

Information
Technology
Laboratory

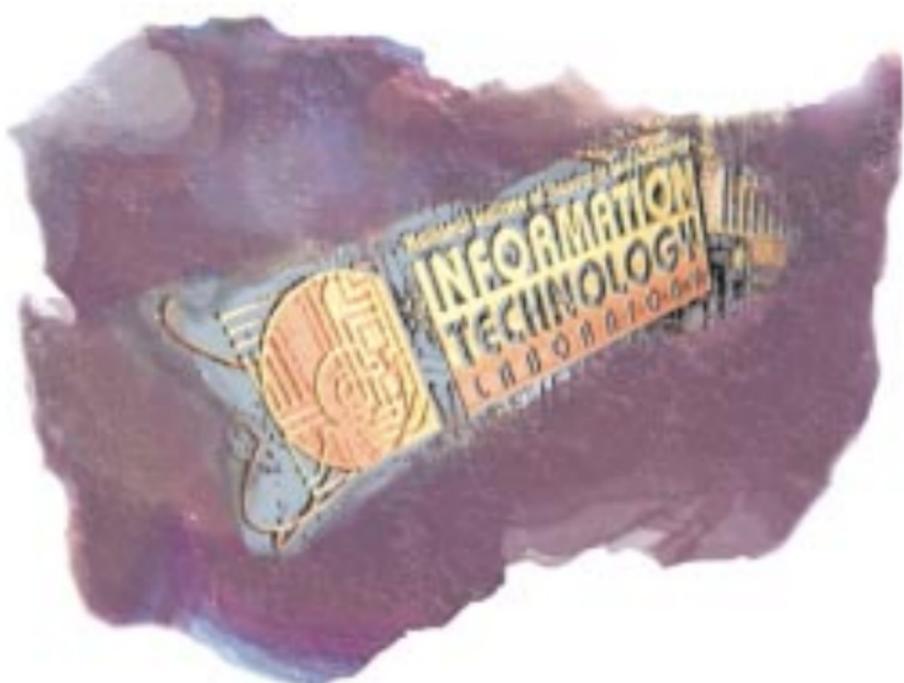
NIST

U.S. DEPARTMENT OF COMMERCE ♦ TECHNOLOGY ADMINISTRATION

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY

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November 1, 1998



U.S. DEPARTMENT OF COMMERCE
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Technology Administration
Gary R. Bachula
Acting Under Secretary for Technology

National Institute of
Standards and Technology
Raymond G. Kammer, Director



S. Wakid



K. Roberts



P. Domich

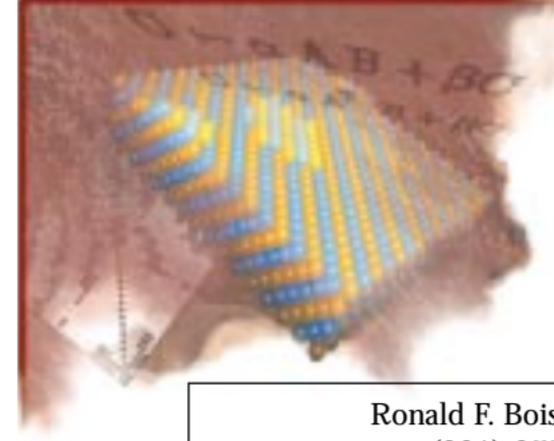
Information Technology Laboratory

Welcome to the Information Technology Laboratory (ITL). One of the Measurement and Standards Laboratories of the National Institute of Standards and Technology (NIST) of the Department of Commerce, ITL provides technical leadership for the Nation's measurement and standards infrastructure for information technology (IT). We are uniquely qualified to help U.S. industry and government by developing tests and test methods, quality assurance techniques, tools, models, reference data, and proof-of-concept implementations for emerging and forward-looking information technologies.

This brochure lists our current research and development projects within ITL's eight technical divisions. For each project, a relevant Web page or technical contact is given. Additional ITL-developed test collections, products, and resources Web sites are given following the division listings. We welcome your interest in our research and development program and offer many opportunities for collaboration with industry organizations in areas of mutual interest. Our management team is also available for consultation on IT issues, solutions, and research directions.

We invite you to learn more about the challenging and exciting work of our laboratory. Working with our industry partners, we will continue to produce the tools and metrics needed by U.S. industry to develop high quality IT products and services for the global marketplace. We look forward to hearing from you, our customers, and sharing our resources and experience.

