUES, MANY OF THEM PIONEERED BY THE AUTHOR TO BE FIT-FOR-PURPOSE AND NOVEL IN THE APPLICATION; SYSTEMATIC INSIGHT INTO LASER DEGRADATION MODES SUCH AS CATASTROPHIC OPTICAL DAMAGE, AND A WIDE RANGE OF TECHNOLOGIES TO INCREASE THE OPTICAL STRENGTH OF DIODE LASERS; COVERAGE OF BASIC CONCEPTS AND TECHNIQUES OF LASER RELIABILITY ENGINEERING WITH DETAILS ON A STANDARD COMMERCIAL HIGH POWER LASER RELIABILITY TEST PROGRAM. SEMICONDUCTOR LASER ENGINEERING, RELIABILITY AND DIAGNOSTICS REFLECTS THE EXTENSIVE EXPERTISE OF THE AUTHOR IN THE DIODE LASER FIELD BOTH AS A TOP SCIENTIFIC RESEARCHER AS WELL AS A KEY DEVELOPER OF HIGH-POWER HIGHLY RELIABLE DEVICES. WITH INVALUABLE PRACTICAL ADVICE, THIS NEW REFERENCE BOOK IS SUITED TO PRACTISING RESEARCHERS IN DIODE LASER TECHNOLOGIES, AND TO POSTGRADUATE ENGINEERING STUDENTS. DR. PETER W. EPPERLEIN IS TECHNOLOGY CONSULTANT WITH HIS OWN SEMICONDUCTOR TECHNOLOGY CONSULTING BUSINESS PWE-

PHOTONICS-ELECTRONICS-ISSUE-RESOLUTION IN THE UK. HE LOOKS BACK AT A THIRTY YEARS CAREER IN CUTTING EDGE PHOTONICS AND ELECTRONICS INDUSTRIES WITH FOCUS ON EMERGING TECHNOLOGIES, BOTH IN GLOBAL AND START-UP COMPANIES, INCLUDING IBM, HEWLETT-PACKARD, AGILENT TECHNOLOGIES, PHILIPS/NXP, ESSIENT PHOTONICS AND IBM/JDSU LASER ENTERPRISE. HE HOLDS PRE-DIPL. (B.Sc.), DIPL. PHYS. (M.Sc.) AND DR. RER. NAT. (PH.D.) DEGREES IN PHYSICS, MAGNA CUM LAUDE, FROM THE UNIVERSITY OF STUTTGART, GERMANY. DR. EPPERLEIN IS AN INTERNATIONALLY RECOGNIZED EXPERT IN COMPOUND SEMICONDUCTOR AND DIODE LASER TECHNOLOGIES. HE HAS ACCOMPLISHED R&D IN MANY DEVICE AREAS SUCH AS SEMICONDUCTOR LASERS, LEDs, OPTICAL MODULATORS, QUANTUM WELL DEVICES, RESONANT TUNNELING DEVICES, FETs, AND SUPERCONDUCTING TUNNEL JUNCTIONS AND INTEGRATED CIRCUITS. HIS PIONEERING WORK ON SOPHISTICATED DIAGNOSTIC RESEARCH HAS LED TO MANY WORLD'S FIRST REPORTS AND HAS BEEN ADOPTED BY OTHER RESEARCHERS IN ACADEMIA AND INDUSTRY. HE AUTHORED MORE THAN SEVENTY PEER-REVIEWED JOURNAL PAPERS, PUBLISHED MORE THAN TEN INVENTION DISCLOSURES IN THE IBM TECHNICAL DISCLOSURE BULLETIN, HAS SERVED AS REVIEWER OF NUMEROUS PROPOSALS FOR PUBLICATION IN TECHNICAL JOURNALS, AND HAS WON FIVE IBM RESEARCH DIVISION AWARDS. HIS KEY ACHIEVEMENTS INCLUDE THE DESIGN AND FABRICATION OF HIGH-POWER, HIGHLY RELIABLE, SINGLE MODE DIODE LASERS. BOOK REVIEWS "SEMICONDUCTOR LASER ENGINEERING, RELIABILITY AND DIAGNOSTICS: A PRACTICAL APPROACH TO HIGH POWER AND SINGLE MODE DEVICES". BY PETER W. EPPERLEIN PROF. EM. DR. HEINZ JÜCKEL, HIGH SPEED ELECTRONICS AND PHOTONICS, SWISS FEDERAL INSTITUTE OF TECHNOLOGY ETH ZÜRICH, SWITZERLAND THE BOOK "SEMICONDUCTOR LASER ENGINEERING, RELIABILITY AND DIAGNOSTICS" BY DR. P.W. EPPERLEIN IS A LANDMARK IN THE RECENT LITERATURE ON SEMICONDUCTOR LASERS BECAUSE IT FILLS A LONGSTANDING GAP BETWEEN MANY EXCELLENT BOOKS ON LASER THEORY AND THE COMPLEX AND CHALLENGING ENDEAVOR TO FABRICATE THESE DEVICES REPRODUCIBLY AND RELIABLY IN AN INDUSTRIAL, REAL WORLD ENVIRONMENT. HAVING WORKED MYSELF IN THE EARLY RESEARCH AND DEVELOPMENT OF HIGH POWER SEMICONDUCTOR LASERS, I APPRECIATE THE COMPETENT, COMPLETE AND SKILLFUL PRESENTATION OF THESE THREE HIGHLY INTERRELATED TOPICS, WHERE SMALL EFFECTS HAVE DRAMATIC CONSEQUENCES ON THE SUCCESS OF A FINAL PRODUCT, ON THE ULTIMATE PERFORMANCE AND ON THE STRINGENT RELIABILITY REQUIREMENTS, WHICH ARE THE NAME OF THE GAME. AS THE TITLE SUGGESTS THE AUTHOR ADDRESSES THREE TIGHTLY INTERWOVEN AND CRITICAL TOPICS OF STATE-OF-THE-ART POWER LASER RESEARCH. THE THREE PARTS ARE: DEVICE AND MODE STABILITY ENGINEERING (CHAPTER 1, 2), RELIABILITY MECHANISMS AND RELIABILITY ASSESSMENT STRATEGIES (CHAPTER 3, 4, 5, 6) AND FINALLY MATERIAL AND DEVICE DIAGNOSTICS (CHAPTER 7, 8, 9) ALL TREATED WITH A STRONG FOCUS ON THE IMPLEMENTATION. THIS EMPHASIS ON THE COMPLEX PRACTICAL ASPECTS FOR A LARGE-SCALE POWER LASER FABRICATION IS A TRUE HIGHLIGHT OF THE BOOK. THE SUBTLE INTERPLAY BETWEEN LASER DESIGN, RELIABILITY STRATEGIES, ADVANCED FAILURE ANALYSIS AND CHARACTERIZATION TECHNIQUES ARE ELABORATED IN A VERY RIGOROUS AND SCIENTIFIC WAY

