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## Index

COMMERCIAL AND GOVERNMENT EXPERIENCE .....	2
BOARDS AND INDUSTRY FORUMS .....	7
ACADEMICS .....	8
ISSUED AND PUBLISHED PATENTS .....	9
TECHNICAL PUBLICATIONS AND MONOGRAPHS .....	10
REPRESENTATIVE TECHNICAL REPORTS .....	12
STANDARDS PUBLICATIONS .....	12
REPRESENTATIVE POLICY PAPERS .....	13
PROFESSIONAL AFFILIATIONS, HONORS, AND SERVICE .....	14
FEDERAL TRAINING .....	16
INVITED LECTURES, COLLOQUIA, AND SYMPOSIA .....	16
COMMUNITY SERVICE .....	16
VISAS AND WORK STATUS.....	16
PERSONAL INTERESTS .....	17

## Commercial and Government Experience

- Assistant Director** **Office of Science and Technology Policy**, Washington DC  
 11/19 - present  
 Responsible for the telecommunications and cybersecurity portfolios. Perform coalition building, coordination, and policy work related to the United States' use of the radio spectrum, communications networks, and cybersecurity. Serve on and may lead senior, policy-level interagency committees relating to science and technology; consult with outside advisory groups from government, universities, industry, and nonprofit organizations in recommendations of policy and policy recommendation options; assist in the development and implementation of policy positions on telecommunications and information issues by working with other federal agencies that have interests in those issues; and provide other support to OSTP on related communications topics, as required. Reports to the US CTO in the Executive Office of the President.
- Chief Technology Officer** **Federal Communications Commission**, Washington DC  
 9/17 – 10/19  
 Worked collaboratively with staff in other Bureaus and Offices, and served as a resource to FCC Commissioners. Was the senior advisor to the Commission on technology related matters. Conducted research addressing policy issues regarding telecommunications networks, reviewed highly complex technical proposals and studies related to telecommunications services, and the developed and executed Commission policy in technical areas. Helped the FCC engage with technology experts outside the agency, and promote technical excellence among agency staff. Ensured technical quality and passage of groundbreaking anti-robocall technology and policy. Other focus areas included reliability and integrity of wireless networks, wireless alerting, amateur radio, suicide prevention, submarine cables, and counter-UAS technologies. Embedded in the Office of Economics & Analytics and on technology issues reported directly to the Chairman. On detail to the White House.
- Senior Technology Advisor** **Cyber SMART**, Washington, DC  
 11/19 – present  
*NOTE: On leave from this position while on IPA and detailed to the White House*  
 Co-Founder and Director for Cyber SMART Communications and Security Research. Cyber SMART prepares public and private sector organizations, researchers, educators and students as the future cyber professionals, for the new era of cyber. This new era's characteristics include increased connectiveness and international regulation; transborder data flows; new developments in communications, especially in over the top services; expanded use of blockchain and distributed ledger technology and its application to a range of industries including finance; and the growing importance of digital identity. Overlaid are legal and policy aspects, particularly individual rights to data protection, privacy and identity; due diligence obligations of organizations; and the need for the development of standards particularly for new applications like blockchain, for example. There are also other considerations that are often overlooked. Disciplines beyond computer science and law including economics, business management, behavioral and other social sciences and medicine bring new perspective and understanding that informs cyber research and education.
- Director** **Security and Software Engineering Research Center at Georgetown**, Washington DC  
 1/12 – [9/17]  
**Georgetown Center for Secure Communications**, Washington DC  
*NOTE: On leave from this position while on IPA and detailed to the White House*  
 Founder and Director of the Georgetown Center for Secure Communications (GCSC), former Director of the Georgetown site of the NSF Security and Software Engineering Research Center (S<sup>2</sup>ERC). The S<sup>2</sup>ERC addresses the technological barriers

ers to secure network interoperability, as well as social, policy, and corporate governance issues related to secure, inter-enterprise communications, more especially for cyber threat intelligence information sharing. It has support from NSF, government, and industry. Responsible for P&L, membership recruitment (sales and marketing), operations, and running the technical program (product delivery).

Report to the SVP Research and Chief Technology Officer of the University.

### **Independent**

#### **Consultant**

6/10 – 9/17

5/08 – 6/09

#### **Projects include:**

- Expert patent witness in VoIP/telecom data base case (plaintiff) – jury accepted all invalidity contentions and awarded damages
- Expert patent witness in SIP and secure communications litigation (defense) versus a patent assertion entity (PAE) – forced settlement on extremely favorable terms
- Expert patent witness in SIP/VoIP gateway litigation and single number service litigation (defense) – won suits instigated by a PAE
- Expert patent witness in Web commerce, cloud storage, and data base synchronization litigation (defense)
- Legal consulting for a fax case (plaintiff)
- Legal consulting for a set of wireless patent re-examinations for a PAE
- Legal consulting for a mobile phone / application privacy issue (plaintiff)
- Assisted the International Civil Aviation Organization in the development of their next generation, integrated secure air traffic management network architecture
- Assisted an international legacy network equipment manufacturer to determine corporate capabilities, channel capabilities, and appropriate new markets to address new products and a plan to refactor the business to address these markets. The client executed the plan and it exceeded their expectations.
- Assisted a major North American ISP develop an architecture and economic model for CDN interconnect that dramatically reduced their transit costs while complying with current and expected FCC rules and Congressional policy. In addition, the economic model I developed is the baseline model for the industry.
- Assisted a startup in mobile video communications with business planning and securing financing.
- Assisted a legacy Asian network operator enter North American mobile advertising space.
- Assisted a startup in the mobile advertising space. Developed intellectual property for the organization.
- Assisted a startup in the media rights space.
- Advise the financial services community on the telecommunications industry on an ongoing basis, including numbering, databases, new gTLD's, ICANN, registry market and players, roaming, lawful intercept, surveillance, cyber security, and VoIP.
- Patent strategy for startup and mid-size companies
- Strategic research planning for a large network equipment manufacturer
- Technical due diligence on a hosted services provider for late-stage VC investment
- Architecture consulting on Application Servers and Media Servers, including vendor selection and contract negotiation strategy for a large private equity equipment manufacturer. Saved client three million dollars.
- Architecture and telco-grade high-availability implementation consulting for a hosted voice services application provider