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Information Technology Laboratory
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Mathematical and Computational Sciences Division

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Mathematical Modeling Group
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Measurement Science for Optical
Reflectance and Scattering
fern.hunt@nist.gov

Micromagnetic Modeling
<http://math.nist.gov/oommf/>

OOF: Object Oriented Finite Element
Software for Materials Science
<http://www.ctcms.nist.gov/~wcraig/oof/>

Mathematical Software Group
Ronald F. Boisvert, Acting Manager
(301) 975-3800, ronald.boisvert@nist.gov

Digital Library of Mathematical Functions (DLMF)
<http://math.nist.gov/DigitalMathLib/>

Fortran 90 Bindings for OpenGL
<http://math.nist.gov/f90gl/>

Guide to Available Mathematical Software (GAMS)
<http://math.nist.gov/gams/>

Java Numerics
<http://math.nist.gov/javanumerics/>

Matrix Market
<http://math.nist.gov/MatrixMarket/>

NIST Sparse BLAS
<http://math.nist.gov/spblas/>

Optimization and Computational Geometry Group
Ronald F. Boisvert, Acting Manager
(301) 975-3800, ronald.boisvert@nist.gov

Compression Algorithms Group
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MPEG and Image Compression Tools
anastase.nakassis@nist.gov

Advanced Network Technologies Division

Kevin L. Mills, Chief
(301) 975-3643
kevin.mills@nist.gov

High Speed Network Technologies Group
David H. Su, Manager
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All-Optical Transport Networks
with Wave Division Multiplexing
thomas.ndousse@nist.gov

ATM (Asynchronous Transfer
Mode) Network Testing
<http://www.hsnt.nist.gov/>

Digital Video Over ATM
david.su@nist.gov

Hybrid Fiber-Coaxial Network
<http://www.hsnt.nist.gov/>

Wireless Communication Technologies Group
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Multimedia and Digital Video Technologies Group
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Mobile Streams
mudumbai.ranganathan@nist.gov

Streaming Synchronized Multimedia
wchang@nist.gov

Internetworking Technologies Group
Craig W. Hunt, Manager
(301) 975-3827, craig.hunt@nist.gov

DARPA Intelligent Collaboration
and Visualization (IC&V)
mark.carson@nist.gov

IP Quality of Service
<http://www.antd.nist.gov/itg/>

IPsec and IPv6 Technologies
<http://www.antd.nist.gov/itg/cerberus/>
<http://ipsec-wit.antd.nist.gov/>

J. Wyrwa
K. Mills





Computer Security Division

Stuart W. Katzke, Chief
(301) 975-2934
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Security Technology Group
Miles E. Smid, Manager
(301) 975-2938, miles.smid@nist.gov

Advanced Encryption Standard (AES)
<http://csrc.nist.gov/encryption/aes/>

Encryption Key Recovery
<http://csrc.nist.gov/tacdfipskmi/>

Public Key Infrastructure (PKI)
<http://csrc.nist.gov/pki/>

Systems and Network Security Group
Tim Grance, Manager
(301) 975-4242, grance@nist.gov

Computer Security Resource Clearinghouse (CSRC)
<http://csrc.nist.gov>

GITS Information Technology (IT) Security Training
<http://csrc.nist.gov/gits>

National Information Assurance Partnership (NIAP)
<http://niap.nist.gov/>

Information Access and User Interfaces Division

Martin Herman, Chief
(301) 975-2788
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Spoken Natural Language Processing Group
David S. Pallett, Manager
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Spoken Language Technologies Benchmark Tests,
Corpora, and Software Tools
<http://www.itl.nist.gov/div894/894.01/proc/index.htm>

Natural Language Processing and Information
Retrieval Group
Donna K. Harman, Manager
(301) 975-3569, donna.harman@nist.gov

Text REtrieval Conference (TREC)
<http://trec.nist.gov>

Visual Image Processing Group
Charles L. Wilson, Manager
(301) 975-2080, charles.wilson@nist.gov

Face Recognition
jonathon.phillips@nist.gov

Fingerprint/Law Enforcement Standards
<http://www.nist.gov/itl/div894/894.03/fing/>

Optical Information Processing
charles.wilson@nist.gov

Visualization and Virtual Reality Group
Sharon J. Laskowski, Manager
(301) 975-4535, sharon.laskowski@nist.gov

DARPA Intelligent Collaboration and Visualization (IC&V)
sharon.laskowski@nist.gov