USING A VERY CLEAR AND EASY TO READ REPRESENTATION OF THE COMPLEX INTERRELATION OF THE THREE MAJOR TOPICS. I WILL ABSTAIN FROM TRYING TO PROVIDE A COMPLETE ACCOUNT OF ALL THE TOPICS BUT MAINLY CONCENTRATE ON THE NUMEROUS HIGHLIGHTS. THE FIRST PART 1 "LASER ENGINEERING" IS DIVIDED IN TWO CHAPTERS ON BASIC ELECTRONIC-OPTICAL, STRUCTURAL, MATERIAL AND RESONATOR LASER ENGINEERING ON THE ONE SIDE, AND ON SINGLE MODE CONTROL AND STABILITY AT VERY HIGH, STILL RELIABLE POWER-LEVELS WITH THE TRADE-OFF BETWEEN MIRROR DAMAGE, SINGLE MODE STABILITY ON THE OTHER SIDE. TO ROUND UP THE PICTURE LESS WELL-KNOWN CONCEPTS AND THE STATE-OF-THE-ART OF LARGE-AREA LASERS, WHICH CAN BE FORCED INTO SINGLE-MODE OPERATION, ARE REVIEWED CAREFULLY. THE SUBTLE AND COMPLEX INTERPLAY, WHICH IS CHALLENGING TO OPTIMIZE FOR A DESIGN FOR RELIABILITY AND LOW STRESS AS A MAJOR BOUNDARY CONDITION IS CRUCIAL FOR THE DESIGN. THE SECTION GIVES A RATHER COMPLETE AND WELL-REFERENCED ACCOUNT OF ALL RELEVANT ASPECTS, RELATIONS AND TRADE-OFFS FOR UNDERSTANDING THE REST OF THE BOOK. THE COMPLETENESS OF THE PRESENTATION ON POWER LASER DIODE DESIGN BASED ON BASIC PHYSICAL AND PLAUSIBLE ARGUMENTS IS MAINLY BASED ON ANALYTIC MATHEMATICAL RELATIONS AS WELL AS EXPERIMENTS PROVIDING A NEW AND WELL-BALANCED ADDITION FOR THE POWER DIODE LASER LITERATURE IN PARTICULAR. MODERN 2D SELF-CONSISTENT ELECTRO-OPTICAL LASER MODELING INCLUDING CARRIER HOLE BURNING AND THERMAL EFFECTS – THIS IS IMPORTANT BECAUSE THE WEAK OPTICAL GUIDING AND GAIN-DISCRIMINATION DEPEND CRITICALLY ON RATHER SMALL QUANTITIES AND EFFECTS, WHICH ARE DIFFICULT TO OPTIMIZE EXPERIMENTALLY – IS USED IN THE BOOK FOR SIMULATION RESULTS, BUT IS NOT TREATED SEPARATELY. THE NOVEL AND REALLY ORIGINAL, "GAP-FILLING" BULK OF THE BOOK IS ELABORATED BY THE AUTHOR IN A VERY CLEAR WAY IN THE FOLLOWING FOUR CHAPTERS IN THE PART 2 "LASER RELIABILITY" ON LASER DEGRADATION PHYSICS AND MIRROR DESIGN AND PASSIVATION AT HIGH POWER, FOLLOWED THEN BY TWO VERY APPLICATION ORIENTED CHAPTERS ON RELIABILITY DESIGN ENGINEERING AND PRACTICAL RELIABILITY STRATEGIES AND IMPLEMENTATION PROCEDURES. THIS ORIGINAL COMBINATION OF INTEGRAL DESIGN AND RELIABILITY ASPECTS – WHICH ARE MOSTLY NEGLECTED IN STANDARD LITERATURE – IS CERTAINLY A MAJOR PLUS OF THIS BOOK. I LIKED THIS SECOND SECTION AS A WHOLE, BECAUSE IT PROVIDES EXCELLENT INSIGHTS IN DEGRADATION PHYSICS ON A HIGH LEVEL AND COMBINES IT IN AN INTERESTING AND SKILLFUL WAY WITH THE LESS "GLAMOROUS" (UNFORTUNATELY) BUT HIGHLY RELEVANT RELIABILITY SCIENCE AND TESTING STRATEGIES, WHICH IS PARTICULARLY IMPORTANT FOR DEVICES OPERATING AT EXTREME OPTICAL STRESSES WITH CHALLENGING LIFETIME REQUIREMENTS IN A REAL WORD ENVIRONMENT. FINALLY, THE LAST PART 3 "LASER DIAGNOSTICS" COMPRISING THREE CHAPTERS, IS DEVOTED MAINLY TO ADVANCED EXPERIMENTAL DIAGNOSTICS TECHNIQUES FOR MATERIAL INTEGRITY, MECHANICAL STRESS, DEEP LEVEL DEFECTS, VARIOUS DYNAMIC LASER DEGRADATION EFFECTS, SURFACE- AND INTERFACE QUALITY, AND MOST IMPORTANTLY HEATING AND DISORDERING OF MIRRORS AND MIRROR COATINGS. THE TOPICS OF CHARACTERIZATION TECHNIQUES COMPRISING MICRO-RAMAN- AND MICRO-