- Advise investment bankers on the telecom enabling technology market
- Advise investment bankers on M&A targets

**CTO and SVP Neustar, Inc., Sterling, VA**

6/09 – 6/10

CTO of a ~1,000 employee publicly traded (NYSE:NSR), ~\$500MM telecommunications clearinghouse, naming & addressing database, Internet infrastructure services, and mobile services company. Responsible for setting Neustar's technology and service strategy; identifying M&A targets (transformative, strategic, and technological) and directing technical due diligence; devising architectures to strengthen the company's market positioning; oversee early stages of new technology development; and drive the successful launch and commercialization of IP services. Led a team of 12 scientists, standards experts, and developers creating technologies for the 3-5 year time horizon. Managed research and development for peer-to-peer networking; digital content rights management and distribution (DECE/UltraViolet/TV Anywhere); telephony naming and addressing; Internet naming and addressing; Internet cyber security and measurement; Next-Generation Emergency Services; and Smart Grid communications and security technology. Created and promoted culture of innovation: dramatically increased number of patent filings and products that were stagnant for 2+ years had new releases with market-relevant, working features. Reported to the Chairman and CEO.

**1/07 to 5/08 BEA Systems, Burlington, MA**

**Acting General  
Manager,  
Communications  
Products Div.**

[2/08 – 5/08] Lead team of 260+ individuals addressing the real-time network software market in a publicly traded (NASDAQ:BEAS) 4200+ employee, \$1.5B middleware software company. Worked on business plan for telecom business unit and engaged stakeholders. Created integrated service provider/enterprise technology and market strategy. Turned around sales, starting at 50% of plan to achieving 150% of plan. Grew revenues five-fold in a year, including a strong plan for growth over the next three years. The plan was adopted by Oracle. **[Oracle acquired BEA in May 2008.]**

**Deputy CTO  
and  
VP Engineering**

[1/07 – 5/08] Responsible for technology vision, market evangelization, intellectual property creation, and organization change. Briefings with C-level executives in the telecom and financial services industries, resulting directly in multiple sales ranging from a \$2MM sale to a 3.5 year, \$72MM contract. Worked with university researchers to identify and acquire technology and personnel. Performed technical due diligence on over 15 companies. Numerous keynote addresses at technical and marketing conferences, as well as interviews with the press and analysts. Reported to the Corporate CTO (EVP).

**9/00 to 1/07 SnowShore Networks, Brooktrout Technology, Cantata Technology, Salem, NH**

**CTO, Cantata**

[10/06 – 1/07] CTO of a 360+ employee private equity enabling technology company for telecommunications applications. Investors included Oak Investment Partners, TowerBrook Capital Partners, Greenview Associates, and Anschutz Investment Company. Responsible for technology vision, market evangelization, and corporate technology positioning. Established “Virtual Office of the CTO,” drawing experts from R&D and marketing, creating a cohesive vision for current products, identified new technology directions and potential acquisition targets, and participating in major standards and industry organizations without imposing undue overhead on the organization. [4/04 – 10/06] Established and ran Advanced Development to build proofs of concept, quick customer demos, and direct research projects internally and at universities. Worked with CxO's at both carriers and large enterprises. Lead IMS and Video strategies and transition the company to address the migration of our cus-

**CTO,  
Brooktrout**

tomers from TDM to IP. Worked closely with strategic partners such as Vodafone, Verizon, AT&T, Comcast, Nokia, Lucent, Motorola, BEA, Oracle, IBM, as well as major research institutions worldwide. Upon acquisition, successfully lead legacy CTO's and Chief Architects. Created and administered patent program that tripled Brooktrout's 20 year-old portfolio in 18 months. Participated in ISO 9000 audit. Participated in earnings calls and educational seminars for the financial community. Divided time between Brooktrout's and Cantata's major development centers in New Hampshire, Massachusetts, and California, as well as supported global offices, customers, and partners. Successfully managed the **Brooktrout Technology** (NASD:BRKT) merger with **Excel Switching** that created **Cantata Technology**, for a \$120MM increase (2x) in market cap. Reported to the CEO. **Brooktrout Technology** acquired **SnowShore Networks** in April 2004 (see below).

3<sup>rd</sup> and 4<sup>th</sup> successful transformation of a company from hardware to software.

**Founder and  
CTO,  
SnowShore**

[9/00 – 4/04] CTO of a venture-backed company (Charles River Ventures, Matrix Partners, St.Paul (Vestbridge), i3) from three co-founders to a high of 72 local employees and 11 contractors in India. Defined the architecture, created the vision, and lead the technology for carrier-scale, IP enhanced services media servers. Created favorable public relations, industry credibility, and good will for SnowShore in the technical and service provider community. Generated leads and help close multi-million-dollar financing and business deals. Inventor of the SIP-controlled Media Server and the Applications and Services Infrastructure concept, which is the dominant enhanced-services development and deployment model for the Next-Generation Network. Led the standardization of this model in international bodies such as the IETF and W3C. Regular speaker at industry and technical fora. Created and administered patent program that generated over 12 applications. SnowShore focused on building highly scalable, IP- and Web-oriented, carrier-class, SIP-based voice and video media processing servers. Reported to the CEO.

Brooktrout's acquisition of **SnowShore** was a top-25% outcome for the venture class of 2000.

Second successful transformation of a company from hardware to software revenues.

**5/93 to 9/00  
Chief Scientist,  
Centigram**

**Centigram Communications Corporation, The Telephone Connection, Rockville, MD**

[6/98 – 9/00] Lead Centigram's Maryland Technology Center of a 375+ employee public company (NASD:CGRM). Centigram's corporate challenge: how to diversify revenue from a 15-year-old legacy platform. Determined and promoted strategic technical direction for the entire company. Responsible for corporate technology assessment; identified and pursued promising avenues of research and technology acquisition strategy. Represented Centigram on international and domestic standards bodies. Created and administered patent program that doubled Centigram's 15-year-old portfolio, including successful defense of a \$30M IPR infringement suit, resulting in a very successful result for the company. Principal contributor for design of real-time Web-based interactive multi-media products. Developed Unified, Internet-based Messaging strategy, including wireless technologies. Technical lead for VoIP and IN/AIN efforts. Responsible for technical and commercial negotiations with strategic partners.