Usability Engineering
<http://zing.ncsl.nist.gov/~webmet/>

Visualization and Virtual Reality for Manufacturing
and the VRML Anthrokids Application
<http://ovrt.nist.gov/>

Visualization for Access
to Complex Documents
[http://zing.ncsl.nist.gov/~cugini/
uicd/sphere-slide-00.html](http://zing.ncsl.nist.gov/~cugini/uicd/sphere-slide-00.html)



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P. Flanagan

High Performance Systems and Services Division

High Performance
Systems &
Services
Division

D. Collins
M. Floyd



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(301) 975-2869
dean.collins@nist.gov

Scalable Parallel Systems and Applications Group
Gordon E. Lyon, Manager
(301) 975-5679, gordon.lyon@nist.gov

Advanced Display Technology Systems: Display Image
Tolerance Testbed
http://www.nist.gov/itl/div895/isis/projects/Advanced_Display/

Cluster Computing
amink@nist.gov

Computer Time Synchronization
amink@nist.gov

High Performance Storage Concepts and Standards -
Research, Test Methods and Standards for Optical Tape and
Optical Disks
http://www.nist.gov/itl/div895/isis/projects/Storage_Concepts/

Interoperable Message Passing Interface (IMPI) and
Conformance Tester
judith.devaney@nist.gov

Optical Information Processing and Transmission: WDM
(wavelength-division multiplexing)-Based Photonic
Interconnection for Wireless Communications
http://www.nist.gov/itl/div895/isis/projects/Holographic_Storage/

WebSubmit
ryan.mccormack@nist.gov

High Performance Systems Usage Group
Jack L. Newmeyer, Manager
(301) 975-2966, jack.newmeyer@nist.gov

NIST Central Scientific Computers, Central Information
Computers, Printing/Graphics, and Security
jack.newmeyer@nist.gov

Network and Telecommunications Systems Group
John K. Antonishek, Manager
(301) 975-5895, john.antonishek@nist.gov

NIST Networking and Telecommunications
john.antonishek@nist.gov



Distributed Computing and Information Services Division

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(301) 975-3240
oscar.farah@nist.gov

Distributed Processing and Operating Systems Support
Robert J. Crosson, Manager
(301) 975-3832, robert.crosson@nist.gov

NIST-Wide Microsoft Windows NT Support
<http://winnt.cam.nist.gov>

E-mail and other Information Services for NIST Staff
<http://www.itl.nist.gov/div896/dposs>

Information Processing Support Group
James R. Graham, Manager
(301) 975-2977, james.graham@nist.gov

Support of NIST's Centralized World Wide Web Servers
<http://www.itl.nist.gov/div896/ipsg/>

Support of NIST's Electronic Commerce and
Information Delivery Systems
james.graham@nist.gov

Administrative Computing Support Group
Robert Lee, Manager
(301) 975-4061, bob.lee@nist.gov

Y2K Compliance of NIST Administrative Computer Systems
gordon.gipe@nist.gov, doree.osborne@nist.gov

Support of Department of Commerce Administrative
Management Systems (CAMS) Project
bob.lee@nist.gov

Support of Administrative Computing Systems at NIST
bob.lee@nist.gov

PC Support Group
Ronald B. Wilson, Manager
(301) 975-3352, ronald.wilson@nist.gov

Support of PC Hardware, Software, and Administrative
Applications NIST-Wide
<http://www.itl.nist.gov/div896/pcsup/>

Software Diagnostics and Conformance Testing Division

Mark W. Skall, Chief
(301) 975-3262
mark.skall@nist.gov

Software Quality Group
D. Richard Kuhn, Manager
(301) 975-3290, kuhn@nist.gov

Automatic Generation of Tests From Formal Specifications
<http://hissa.nist.gov/~black/FTG/autotest.html>

Error, Fault, and Failure Data Collection and Analysis
<http://hissa.nist.gov/project/eff.html>

Role Based Access Control (RBAC)
<http://hissa.nist.gov/rbac>

Unravel
<http://hissa.nist.gov/unravel>

Conformance Testing Group
Lynne Rosenthal, Manager
(301) 975-3283, lsr@nist.gov

JAVA Conformance Testing
http://www.nist.gov/java_ca.htm

Technology Transfer of Conformance Testing Programs
<http://www.nist.gov/ctdirectory.html>

VRML Conformance Testing
<http://www.nist.gov/vrml.html>

XML
mary.brady@nist.gov

Software Standards Group
Bruce K. Rosen, Manager
(301) 975-3299, bruce.rosen@nist.gov