THERMOREFLECTANCE-PROBING, 2K PHOTOLUMINESCENCE SPECTROSCOPY, MICRO-ELECTROLUMINESCENCE AND PHOTOLUMINESCENCE SCANNING, AND DEEP-LEVEL-TRANSIENT SPECTROSCOPY HAVE BEEN PIONEERED BY THE AUTHOR FOR THE SPECIFIC APPLICATIONS OVER MANY YEARS GUARANTEEING MANY COMPETENT AND WELL REPRESENTED INSIGHTS. THESE TECHNIQUES ARE BRILLIANTLY DISCUSSED AND THE INFORMATION DISTRIBUTED IN MANY ARTICLES BY THE AUTHOR HAS BEEN SUCCESSFULLY UNIFIED IN A BOOK FORM. IN MY PERSONAL JUDGMENT AND LIKING, I CONSIDER THE PARTS 2 AND 3 ON RELIABILITY AND DIAGNOSTICS AS THE MOST VALUABLE AND TRUE NOVEL CONTRIBUTION OF THE BOOK, WHICH IN COMBINATION WITH THE EXTREMELY WELL-COVERED LASER DESIGN OF PART 1 CLEARLY FILL THE GAP IN THE CURRENT DIODE LASER LITERATURE, WHICH IN THIS DETAIL HAS CERTAINLY BEEN NEGLECTED IN THE PAST. IN SUMMARY, I CAN HIGHLY RECOMMEND THIS EXCELLENT, WELL-ORGANIZED AND CLEARLY WRITTEN BOOK TO READERS WHO ARE ALREADY FAMILIAR WITH BASIC DIODE LASER THEORY AND WHO ARE ACTIVE IN THE ACADEMIC AND INDUSTRIAL FABRICATION AND CHARACTERIZATION OF SEMICONDUCTOR LASERS. DUE TO ITS COMPLETENESS, IT ALSO SERVES AS AN EXCELLENT REFERENCE OF THE CURRENT STATE-OF-THE-ART IN RELIABILITY ENGINEERING AND DEVICE AND MATERIAL DIAGNOSTICS. NEEDLESS TO MENTION THAT THE QUALITY OF THE BOOK, ITS REPRESENTATIONS AND METHODICAL STRUCTURE MEET THE HIGHEST EXPECTATION AND ARE CERTAINLY A TRIBUTE FROM THE LONG AND BROAD EXPERIENCE OF THE AUTHOR IN ACADEMIC LASER SCIENCE AND THE INDUSTRIAL COMMERCIALIZATION OF HIGH POWER DIODE LASERS. IN MY OPINION, THIS BOOK WAS A PLEASURE TO READ AND DUE TO ITS QUALITY AND RELEVANCE DESERVES A LARGE AUDIENCE IN THE POWER DIODE LASER COMMUNITY! PROF. EM. DR. HEINZ JÜCKEL, HIGH SPEED ELECTRONICS AND PHOTONICS, SWISS FEDERAL INSTITUTE OF TECHNOLOGY ETH ZÜRICH, SWITZERLAND JUNE 16, 2013