Directly involved with sale of company to ADC, which resulted in a nearly 3x increase in market cap. Reported to the Exec. VP Engineering.

**ADC** purchased **Centigram** in June 2000. **Centigram** purchased **The Telephone Connection** in June 1998.

- Vice President of Engineering, The Telephone Connection** [5/93 – 6/98] Managed all aspects of telecommunications product design, development, deployment, feature pricing, feature definition, launch planning, and partner relations. Responsible for demonstrating to prospective customers how our solutions meet or exceed their requirements. Typical VP-Level P&L and personnel responsibilities, restarting company at six employees and growing it to 32 employees. Established strategic relations with vendors and customers, resulting in the award of a \$150M contract. Shared VP Marketing role with VP Product Development, including RFP response, pricing and positioning. Reported to the CEO.
- Manager, Software Development** **Cable & Wireless Communications, Inc.**, Vienna, VA  
10/91 -05/93  
Manager and principal engineer for a broadcast and high-volume broadcast facsimile switch service. Managed technology transfer to my in-house engineering organization of 500,000 lines of C code running in a distributed TCP/IP environment. Reduced engineer turnover from an average tenure of 9 months to over 18 months. Worked with other divisions of Cable & Wireless, primarily in the United Kingdom and Hong Kong. Managed group of 18 people. Reported to the Director of Software Development and the VP Engineering.
- Consultant** **MCI Telecommunications Corporation**, McLean, VA  
10/90-09/91  
Directed a staff of engineers for high volume real-time on-line transaction processing for MCI's Intelligent Network, creating the first effective architecture that today is known as a SoftSwitch. Directed and participated in research and development of transaction-oriented applications design for massively parallel supercomputer platform (nCube). This was a technical and commercial success. We demonstrated call processing capacity that could process more than all of the global inter-exchange and international traffic for enhanced services. This resulted in a dramatic reduction in MCI's network equipment costs.
- Engineering and Sales Management** **Valid Logic Systems, Inc.**, San Jose, CA  
06/84 - 09/90  
**Sales Executive**, Eindhoven, The Netherlands (8/89-9/90). Responsible for largest electronics account in Europe; landed largest order for Valid in 1989. Confounded #1 competitor (Valid at that time was #2) – stopped all sales from their largest account for three quarters.  
**Member of The Technical Staff**, Diest, Belgium (9/86-7/89). Established European Corporate Research Center. Delivered 500,000 lines of C code.  
**Engineering Program Manager**, San Jose, CA (7/85-9/86). Responsible for PC-based products; became 40% of shipments in first year.  
**Engineering Project Manager**, San Jose, CA (11/84-6/85). Responsible for largest release in the company's history, restoring product quality.  
**Sr. Software Engineer**, San Jose, CA (6/84-11/84). Created MOS Simulation tools. First successful transformation of a company from hardware to software revenues. This company became **Cadence Design Systems**.
- Research Engineer** **Texas Instruments, Inc., Central Research Laboratory**, Dallas, TX  
01/80 – 06/84  
Sub-Micron Structures; Device Modeling and Simulation; Full-Custom VLSI Design; my research group invented the Single-Chip DSP.

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## Boards and Industry Forums

- Industry Advisory Council** **Medgar Evers College, The City University of New York**, Brooklyn, NY  
2015 - present  
Medgar Evers College is a senior college of CUNY and a designated HBCU. Motto: *We Create Success, One Student at a Time*. Advise the Dean of the School of Business on curriculum, student outcomes, strategic objectives, and initiatives.

- Chair of the Board of Directors** **AtF Cyber**  
 2016 – 2019 AtFCyber is a company founded by experts in cyber security to dramatically change how people access information and services important to them with significantly reduced risk of attack. Our suite of patented, customizable authentication solutions targets the IOT and IIOT in order to protect critical infrastructure, providing both with new levels of security while reducing the supporting infrastructure cost and complexity. **Chair** (2016-2019).
- Board of Advisors** **Dexrex LLC**, Amherst, MA  
 2008 - 2018 Dexrex was a PAE in the compliance, instant messaging, and social networking space.
- Treasurer and Board of Directors** **Public Interest Registry**  
 2015 – 2017 The Public Interest Registry (PIR) is a nonprofit organization operated in the public interest, formed initially to manage the .ORG generic top-level domain. .ORG was the first DNSSEC gTLD and .OPF was one of the first internationalized gTLDs. PIR now also manages the .ONG and .NGO gTLDs. **Treasurer** (2017) **Corporate Secretary** (2015-2016). Member, **Finance and Audit Committee** (2015-2017).
- Board of Directors** **Ascension Technology Group**, Atlanta, GA  
 2012 – 2016 Ascension Technology Group is a cloud technology managed services provider with core offerings of Cloud Advisory & Hosting Services, Cloud Support, Cloud based Training & Certification, and Infrastructure Services.
- Board of Trustees** **Internet Society**  
 2009 – 2015 The Internet Society (ISOC) is a nonprofit organization founded in 1992 to provide leadership in Internet related standards, education, and policy. Transitioned new CEO. **Audit Committee Chair**. By-Laws Committee Chair. Member Executive, Compensation, Elections, Governance, and Nominations Committee.
- Trustee** **IETF Trust**  
 2010 - 2012 The IETF Trust advances educational and public interest by acquiring, holding, maintaining and licensing intellectual property and other property used in connection with the Internet standards process and its administration.
- Chairman Emeritus, Director** **SIP Forum**  
 2003 - 2011 The SIP Forum is dedicated to promoting the use of the SIP protocol, by working with industry, academia, and the IETF. Board member since 2003. Elected Chair 2007. Chairman Emeritus since 2010.
- Board of Advisors** **Sigma Systems**, Toronto, Canada  
 2008 - 2015 Sigma Systems is a leader in Operations Support Systems (OSS) for the communications industry. Successful capital restructuring executed in 2015.
- Member** **IETF Administrative Oversight Committee (IAOC)**  
 2010 – 2012 The IAOC carries out the responsibilities of the IETF Administrative Support Activity.
- Lead Mentor** **MIT Venture Mentor Service**, Cambridge, MA  
 2008 - 2011 Startups advised: using a mobile phone to collect user behavior; high-quality image processing for mobile phones; location-based services; 3D user interface devices; HVAC optimization