Object Oriented Technology for
Distributed Interactive Learning
<http://www.imsproject.org/specs.html>

Requirements Collection for Forward-Looking Standards
bruce.rosen@nist.gov

Software Testing by Statistical Methods
<http://www.nist.gov/stsm.html>

Year 2000 (Y2K) Software Problem
Information Dissemination
<http://www.nist.gov/y2k>



Statistical
Engineering
Division

Statistical Engineering Division

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Cooperative Research and Development
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Rockwell Hardness Standards Modeling
walter.liggett@nist.gov

Stochastic Modeling
charles.hagwood@nist.gov

Measurement Process Evaluation Group
Carroll Croarkin, Manager
(301) 975-2849, carroll.croarkin@nist.gov

NIST/SEMATECH Engineering Statistics
Internet Handbook
<http://www.itl.nist.gov/div898/projects/handbook.html>

Standard Reference Materials and Calibration Services
carroll.croarkin@nist.gov

Statistical Modeling and Analysis Group
Keith R. Eberhardt, Acting Manager
(301) 975-2839, keith.eberhardt@nist.gov

Statistical Reference Datasets (StRD)
<http://www.itl.nist.gov/div898/strd>

Bayesian Methods for Metrology
david.banks@nist.gov

Analysis of Measurement Uncertainty
mark.levenson@nist.gov

Interlaboratory Studies
mark.vangel@nist.gov

Design of Experiments
james.filliben@nist.gov

Statistical Modeling and Analysis - Boulder
dominic.vecchia@nist.gov



ITL Tests, Products, and Resources

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Text Retrieval Test Collections

<http://www.nist.gov/itl/div894/894.02/products.html>

TREC Test Collections on CD-ROM

http://trec.nist.gov/data/docs_eng.html

Speech Processing Evaluations and Benchmark Tests

<http://www.nist.gov/speech/online.htm>

NIST Spoken Language Benchmark Tests

<http://www.nist.gov/speech/test.htm>

Optical Character Recognition (OCR)

<http://www.nist.gov/itl/div894/894.03/ocr/ocr.html>

OCR Test Material on CD-ROM

http://www.nist.gov/itl/div894/894.03/databases/defs/vip_dbases.html#ocrlist

Fingerprint Classification/Matching

<http://www.nist.gov/itl/div894/894.03/fing/fing.html>

Fingerprint Test Data on CD-ROM

http://www.nist.gov/itl/div894/894.03/databases/defs/vip_dbases.html#finglist

Face Recognition

<http://www.nist.gov/itl/div894/894.03/face/face.html>

Mugshot/Face Test Data on CD-ROM

http://www.nist.gov/itl/div894/894.03/databases/defs/vip_dbases.html#facelist

S-Check: <http://cmr.ncsl.nist.gov/scheck/scheck.html>

MultiKron Series of Instrumentation Boards and Toolkits

<http://cmr.ncsl.nist.gov/multikron>

Fortran78: http://www.itl.nist.gov/div897/ctg/fortran_form.htm

Cobol85: http://www.itl.nist.gov/div897/ctg/cobol_form.htm

CGM: http://www.itl.nist.gov/div897/ctg/cgm_form.htm

<http://www.itl.nist.gov/div897/ctg/graphics/cgm3hd.htm>

PHIGS: http://www.itl.nist.gov/div897/ctg/phigs_form.htm

RDA: http://www.itl.nist.gov/div897/ctg/rda_form.htm

JAVA Conformity Assessment and Diagnostics

http://www.nist.gov/java_ca.htm

VRML Conformance Tests and Viper Reference Parser

<http://www.nist.gov/vrml.html>

SQL: http://www.itl.nist.gov/div897/ctg/sql_form.htm

POSIX: http://www.itl.nist.gov/div897/ctg/posix_form.htm

Cryptographic Modules and Algorithms:
Specifications, Tests, and Validated Implementations
<http://csrc.nist.gov/cryptval>

IP Quality of Service

NIST Network Emulation Tool: <http://www.antd.nist.gov/itg/nistnet/>

NIST Integrated Services Protocol Instrument (RSVP/RTP Testing)
<http://www.antd.nist.gov/itg/ispi/>

NIST Cerberus: An IPsec Reference Implementation
<http://www.antd.nist.gov/itg/cerberus/>

IPsec WWW-Based Interoperability Tester (IPsec-WIT)
<http://ipsec-wit.antd.nist.gov/>