===== “SEMICONDUCTOR LASER ENGINEERING, RELIABILITY AND DIAGNOSTICS: A PRACTICAL APPROACH TO HIGH POWER AND SINGLE MODE DEVICES”. BY PETER W. EPPERLEIN DR. CHUNG-EN ZAH, RESEARCH DIRECTOR, SEMICONDUCTOR TECHNOLOGIES RESEARCH, S&T DIVISION, CORNING INCORPORATE, CORNING NY, USA THIS BOOK COVERS FOR THE FIRST TIME THE THREE CLOSELY INTERRELATED KEY LASER AREAS OF ENGINEERING (DESIGN), RELIABILITY AND DIAGNOSTICS IN ONE BOOK, WRITTEN BY THE WELL-KNOWN PRACTITIONER IN CUTTING-EDGE OPTOELECTRONICS INDUSTRIES, DR. PETER W. EPPERLEIN. THE BOOK CLOSES THE GAP IN THE CURRENT BOOK LITERATURE AND IS THUS A UNIQUE AND EXCELLENT EXAMPLE OF HOW TO MERGE DESIGN, RELIABILITY AND DIAGNOSTICS ASPECTS IN A VERY PROFESSIONAL, PROFOUND AND COMPLETE MANNER. ALL PHYSICAL AND TECHNOLOGICAL PRINCIPLES, CONCEPTS AND PRACTICAL ASPECTS REQUIRED FOR DEVELOPING AND FABRICATING HIGHLY-RELIABLE HIGH-POWER SINGLE-MODE LASER PRODUCTS ARE PRECISELY SPECIFIED AND SKILFULLY FORMULATED ALONG WITH ALL THE NECESSARY EQUATIONS, FIGURES, TABLES AND WORKED-OUT EXAMPLES MAKING IT EASY TO FOLLOW THROUGH THE NINE CHAPTERS. HENCE, THIS UNIQUE BOOK IS A MILESTONE IN THE DIODE LASER LITERATURE AND IS AN EXCELLENT REFERENCE BOOK

NOT ONLY FOR DIODE LASER RESEARCHERS AND ENGINEERS, BUT ALSO DIODE LASER USERS. THE ENGINEERING PART STARTS WITH A VERY INFORMATIVE AND CLEAR, WELL-PRESENTED ACCOUNT OF ALL NECESSARY BASIC DIODE LASER TYPES, PRINCIPLES, PARAMETERS AND CHARACTERISTICS FOR AN EASY AND QUICK UNDERSTANDING OF LASER FUNCTIONALITY WITHIN THE CONTEXT OF THE BOOK. ALONG WITH AN ELABORATE AND BROAD DISCUSSION OF RELEVANT LASER MATERIAL SYSTEMS, APPLICATIONS, TYPICAL OUTPUT POWERS, POWER-LIMITING FACTORS AND RELIABILITY TRADEOFFS, BASIC FABRICATION AND PACKAGING TECHNOLOGIES, THIS EXCELLENT INTRODUCTORY SECTION IS WELL SUITED TO BECOME QUICKLY AND EASILY FAMILIAR WITH PRACTICAL ASPECTS AND ISSUES OF DIODE LASER TECHNOLOGIES. OF SPECIAL IMPORTANCE AND HIGH USEFULNESS IS THE FIRST ANALYTIC AND QUANTITATIVE DISCUSSION IN A BOOK ON ISSUES OF COUPLING LASER POWER INTO OPTICAL SINGLE MODE FIBERS. THE SECOND SECTION DISCUSSES IN A WELL-BALANCED, COMPETENT AND SKILFUL WAY WAVEGUIDE TOPICS SUCH AS BASIC HIGH-POWER DESIGN APPROACHES, TRANSVERSE VERTICAL AND LATERAL WAVEGUIDE CONCEPTS, STABILITY OF THE FUNDAMENTAL TRANSVERSE LATERAL MODE AND FUNDAMENTAL MODE WAVEGUIDE OPTIMIZATION TECHNIQUES BY CONSIDERING DETRIMENTAL EFFECTS SUCH AS HEATING, CARRIER INJECTION, SPATIAL HOLE BURNING, LATERAL CURRENT SPREADING AND GAIN PROFILE VARIATIONS. LESS WELL-KNOWN APPROACHES TO FORCE LARGE-AREA LASERS INTO A SINGLE MODE OPERATION ARE WELL-IDENTIFIED AND CAREFULLY DISCUSSED IN DEPTH AND BREADTH. ALL THESE TOPICS ARE ELABORATED IN A VERY COMPLETE, RIGOROUS AND SCIENTIFIC WAY AND ARE CLEARLY ARTICULATED AND EASY TO READ. IN PARTICULAR, THE BOOK WORKS OUT THE COMPLEX INTERACTION BETWEEN THE MANY DIFFERENT EFFECTS TO OPTIMIZE HIGH-POWER SINGLE-MODE PERFORMANCE AT ULTIMATE RELIABILITY AND THUS IS OF GREAT BENEFIT TO EVERY RESEARCHER AND ENGINEER ENGAGED IN THIS DIODE LASER FIELD. ANOTHER NOVELTY AND HIGHLIGHT IS, FOR THE FIRST TIME EVER IN BOOK FORM, A COMPREHENSIVE YET CONCISE DISCUSSION OF DIODE LASER RELIABILITY RELATED ISSUES. THESE ARE ELABORATED IN FOUR DISTINCT CHAPTERS COMPRISING LASER DEGRADATION PHYSICS AND MODES, OPTICAL STRENGTH ENHANCEMENT APPROACHES INCLUDING MIRROR PASSIVATION/COATING AND NON-ABSORBING MIRROR TECHNOLOGIES, FOLLOWED BY TWO HIGHLY RELEVANT PRODUCT-ORIENTED CHAPTERS ON RELIABILITY DESIGN ENGINEERING CONCEPTS AND TECHNIQUES AND AN ELABORATE RELIABILITY TEST PLAN FOR LASER CHIP AND MODULE PRODUCT QUALIFICATION. THIS ORIGINAL AND NOVEL APPROACH TO LINK LASER DESIGN TO RELIABILITY ASPECTS AND REQUIREMENTS PROVIDES BOTH, MOST USEFUL INSIGHT INTO DEGRADATION PROCESSES SUCH AS CATASTROPHIC OPTICAL MIRROR DAMAGE ON A MICROSCOPIC SCALE, AND A WIDE SELECTION OF EFFECTIVE REMEDIAL ACTIONS. THESE ACCOUNTS, WHICH ARE OF HIGHEST SIGNIFICANCE FOR LASERS OPERATING AT THE OPTICAL STRESS LIMIT DUE TO EXTREMELY HIGH OUTPUT POWER DENSITIES AND MOST DEMANDING LIFETIME REQUIREMENTS ARE VERY PROFESSIONALLY PREPARED AND DISCUSSED IN AN INTERESTING, COHERENT AND SKILFUL MANNER. THE DIAGNOSTICS PART, CONSISTING OF THREE VERY ELABORATE CHAPTERS, IS MOST UNIQUE AND NOVEL WITH RESPECT TO OTHER DIODE LASER BOOKS. IT DISCUSSES FOR