- Board of** **Mobera Systems**, Milpitas, CA  
**Advisors** Mobera is a core product development corporation with facilities in Chandigarh, India focused on the telecom, life sciences, and logistics industries, as well as assisting venture capital firms with identifying promising technologies and teams.  
 2000 - 2010
- Advisor** **PC-NG**, Cambridge, MA  
 2008 - 2009 PC-NG did call recording in the consumer communications application space.
- Board of** **IMS Forum**  
**Directors** The IMS Forum is the premier organization dedicated to advancing the state of the art in packet telephony technology and implementation. This is the successor organization to the International Packet Communications Consortium (IPCC) and the International Softswitch Consortium (ISC).  
**and VP Asia**  
 2002 - 2007
- Board of** **Information Appliances International**, Falls Church, VA  
**Directors** IIA manufactured equipment and systems for the PDA's and wireless devices.  
 2000 - 2004
- Advisory Board** **Voice Over IP Forum of Japan**, Tokyo, Japan  
 2004 - 2007 The VFJ is dedicated to the promotion of VoIP in the Japanese market.
- Board of** **Vivexchange.com**, Milpitas, CA  
**Advisors** A B2B e-commerce company; sold to Commerce One. Recouped 100% of equity, a major feat at the end of 2000.  
 1999 - 2000

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## Academics

- Research Professor** **Georgetown University**, Washington, DC (Department of Computer Science)  
**Computer Science** Research: networking theory, protocol design, secure communications, and policy aspects of communications. Developed MS in Analytics (Big Data) program for the Provost, adopted by Graduate School. Classes: FinTech and Blockchain (2012-present)  
**Adjunct Assistant Professor CS** (FINC 258), Blockchain Technologies Management (XBUS 990), Information Warfare (COSC 411) and Operating Systems (COSC 374), Cybersecurity Seminar (COSC 437), Advanced Networking (COSC 525), and Network Security (COSC 535). PI or Co-PI ~ \$13M of grants. **2011-present**
- Adjunct Professor** **George Mason University**, Fairfax, VA (Computer Science Department)  
**Computer Science** Data Base and Object Oriented Concepts (CS 450) **2000**
- Lecturer** **The George Washington University**, Washington, DC (Fac. CCEW)  
**Information Systems** Software Quality Assurance (CWIS 704), Relational Data Base Theory (CWIS 702), Software Engineering (IS 703), Cooperative Application Development, Programming (C) **1993 - 2000**
- Ph.D.** **Illinois Institute of Technology**, Chicago, IL  
**Computer Science** Graduated with Highest Honors (4.0 GPA). Recipient *IIT Exemplary Research Award*. Research topics: high-performance, real-time network protocols, high-performance Internet infrastructure, distributed systems, advanced search. Thesis: *Ubiquitous Remote Control of Household Devices*. Thesis Advisor: Ophir Frieder
- Doctorate in** **George Mason University**, Fairfax, VA  
**Education** (no degree) Recipient Fellowship from the Commonwealth of Virginia. 4.0/4.0 GPA. Research topics: Web-based distance learning, success factors in Web-based collaborative projects, next generation HTTP, XML, and e-commerce.
- M.B.A.** **Katholieke Universiteit Leuven**, Belgium  
**International** Graduated with Honors. Dual Minor: Economics and Marketing.



**Business Management** Thesis: *Multi-National Transfer Pricing Policy*  
Thesis Advisor: Sylvain R. F. Plasschaert

**Certificaat Nederlands als vreemde taal** **Katholieke Universiteit Leuven**, Belgium  
**Instituut voor Levende Talen**, Certificate in elementary knowledge level 2 in Dutch language

**Certificat elementaire Français** **Ecole de Langues pour Entreprises**, Belgium  
Certificate in elementary knowledge in French language

**S.B. Electrical Engineering** **Massachusetts Institute of Technology**, Cambridge, MA  
Minor: Music. Concentration: Semiconductor Physics. Recipient of a graduate research assistantship as an undergraduate (worked in the Sub-Micron Structures Laboratory).  
Thesis: *MOS Simulation Techniques*  
Thesis Advisor: Christopher Terman Academic Advisor: L. Rafael Reif

(no degree) **The Juilliard School PCD**, New York, NY: Music Performance  
Oboe & English Horn Lois Wann (Juilliard), Steve Lickman (DSO), Fred Cohen (NEC)  
Conducting James Rives Jones (MSO, SMU), Christian Tiemeyer (DSO), F. John Adams (Harvard University/Wellesley College)

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## Issued and Published Patents