NIST Network Emulation Tool (NIST Net)
<http://www.antd.nist.gov/itg/nistnet/>

NIST Integrated Services Protocol Instrument (ISPI)
<http://www.antd.nist.gov/itg/ispi/>

ATM Network/HFC Network Simulator: <http://www.hsnt.nist.gov/>

ATM ABR Service Traffic Management Conformance Test Tool
<http://www.hsnt.nist.gov/>

ATM Private Network-Network Interface (PNNI) Simulator
<http://www.hsnt.nist.gov/>

ATM PNNI Protocol Interoperability Test Tool
<http://www.hsnt.nist.gov/>

P	R	O	D	U	C	T	S
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Template Numerical Toolkit (TNT): <http://math.nist.gov/tnt/>

SciMark: <http://math.nist.gov/scimark/>

MicroMagnetic Modeling Group
<http://www.ctcms.nist.gov/~rdm/mumag.org.html>

Best Practice Recommendation for the
Capture of Mugshots or Facial Images
http://www.itl.nist.gov/div894/vip/face/bpr3_let.html

Databases for Mugshot/Face Identification,
Fingerprint Classification/Matching, and OCR
http://www.nist.gov/itl/div894/894.03/databases/defs/vip_dbases.html

Translation of Deneb Robotics Formats to VRML (source code)
<http://ovrt.nist.gov/projects/mfg/SIMA/deneb2vrml/deneb2vrml.html>

Guide to Z39.50/PRISE 2.0
<http://www.nist.gov/itl/div894/894.02/works/papers/zp2/zp2.html>

Making VRML Accessible
<http://ovrt.nist.gov/projects/VRMLaccess>



NIST Formed-Based Handprint Recognition System (Release 2.0)
http://www.itl.nist.gov/div894/894.03/databases/defs/nist_ocr.html

Public Domain Pattern Level Classification Systems
http://www.nist.gov/itl/div894/894.03/databases/defs/nist_pca.html

Spoken Language Scoring and Evaluations Software
<http://www.nist.gov/speech/software.htm>

Virtual Environments for Health Care
<http://ovrt.nist.gov/projects/health/health.html>

Webmetrics: <http://zing.ncsl.nist.gov/~webmet/>

Working Model 3D Translator to VRML: <http://ovrt.nist.gov/work3d>

VMView (Java Diagnostic Tool)
<http://www.itl.nist.gov/div897/ctg/java/vmview/>

Find Date: <http://www.nist.gov/y2k/software.htm#finddate>

Information on How to Compute Leap Year
<http://www.nist.gov/y2k/documents.htm#leapyear>

Test Assertions for Year 2000
<http://www.nist.gov/y2k/datetest.htm>

Year 2000 Reference Data: <http://www.nist.gov/y2k/gjdates.exe>

RBAC: <http://hissa.ncsl.nist.gov/RBACdist/> (for Unix systems)
RBAC: <http://hissa.ncsl.nist.gov/RBACdistNT> (for NT systems)

Dataplot Statistical Software
<http://www.itl.nist.gov/div898/software/dataplot.html/>

Omnitab Statistical Software
<http://www.itl.nist.gov/div898/software/omnitab.html>

Recipe Statistical Software
<http://www.itl.nist.gov/div898/software/recipe/homepage.html>

R E S O U R C E S

ANSI/NIST-CSL 1-1993
<http://www.itl.nist.gov/div894/894.03/fing/stand1.html>

Standard Review
<http://www.itl.nist.gov/div894/vip/fing/stand2.html>

ANSI/NIST-ITL 1a-1997
http://www.itl.nist.gov/div894/vip/face/std_cov.html

Common Criteria (CC): <http://csrc.nist.gov/cc/>

Text REtrieval Conference (TREC) Proceedings
<http://trec.nist.gov/pubs.html>

Documents on Year 2000 Problem
<http://www.nist.gov/y2k/documents.htm>

ITL Publications, with link to complete list
of FY 1998 ITL publications
<http://www.itl.nist.gov/lab/csl-pubs.htm>

Information Technology Laboratory

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Mathematical and
Computational
Sciences

Advanced
Network
Technologies

Computer
Security

Information
Access and
User Interfaces

High Performance
Systems and
Services

Distributed
Computing and
Information
Services

Software
Diagnostics and
Conformance
Testing

Statistical
Engineering

NOTE: Reference to specific commercial products or brands is for information purposes only; no endorsement or recommendation by the National Institute of Standards and Technology, explicit or implicit, is intended or implied.

For more information, contact:

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