THE FIRST TIME EVER ON A VERY HIGH LEVEL AND IN A COMPETENT WAY STUDIES ON MATERIAL INTEGRITY, IMPURITY TRAPPING EFFECTS, MIRROR AND CAVITY TEMPERATURES, SURFACE- AND INTERFACE QUALITY, MIRROR FACET DISORDER EFFECTS, MECHANICAL STRESS AND FACET COATING INSTABILITY, AND DIVERSE LASER TEMPERATURE EFFECTS, DYNAMIC LASER DEGRADATION EFFECTS AND MIRROR TEMPERATURE MAPS. OF HIGHEST SIGNIFICANCE TO DESIGN, PERFORMANCE AND RELIABILITY ARE THE VARIOUS CORRELATIONS ESTABLISHED BETWEEN LASER DEVICE AND MATERIAL PARAMETERS. THE MOST DIFFERENT AND SOPHISTICATED EXPERIMENTS, CARRIED OUT BY THE AUTHOR AT MICROMETER SPATIAL RESOLUTIONS AND AT TEMPERATURES AS LOW AS 2K, PROVIDE HIGHLY VALUABLE INSIGHTS INTO LASER AND MATERIAL QUALITY PARAMETERS, AND REVEAL FOR THE FIRST TIME THE ORIGINS OF HIGH POWER LIMITATIONS ON AN ATOMIC SCALE DUE TO LOCAL HEATING EFFECTS AND DEEP LEVEL DEFECTS. IT IS OF GREAT BENEFIT, THAT THE EXPERIMENTAL TECHNIQUES SUCH AS RAMAN SPECTROSCOPY, VARIOUS LUMINESCENCE TECHNIQUES, THERMOREFLECTANCE AND DEEP-LEVEL TRANSIENT SPECTROSCOPY, PIONEERED BY THE AUTHOR FOR THE SPECIFIC EXPERIMENTS ON LASERS, ARE DISCUSSED WITH GREAT EXPERTISE IN DEPTH AND BREADTH, AND THE NUMEROUS PAPER ARTICLES PUBLISHED BY THE AUTHOR ARE NOW REPRESENTED IN THIS BOOK. THE BOOK HAS AN ELABORATE TABLE OF CONTENTS AND INDEX, WHICH ARE VERY USEFUL, OVER 200 ILLUSTRATIVE FIGURES AND TABLES, AND EXTENSIVE LISTS OF REFERENCES TO ALL TECHNICAL TOPICS AT THE END OF EACH OF THE NINE CHAPTERS, WHICH MAKE IT EASY TO FOLLOW FROM COVER TO COVER OR BY JUMPING IN AT RANDOM AREAS OF SPECIAL INTEREST. MOREOVER, EXPERIMENTAL AND THEORETICAL CONCEPTS ARE ALWAYS ILLUSTRATED BY PRACTICAL EXAMPLES AND DATA. I CAN HIGHLY RECOMMEND THIS EXTREMELY RELEVANT, WELL-STRUCTURED AND WELL-FORMULATED BOOK TO ALL PRACTISING RESEARCHERS IN INDUSTRIAL AND ACADEMIC DIODE LASER R&D ENVIRONMENTS AND TO POST-GRADUATE ENGINEERING STUDENTS INTERESTED IN THE ACTUAL PROBLEMS OF DESIGNING, MANUFACTURING, TESTING, CHARACTERISING AND QUALIFYING DIODE LASERS. DUE TO ITS COMPLETENESS AND NOVEL APPROACH TO COMBINE DESIGN, RELIABILITY AND DIAGNOSTICS IN THE SAME BOOK, IT CAN SERVE AS AN IDEAL REFERENCE BOOK AS WELL, AND IT DESERVES TO BE WELCOMED WORDWIDE BY THE ADDRESSED AUDIENCE. DR. CHUNG-EN ZAH, RESEARCH DIRECTOR, SEMICONDUCTOR TECHNOLOGIES RESEARCH, S&T DIVISION, CORNING INCORPORATE, CORNING NY, USA