1. Federoff, H., Frieder, O., and Burger, E., System and Method of Applying State of Being to Health Care Delivery, **US 10,162,940**, 2018
2. Burger, E., Pelson, J.A., Heard, D., and Traver, G., System and Method for Correlating User Call Response to Electronic Messages, **US 9,609,145**, 2017
3. Burger, E., Pelson, J.A., Heard, D., and Traver, G., System and Method for Correlating User Call Response to Electronic Messages, **US 9,369,591**, 2016
4. Federoff, H., Frieder, O., and Burger, E., System and Method of Applying State of Being to Health Care Delivery, **US 9,305,140**, 2016
5. Burger, E., Pelson, J.A., Heard, D., and Traver, G., System and Method for Correlating User Call Response to Electronic Messages, **US 9,105,057**, 2015
6. Filreis, J. and Burger, E.: Facsimile transmission authentication, **US 8,533,477**, 2013
7. Burger, E. and Frieder, O.: System and Method for Providing User Input Information to Multiple Independent, Concurrent Applications, **US 8,286,190**, 2012
8. Filreis, J. and Burger, E.: System and Method for Authentication of Transformed Documents, **US 8,219,817**, 2012
9. Burger, E. and Frieder, O.: Remote Control of Device by Telephone or Other Communication Devices, **US 7,885,272**, 2011
10. Burger, E. and Frieder, O.: System and Method for Providing User Input Information to Multiple Independent, Concurrent Applications, **US 7,406,696**, 2008
11. Burger, E., Hughes, J., and Penny, D.: Low Latency Packet Processor, **US 7,330,900**, 2008
12. Burger, E. and Van Dyke, J.: Universal Voice Browser Framework, **US 7,149,287**, 2006
13. Burger, E.: System and Method for Performing Signaling-Plan-Specific Call Progress Analysis, **US 7,139,380**, 2006
14. Burger, E. and Womer, M.: Cache for Large-Object Real-Time Latency Elimination, **US 6,988,169**, 2006

15. Burger, E., O'Connor, W., Spitzer, A., and Wessler, B.: Network-Based Disc Redundancy Storage System and Method, **US 6,779,082**, 2004
  16. Burger, E., Kimball, J., O'Connor, W., Taylor, N., Parikh, S., Pax, C.: System and Method for Locating Subscribers Using A Best Guess Location Algorithm With Enhanced Location Determination, **US 6,678,366**, 2004
  17. Burger, E. and Spitzer, A.: Distributed Telephony Resource Management Method, **US 6,477,172**, 2002
  18. Parikh, S., and Burger, E.: System and Method for Call Management with Voice Channel Conservation, **US 6,408,177**, 2002
  19. Nestoriak III, J. and Burger, E.: Enhanced Telephone Service System with Secure System and Method for E-Mail Address Registration, **US 6,353,852**, 2002
  20. Burger, E. and Kimball, J.: Voice Call Processing Methods, **US 6,353,660**, 2002
  21. Shankarappa, V., Burger, E., and Nestoriak, J.: Service Platform with Secure System and Method For Subscriber Profile Customization, **US 6,266,690**, 2001
  22. Abramov, A. and Burger, E., A Hybrid Smart Watch with Multiple Sources of Time, Multiple Power Sources, and Multiple Time Indicator Mechanisms, **US 20180039232**, 2018
- Other patents pending (not yet published by the USPTO). Other patents issued worldwide, related to the above US Patents.

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## Technical Publications and Monographs

1. Takanashi, Y., Matsuo, S., Burger, E., Sullivan, C., Miller, J., and Sato, H., *Call for Multi-Stakeholder Communication to Establish a Governance Mechanism for the Emerging Blockchain-Based Financial Ecosystem, Part 1 of 2*, **Stanford Journal of Blockchain Law & Policy**, (3) 1, 2020, <https://stanford-jblp.pubpub.org/pub/multistakeholder-comm-governance> [Journal]
2. Sullivan, C. and Burger, E., Chapter *Blockchain, Digital Identity, E-government* in **Business Transformation through Blockchain: Volume II** (Treiblmaier, H. and Beck, R. (eds.)), Springer Nature, ISBN 978-3319990576, December 2018.
3. Lange, R. and Burger, E., *Long-Term Market Implications of Data Breaches, Not*, **Journal of Information Privacy and Security**, (13) 4, 2017, pp. 186-206.
4. Chiang, M. and Burger, E., *An Affordable Solution for Authenticated Communications for Enterprise and Personal Use*, **8<sup>th</sup> IEEE Annual Computing and Communication Workshop and Conference**, Las Vegas, NV, USA, 9 January 2018.
5. Sullivan, C. and Burger, E., *E-residency and blockchain*, **Computer Law & Security Review: The International Journal of Technology Law and Practice**, (33) 4, 2017, pp. 470-481 [Journal]
6. Sullivan, C. and Burger, E., *"In the public interest": The privacy implications of international business-to-business sharing of cyber-threat intelligence*, **Computer Law & Security Review: The International Journal of Technology Law and Practice**, (33) 1, 2017, pp. 14-29 [Journal]
7. Burger, E., Frieder, O., *Efficient Residential Consumer Device Interaction with Network Services*, **IEEE Transactions on Consumer Electronics**, (53) 1, February 2007, pp. 100-107. [Journal]
8. Burger, E., Frieder, O., *A Novel System for Remote Control of Household Devices Using Digital IP Phones*, **IEEE Transactions on Consumer Electronics**, (52) 2, May 2006, pp. 575-582. [Journal]
9. Chowdhury, A., Frieder, O., Burger, E., Grossman, D., and Makki, K., *Dynamic Routing System (DRS): Fault tolerance in network routing*, **Computer Networks and ISDN Systems** (31) 1-2, 1999, pp. 87-97. [Journal]
10. Burger, E., *Ubiquitous Reach and Remote Control of Devices: Introducing KPML - A Protocol for Efficient Interaction with Devices*, VDM Verlag, ISBN 978-3836486460, October 2008. [Monograph]