===== "SEMICONDUCTOR LASER ENGINEERING, RELIABILITY AND DIAGNOSTICS: A PRACTICAL APPROACH TO HIGH POWER AND SINGLE MODE DEVICES". BY PETER W. EPPERLEIN CORDINATORE PROF. LORENZO PAVESI, UNIVERSIT[?] DEGLI STUDI DI TRENTO, DIPARTIMENTO DI FISICA / LABORATORIO DI NANOSCIENZE THIS BOOK REPRESENTS A WELL THOUGHT DESCRIPTION OF THREE FUNDAMENTAL ASPECTS OF LASER TECHNOLOGY: THE FUNCTIONING PRINCIPLES, THE RELIABILITY AND THE DIAGNOSTICS. FROM THIS POINT OF VIEW, AND, AS FAR AS I KNOW, THIS IS A UNIQUE EXAMPLE OF A BOOK WHERE ALL THESE ASPECTS ARE MERGED TOGETHER RESULTING IN A WELL-BALANCED PRESENTATION. THIS HELPS THE READER TO MOVE WITH

EASE BETWEEN DIFFERENT CONCEPTS SINCE THEY ARE PRESENTED IN A COHERENT MANNER AND WITH THE SAME TERMINOLOGY, SYMBOLS AND DEFINITIONS. THE BOOK READS WELL. DESPITE THE SUBTITLE INDICATES THAT IT IS A PRACTICAL APPROACH, THE BOOK IS ALSO CORRECT FROM A FORMAL POINT OF VIEW AND PRESENTS THE NECESSARY EQUATIONS AND DERIVATIONS TO UNDERSTAND BOTH THE PHYSICAL MECHANISMS AND THE PRACTICALITIES VIA A SET OF USEFUL FORMULAS. IN ADDITION, THERE IS THE MORE IMPORTANT ASPECT OF MANY REAL-LIFE EXAMPLES OF HOW A LASER IS ACTUALLY MANUFACTURED AND WHICH THE RELEVANT PARAMETERS THAT DETERMINE ITS BEHAVIOUR ARE. IT IMPRESSES THE AMOUNTS OF INFORMATION THAT ARE GIVEN IN THE BOOK: THIS WOULD BE MORE TYPICAL OF A THICK HANDBOOK ON SEMICONDUCTOR LASER THAN OF AN AGILE BOOK. DR. EPPERLEIN WAS ABLE TO IDENTIFY THE MOST IMPORTANT CONCEPTS AND TO PRESENT THEM IN A CLEAR THOUGH CONCISE WAY. I AM TEACHING A COURSE ON OPTOELECTRONICS AND I'M GOING TO ADVISE STUDENTS TO REFER TO THIS BOOK, BECAUSE IT HAS ALL THE NECESSARY CONCEPTS AND DERIVATIONS FOR A SYSTEMATIC UNDERSTANDING OF SEMICONDUCTOR LASERS WITH MANY WORKED-OUT EXAMPLES, WHICH WILL HELP THE STUDENT TO GRASP THE ACTUAL PROBLEMS OF DESIGNING, MANUFACTURING, TESTING AND USING SEMICONDUCTOR LASERS. ALL THE VARIOUS CONCEPTS ARE JOINED TO VERY USEFUL FIGURES, WHICH, IF PROVIDED TO INSTRUCTORS AS FILES, CAN BE A USEFUL ADD-ON FOR THE USE OF THE BOOK AS TEXT FOR TEACHING. CONCEPTS ARE ALWAYS DETAILED WITH NUMBERS TO GIVE A FEELING OF THEIR PRACTICAL USE. IN CONCLUSION, I DO FIND THE BOOK SUITABLE FOR MY TEACHING DUTIES AND WILL REFER IT TO MY STUDENTS. PROF. DR. LORENZO PAVESI, HEAD OF THE DEPARTMENT OF PHYSICS, HEAD OF THE NANOSCIENCE LABORATORY, UNIVERSITY OF TRENTO, ITALY 31 MAY 2013 =====

"SEMICONDUCTOR LASER ENGINEERING, RELIABILITY AND DIAGNOSTICS: A PRACTICAL APPROACH TO HIGH POWER AND SINGLE MODE DEVICES". BY PETER W. EPPERLEIN ROBERT W. HERRICK, PH.D., SENIOR COMPONENT RELIABILITY ENGINEER, INTEL CORP., SANTA CLARA, CALIFORNIA, USA DR. EPPERLEIN HAS DONE THE SEMICONDUCTOR LASER COMMUNITY A GREAT SERVICE, BY RELEASING THE MOST COMPLETE BOOK ON THE MARKET ON THE PRACTICAL ISSUES OF HOW TO MAKE RELIABLE SEMICONDUCTOR LASERS. WHILE DOZENS OF BOOKS HAVE BEEN WRITTEN OVER THE PAST COUPLE OF DECADES ON SEMICONDUCTOR LASER DESIGN, ONLY A HANDFUL HAVE BEEN WRITTEN ON SEMICONDUCTOR LASER RELIABILITY. PRIOR TO THE RELEASE OF THIS BOOK, PERHAPS 40% OF THE MATERIAL COULD BE OBTAINED ELSEWHERE BY COMBINING FIVE BOOKS: ONE ON LASER DESIGN, ONE ON LASER RELIABILITY, ONE ON RELIABILITY CALCULATIONS, AND A COUPLE OF LASER REVIEW BOOKS. ANOTHER 40% COULD BE PIECED TOGETHER BY COLLECTING 50 - 100 PAPERS ON THE SUBJECTS OF LASER DESIGN, LASER FABRICATION, CHARACTERIZATION, AND RELIABILITY. THE REMAINING 20% HAVE NOT PREVIOUSLY BEEN COVERED IN ANY COMPREHENSIVE WAY. ONLY THE INTRODUCTORY MATERIAL IN THE FIRST HALF OF THE FIRST CHAPTER HAS GOOD COVERAGE ELSEWHERE. THE LARGE MAJORITY OF THE KNOWLEDGE IN THIS BOOK IS GENERALLY HELD AS "TRADE SECRET" BY THOSE WITH THE EXPERTISE IN THE FIELD, AND MOST OF THOSE IN THE

KNOW ARE NOT FREE TO DISCUSS. THE AUTHOR WAS FORTUNATE ENOUGH TO WORK FOR THE FIRST HALF OF HIS CAREER IN THE IBM RESEARCH LABS, WITH ACCESS TO UNPARALLELED RESOURCES, AND THE ABILITY TO PUBLISH HIS WORK WITHOUT TRADE SECRET RESTRICTIONS. THE RESULTS ARE STILL AT THE CUTTING EDGE OF OUR UNDERSTANDING OF SEMICONDUCTOR LASER RELIABILITY TODAY, AND GO WELL BEYOND THE EMPIRICAL "BLACK BOX" APPROACH MANY USE OF "TRY EVERYTHING, AND SEE WHAT WORKS." THE AUTHOR DID A FINE JOB OF PULLING TOGETHER MATERIAL FROM MANY DISPARATE FIELDS. DR. EPPERLEIN HAS PARTICULAR EXPERTISE IN HIGH POWER SINGLE MODE SEMICONDUCTOR LASERS, AND THOSE WORKING ON THOSE TYPE OF LASERS WILL BE ESPECIALLY INTERESTED IN THIS BOOK, AS THERE HAS NEVER BEEN A BOOK PUBLISHED ON THE FABRICATION AND QUALIFICATION OF SUCH LASERS BEFORE. BUT THOSE IN ALMOST ANY FIELD OF SEMICONDUCTOR LASERS WILL LEARN ITEMS OF INTEREST ABOUT DEVICE DESIGN, FABRICATION, RELIABILITY, AND CHARACTERIZATION. UNLIKE MOST OTHER BOOKS, WHICH INTEND TO CONVEY THE SCIENTIFIC FINDINGS OR PAST WORK OF THE AUTHOR, THIS ONE IS WRITTEN MORE AS A "HOW TO" MANUAL, WHICH SHOULD MAKE IT MORE ACCESSIBLE AND USEFUL TO DEVELOPMENT ENGINEERS AND RESEARCHERS IN THE FIELD. IT ALSO HAS OVER 200 FIGURES, WHICH MAKE IT EASIER TO FOLLOW. AS WITH MANY BOOKS OF THIS TYPE, IT IS NOT NECESSARY TO READ IT FROM COVER-TO-COVER; IT IS BEST SKIMMED, WITH DEEP DIVING INTO ANY AREAS OF SPECIAL INTEREST TO THE READER. THE BOOK IS REMARKABLE ALSO FOR HOW COMPREHENSIVE IT IS - EVEN EXPERTS WILL DISCOVER SOMETHING NEW AND USEFUL. DR. EPPERLEIN'S BOOK IS AN ESSENTIAL READ FOR ANYONE LOOKING TO DEVELOP SEMICONDUCTOR LASERS FOR ANYTHING OTHER THAN PURE RESEARCH USE, AND I GIVE IT MY HIGHEST RECOMMENDATION. ROBERT W. HERRICK, PH.D., SENIOR COMPONENT RELIABILITY ENGINEER, INTEL CORP., SANTA CLARA, CALIFORNIA, USA