11. Burger, E.: *Program Construction in the UNIX Environment*, The George Washington University, 1994. [Textbook]
12. Burger, E.: *UNIX System Calls and Inter-Process Communication*, The George Washington University, 1994. [Textbook]
13. Vaidya, T., Burger, E., Sherr, M., and Shields, C., *Where art thou, Eve? Experiences Laying Traps for Internet Eavesdroppers*, **10<sup>th</sup> USENIX Workshop on Cyber Security Experimentation and Test**, Vancouver, BC, Canada, 14 August 2017 (to appear).
14. Burger, E. and Sullivan, C., *Minerva Project on the Estonian E-Residency Initiative: Impact of Estonia's Start-Up Culture on Decisions Related to Prudence & Good Governance*, **Human Aspects of the Operational Environment**, AHFE Affiliated Conference on Cross-Cultural Decision-Making, Orlando, Florida, 29 July 2016.
15. Asgarli, E. and Burger, E., *Semantic Ontologies for Cyber Threat Sharing Standards*, **IEEE International Symposium on Technologies for Homeland Security 2016**, DOI 10.1109/THS.2016.7568896, 10 May 2016.
16. Burger, E.W., Goodman, M.D., Kampanakis, P., Zhu, K.A., *Taxonomy Model for Cyber Threat Intelligence Information Exchange Technologies*, in **Proceedings of the 2014 ACM Workshop on Information Sharing & Collaborative Security**, ISBN 978-1-4503-3151-7, September 2014.
17. Burger, E.W., Federoff, H.J., Fiandaca, M.S., Frieder, O., Goharian, N., and Yates, A., *Social Media Communications Networks and Pharmacovigilance: SequelAE-2.0*, in **Proceedings of the 2013 IEEE 15th International Conference on e-Health Networking, Applications & Services**, ISBN 978-1-4673-5800-2, October 2013.
18. Gurbani, V.K., Burger, E., Anjali, T., and Davids, C., *SIP CLF: A Common Log Format (CLF) for the Session Initiation Protocol (SIP)*, in **Proceedings of the Usenix Workshop on Managing Systems via Log Analysis and Machine Learning Techniques (SLAML)**, 3 October 2010.
19. Burger, E., Rajasekar, S., O'Doherty, P., Lundqvist, A., and Grönberg, T., *A Telecommunications Web Services Platform for Third Party Network Access and SOA-Based Service Delivery*, **2007 Workshop on Middleware for Next Generation Converged Networks and Applications (MNCNA '07)**, November 2007.
20. Burger, E., *A New Interprovider Interconnect Technology for Multimedia Networks*, **IEEE Communications Magazine**, (43) 6, June 2005, pp. 147-151.
21. Burger, E., Frieder, O., *Efficient Residential Consumer Device Interaction With Network Services*, **2007 International Conference on Consumer Electronics (ICCE 2007)**, January 2007, pp. 50-51.
22. Burger, E., Frieder, O., *A Novel System for Remote Control of Household Devices Using Digital IP Phones*, **2006 International Conference on Consumer Electronics (ICCE 2006)**, January 2006, pp. 183-184.
23. Burger, E., Frieder, O., *Network Traffic Reduction for Transport of User Signaling Information*, **IEEE Consumer Communications and Networking Conference (CCNC 2006)**, January 2006, pp. 1057-1062.
24. Chowdhury, A., Burger, E., Grossman, D., and Frieder, O.: *DRS: A Fault Tolerant Network Routing System for Mission Critical Distributed Applications*, **Proceedings 6th International Conference on Computer Communications and Networks**, August 1997, pp. 106-113. [Nominated for Best Paper]
25. Burger, E.: *Multinational Issues in R&D Management, Technology Management: the New International Language*, October 1991, p. 184.
26. Burger, E.: *The Use of Unix Software Tools for Automatic Program Generation*, **Proc. 1st Sun Expo**, March 1990.

27. Burger, E. and Dedene, G.: *Economics of Point Acceleration*, **Proceedings 1st European Design Automation Conference**, February 1990, pp. 424-428.
28. Klass, G. and Burger, E., *Vendor Truth Serum* (Poster), **High Confidence Software and Systems Conference**, Annapolis, MD, 8-10 May 2017.
29. Vaidya, T., Burger, E., Sherr, M., and Shields, C., *Studying the Pervasiveness of Internet Interception with Honey{POP,SMTP,Telnet}* (Poster), **USENIX Security 2015**, 12 August 2015.

My Erdős number is 3 (Ophir Frieder⇒Frank Harary⇒Paul Erdős)

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## Representative Technical Reports

At <https://s2erc.georgetown.edu/projects/georgetown/results:>

1. Stohrer, T., Stewart, A., and Burger, E., *Issues, Analysis, and Tools For Rural Call Completion Issues*, 27 June 2017.
2. Lange, R. and Burger, E., *Market Implications of Data Breaches*, 16 December 2016.
3. Klass, G. and Burger, E., *Vendor Truth Serum*, 22 September 2016.
4. Burger, E. and Kieserman, J., *Next Generation Caller Identification*, 23 June 2016.
5. Burger, E., *Issues and Analysis of a Provider Transition for the NPAC*, 22 July 2014.
6. Burger, E., *A Taxonomy for CyberISE Technology Evaluation*, 17 February 2014.

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## Standards Publications

1. Burger, E. and Nagda, B., *A Session Initiation Protocol (SIP) Response Code for Rejected Calls*, RFC 8688, IETF, December 2019.
2. Gurbani, V. (Ed.), Burger, E. (Ed.), Anjali, T., Abdelnur, H., and Festor, O., *The Common Log Format (CLF) for the Session Initiation Protocol (SIP): Framework and Information Model*, RFC 6872, IETF, February 2013.
3. Holmberg, C., Blau, S., and Burger, E., *Connection Establishment for Media Anchoring (CEMA) for the Message Session Relay Protocol (MSRP)*, RFC 6714, IETF, August 2012.
4. Burger, E., *IANA Registry for MEDIACTRL Interactive Voice Response Control Package*, RFC 6623, IETF, May 2012.
5. Housley, R., Crocker, D., and Burger, E., *Reducing the Standards Track to Two Maturity Levels*, RFC 6410 (BCP 9), IETF, October 2011.
6. Holmberg, C., Burger, E., and Kaplan, H., *Session Initiation Protocol (SIP) INFO Method and Package Framework*, RFC 6086, IETF, January 2011.
7. Seedorf, J. and Burger, E., *Application-Layer Traffic Optimization (ALTO) Problem Statement*, RFC 5693, IETF, October 2009.
8. Burger, E. and Parsons, G., *LEMONADE Architecture - Supporting Open Mobile Alliance (OMA) Mobile Email (MEM) Using Internet Mail*, RFC 5442, IETF, March 2009.
9. Burger, E. and Khartabil, H., *Instant Message Disposition Notification (IMDN)*, RFC 5438, IETF, February 2009.
10. Burger, E., *WITHIN Search Extension to the IMAP Protocol*, RFC 5032, IETF, September 2007.
11. Burger, E. (Ed.), Van Dyke, J., and Spitzer, A., *Media Server Control Markup Language (MSCML) and Protocol*, RFC 5022, IETF, September 2007.
12. Burger, E. and Dolly, M., *A Session Initiation Protocol (SIP) Event Package for Key Press Stimulus (KPML)*, RFC 4730, IETF, November 2006.
13. Burger, E. (Ed.), Van Dyke, J., and Spitzer, A., *Media Server Control Markup Language (MSCML) and Protocol*, RFC 4722, IETF, October 2006.
14. Burger, E., *A Mechanism for Content Indirection in SIP Messages*, RFC 4483, IETF, April 2006.

15. Burger, E. (Ed.), Van Dyke, J., and Spitzer, A., *Basic Network Media Services with SIP*, RFC 4240, IETF, December 2005.
16. Camarillo, G., Burger, E., Schulzrinne, H., and van Wijk, A., *Transcoding Services Invocation in the Session Initiation Protocol (SIP) Using Third Party Call Control (3pcc)*, RFC 4117, IETF, June 2005.
17. Barbir, A., Burger, E., Chen, R., McHenry, S., Orman, H., and Penno, R., *Open Pluggable Edge Services (OPES) Use Cases and Deployment Scenarios*, RFC 3752, IETF, April 2004.
18. Burger, E., *Critical Content Multi-purpose Internet Mail Extensions (MIME) Parameter*, RFC 3459, IETF, January 2003.
19. Burger, E., Candell, E., Eliot, C., and Klyne, G., *Message Context for Internet Mail*, RFC 3458, IETF, January 2003.
20. *Media Server Control Using the IP Multimedia (IM) Core Network (CN) Subsystem*, 3GPP TR 24.880, June 2008.
21. RJ Auburn et al., *Call Control Markup Language (CCXML) Version 1.0*, W3C, June 2005.
22. D. Burnett et al., *Voice Extensible Markup Language (VoiceXML) Version 2.0*, W3C, March 2004.

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## Representative Policy Papers

1. Burger, E., comments at the FCC, in re: Rural Call Completion, WC Docket No. 13-39, at <https://www.fcc.gov/ecfs/filing/104180548507226>
2. Burger, E., reply comments to the FCC, in re: *Petitions for Reconsideration of the Protecting the Privacy of Customers of Broadband and Other Telecommunications Services Report and Order*, WC Docket No. 16-106, at <https://ecfsapi.fcc.gov/file/103161885302540/S2ERC%20BIAS%20Reconsideration%20Reply%20Comments.pdf>
3. Sullivan, C. and Burger, E. *Estonian E-Residency and Blockchain*, **TPRC Research Conference on Communications, Information and Internet Policy 2016**, Washington DC, 29 September 2016.
4. Burger, E. and Pavur, J., reply comments to the FCC, in re: *Protecting the Privacy of Customers of Broadband and Other Telecommunications Services*, WC Docket No. 16-106, at <https://ecfsapi.fcc.gov/file/10705641704886/FCC-Encryption-Response.pdf>
5. Burger, E., Pavur, J., and Van Laan, M. comments to the FCC, in re: *Protecting the Privacy of Customers of Broadband and Other Telecommunications Services*, WC Docket No. 16-106, at <http://apps.fcc.gov/ecfs/comment/view?id=60001974396>
6. Author, *Risking It All: Unlocking the Backdoor to the Nation's Cybersecurity*, IEEE-USA, June 2014, <http://www.ieeeusa.org/policy/whitepapers/IEEEUSAWP-RiskingitAll2014.pdf> and <http://ssrn.com/abstract=2468604>
7. Author, *SOPA/PIPA Defeated... For Now*, IEEE-USA Today's Engineer, February 2011, <http://www.todaysengineer.org/2012/Feb/SOPA.asp>
8. Lead author, *Encryption Policy*, IEEE-USA, 2008, updated 2011, <http://www.ieeeusa.org/policy/positions/encryptionpolicy1111.pdf>
9. CCP Chair, FCC Spectrum Policy, IEEE-USA Letter to Chairman Genachowski, IEEE-USA 2011, <http://www.ieeeusa.org/policy/positions/SpectrumPoilcy1112.pdf>
10. Contributor, *Comments on ANPRM HHS 2011-18792: Human Subjects Research*, US-ACM and IEEE-USA 2011, <http://www.ieeeusa.org/volunteers/committees/ccp/documents/JointCommentswithUSACMonHumanSubjects.pdf>

11. Contributor and CCP Chair, *Network Traffic Management And The Evolving Internet*, IEEE-USA 2010, <http://www.ieeeusa.org/volunteers/committees/ccp/docs/NTM-whitepaper.pdf>
12. Lead author, *Voice over Internet Protocol*, IEEE-USA 2010, <http://www.ieeeusa.org/policy/positions/VOIP0210.pdf>
13. Lead author, *Next Generation Internet: IPv4 Address Exhaustion, Mitigation Strategies and Implications for the U.S.*, IEEE-USA 2009, <http://www.ieeeusa.org/volunteers/committees/ccp/documents/IPv6FinalwhitepaperFinalAugust2009.pdf>
14. Contributor, *Why Broadband Matters*, IEEE-USA statement to US Senate Commerce, Science and Transportation Committee, 2008, <http://www.ieeeusa.org/policy/policy/2008/091608.pdf>

IEEE-USA Washington Internships for Students of Engineering (WISE) Advisees:

- McDonald, Kevin, *Network Neutrality: Public Policy Approaches for Mandating Reasonable Network Management Non-Discrimination to Preserve the Open Internet*, in WISE Journal of Engineering and Public Policy, v. 16, September 2012, [http://www.wise-intern.org/journal/2012/documents/McDonald\\_WISE\\_2012\\_Final\\_Presentation.pdf](http://www.wise-intern.org/journal/2012/documents/McDonald_WISE_2012_Final_Presentation.pdf)
- Stinson, Preston, *An Analysis of Incentives to Encourage Adoption of the NIST Cybersecurity Framework*, in WISE Journal of Engineering and Public Policy, v. 16, September 2012, <http://www.wise-intern.org/journal/2014/documents/PrestonStinsonFinalpaper.pdf>

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## Professional Affiliations, Honors, and Service

Member (2016), Senior Member (2019), **National Academy of Inventors** (NAI)

Member (1984), Senior Member (2000), **Institute of Electrical and Electronics Engineers** (IEEE).