BASIC RELIABILITY - NICHOLAS SUMMERVILLE 2004

THE STORY IS ABOUT A YOUNG FIFTEEN-YEAR-OLD SHEPHERD BOY NAMED DYRUS WHO LIVED IN A REMOTE AREA IN THE KINGDOM OF PERSIA DURING THE TIME OF CHRIST'S BIRTH. DYRUS WAS CONSTANTLY ASKING HIS FATHER AND GRANDFATHER ABOUT THE STARS, THE SUN, THE MOON, THE CLOUDS, AND JUST ABOUT EVERYTHING IN NATURE INCLUDING SUCH QUESTIONS AS HOW DO BIRDS FLY AND HOW DOES WATER GET UP IN THE SKY TO MAKE RAIN. HIS FATHER AND GRANDFATHER COULD NOT ANSWER THE QUESTIONS BUT TRIED TO KEEP DYRUS' QUESTIONS DIRECTED TO HIS BECOMING A SHEPHERD TO CARRY ON THE FAMILY WORK. DYRUS NOTICED A SPECIAL STAR ONE NIGHT WHILE ON A WOLF HUNT WITH HIS FATHER AND HIS FATHER'S FRIEND. ONLY DYRUS SAW THE STAR. THE KING'S TWO WISE MEN SAW THE STAR, TOO. ONE OF THE WISE MEN VENTURED TO A TALL MOUNTAIN CLOSE TO DYRUS' HOME TO BETTER OBSERVE THE STAR. THERE THE WISE MAN AND DYRUS MEET, AND DYRUS' LIFE IS

CHANGED FOREVER. DYRUS BECOMES A STUDENT OF THE TWO WISE MEN. IN THE WISE MEN'S SEARCH TO ANSWER THE KING'S QUESTIONS ABOUT THE MYSTERIOUS STAR, DYRUS IS CAUGHT UP IN AN ADVENTURE OF A LIFETIME.

RELIABILITY ENGINEERING - JOEL A. NACHLAS 2017-03-03

WITHOUT PROPER RELIABILITY AND MAINTENANCE PLANNING, EVEN THE MOST EFFICIENT AND SEEMINGLY COST-EFFECTIVE DESIGNS CAN INCUR ENORMOUS EXPENSES DUE TO REPEATED OR CATASTROPHIC FAILURE AND SUBSEQUENT SEARCH FOR THE CAUSE. TODAY'S ENGINEERING STUDENTS FACE INCREASING PRESSURE FROM EMPLOYERS, CUSTOMERS, AND REGULATORS TO PRODUCE COST-EFFICIENT DESIGNS THAT ARE LESS PRONE TO FAILURE AND THAT ARE SAFE AND EASY TO USE. THE SECOND EDITION OF RELIABILITY ENGINEERING AIMS TO PROVIDE AN UNDERSTANDING OF RELIABILITY PRINCIPLES AND MAINTENANCE PLANNING TO HELP ACCOMPLISH THESE GOALS. THIS EDITION EXPANDS THE TREATMENT OF SEVERAL TOPICS WHILE MAINTAINING AN INTEGRATED INTRODUCTORY RESOURCE FOR THE STUDY OF RELIABILITY EVALUATION AND MAINTENANCE PLANNING. THE FOCUS ACROSS ALL OF THE TOPICS TREATED IS THE USE OF ANALYTICAL METHODS TO SUPPORT THE DESIGN OF DEPENDABLE AND EFFICIENT EQUIPMENT AND THE PLANNING FOR THE SERVICING OF THAT EQUIPMENT. THE ARGUMENT IS MADE THAT PROBABILITY MODELS PROVIDE AN EFFECTIVE VEHICLE FOR PORTRAYING AND EVALUATING THE VARIABILITY THAT IS INHERENT IN THE PERFORMANCE AND LONGEVITY OF EQUIPMENT. WITH A BLEND OF MATHEMATICAL RIGOR AND READABILITY, THIS BOOK IS THE IDEAL INTRODUCTORY TEXTBOOK FOR GRADUATE STUDENTS AND A USEFUL RESOURCE FOR PRACTISING ENGINEERS.

RELIABILITY PROBLEMS: GENERAL PRINCIPLES AND APPLICATIONS IN MECHANICS OF SOLIDS AND STRUCTURES - F. CASCIATI 2014-05-04

THE AIM OF THIS VOLUME IS TO PRESENT TO RESEARCHERS AND ENGINEERS WORKING ON PROBLEMS CONCERNED WITH THE MECHANICS OF SOLIDS AND STRUCTURES, THE CURRENT STATE OF THE DEVELOPMENT AND APPLICATION TO PROCEDURES FOR ASSESSING THE RELIABILITY OF A SYSTEM. PARTICULAR ATTENTION IS PAID TO THEIR USE IN THE ANALYSIS OF COMPLEX ENGINEERING SYSTEMS. THE TOPICS COVERED REFLECT THE NEED TO INTEGRATE, WITHIN THE OVERALL METHODOLOGY, STATISTICAL METHODS FOR DEALING WITH UNCERTAIN PARAMETERS AND RANDOM EXCITATION WITH THE DEVELOPMENT OF A SUITABLE SAFETY INDEXES AND DESIGN CODES. THE BASIC PRINCIPLES OF RELIABILITY THEORY, TOGETHER WITH CURRENT STANDARD METHODOLOGY, INCLUDING A CONSIDERATION OF THE OPERATIONAL, ECONOMIC AND LEGAL ASPECTS OF RELIABILITY ASSURANCE, IS REVIEWED, TOGETHER WITH AN INTRODUCTION TO NEW DEVELOPMENTS, SUCH AS THE APPLICATION OF EXPERT SYSTEMS TECHNOLOGY. DAMAGE ACCUMULATION PREDICTIONS, WITH APPLICATIONS IN SEISMIC ENGINEERING ARE ALSO COVERED.