- Member (2016-), Government Fellows Committee
- Recipient, 2012 IEEE-USA **Professional Achievement for Individuals Award** “for sustained and collaborative support of communications technology policy.”
- Chair (2010-2011), Vice Chair (2009), IEEE-USA Committee on Communications Policy
- Member (2010-2012), IEEE-USA Government Relations Council
- Member, IEEE-USA Committee on Communications and Information Policy (2005-2008), renamed IEEE-USA Committee on Communications Policy (2009-present)
- Member, IEEE-USA Intellectual Property Committee (2011-present)
- Vice Chair, New Hampshire Section of IEEE (2009)
- Executive Committee Member, New Hampshire Section of IEEE (2008-2009)
- Technical Program Committees
  - Third Annual IEEE Cyber Resilience Economics Workshop (CRE), 2017
  - First IEEE International Conference on Smart Grid Communications (SmartGridComm) 2010
  - Principles, Systems and Applications of IP Telecommunications (IPTComm), Chair, Independent Track 2011, TPC 2013, 2014, 2015, 2018
  - Computing and Communication Workshop and Conference (CCWC), TPC 2017, 2018
- Steering Committee Member
  - IEEE International Conference on Next Generation Mobile Applications, Services and Technologies (NGMAST) 2007-2009
  - Boston Section IEEE/CS (2001-2004)
- Executive Committee Member and Chapter Liaison, Northern Virginia Section of IEEE (2000).
- Participant in the SET/IEEE Congressional Visits Day, 2000, 2005, 2007, 2008, 2015.
- Invited speaker for Northern Virginia Communications Society and Joint Greater Boston Area IEEE Computer Society / Greater Boston Chapter ACM.
- IEEE Mentor

Member (1976), Senior Member (2006), **Association for Computing Machinery** (ACM).

- Member, US-ACM Intellectual Property Committee (2012-*present*)
- Member, US-ACM Security and Privacy Committee (2012-*present*)
- Technical Program Committees
  - ACM Middleware for Next-generation Converged Networks and Applications 2007
  - ACM Conference on Information and Knowledge Management (CIKM) 2008
  - ACM Workshop on Information Sharing and Collaboration (WISCS) 2014, 2015, 2016
  - ACM Workshop on Applying the Scientific Method to Active Cyber Defense Research (SafeConfig) 2017
- ACM Mentor
- ACM Professional Development Seminar Lecturer
  - Distributed, Scalable Application Architectures and Future Technologies (1998)

Member and Patron (2006 - present), **American Association for the Advancement of Science** (AAAS)

Member and Patron (2000 - present), **The Internet Society** (ISOC).

Member (2014 – present), **ISACA** (former Information Systems Audit and Control Association).

Life Member (2012), **Armed Forces Communications and Electronics Association** (AFCEA).

- Invited representative to AFCEA Technology Committee
- Member (2014 – 2017), **National Association of Corporate Directors** (NACD)

Representative (2015 – 2017), **OASIS**

- Cyber Threat Intelligence Sharing Work Group
- Program Chair, Borderless Cyber Conference, 2017

Advisory Committee Representative (2000-2006), **The World-Wide Web Consortium** (W3C).

Academic Member (2003-2006), **Society for Industrial and Applied Mathematics** (SIAM).

Member (1999), **Association for the Advancement of Computing in Education** (AACE).

Charter Member (2005) **Teksia**

Technical Committees:

- **Chair**, IETF MEDIACTRL Work Group (Media Server Control) – concluded
- **Director**, IETF Applications Area Review Committee – retired
- **Chair**, IETF SPEECHSC Work Group (Speech Services Control) – concluded
- **Chair**, IETF LEMONADE Work Group (Mobile and Unified Messaging) – concluded
- W3C Voice Browser Work Group (VoiceXML, CCXML), Multimodal Interaction Work Group
- IEEE POSIX Standards Group (P1003)
- ITU-T SG-D

Reviewer for:

- *International Journal of Technology Management*
- *IEEE Software*
- *IEEE Communications Magazine*

Lead Mentor, MIT Venture Mentoring Service <http://web.mit.edu/vms/>

Advisor, MIT Institute Career Assistance Network <http://alum.mit.edu/cs/ican/>

Finalist, **CTO of the Year** (2006), Massachusetts Technology Leadership Council.

Ingenieur Degree conferred by the Belgian Ministry of Education (Equivalent to P.E. License in U.S.).

GAP International Executive Challenge Course (2000, 2012), Executive Mastery (2016-2017).

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## Federal Training

- High Threat Security Overseas
- No FEAR Act
- Whistleblower Act
- Cyber Security Awareness Training
- Ethics Training

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## Invited Lectures, Colloquia, and Symposia

- Massachusetts Institute of Technology Sloan Business School Lecture
- Massachusetts Institute of Technology CIO Symposium
- Georgia Institute of Technology Lecture
- City University of Hong Kong Computer Science Colloquium
- Northwestern University Computer Science Colloquium
- GA Tech FutureMedia Panel
- University of New Hampshire Lecture
- Southern New Hampshire University Lecture
- George Mason University Lecture
- Washington CTO Roundtable
- Invited Keynotes at China SIP Summit, China VoIP Forum, CommunicAsia, International SIP
- Regular Presentations to Voice on the Net, China Softswitch Forum, SIP Summit, Connectivity Forum, IEC IN/IP World Forum and SuperComm; Multiple IEC TecForum Chair
- Invited Keynotes at ACM MNCNA (Middleware), IEEE NGMAST
- Invited Presentations to IEEE Globecom, IEEE CQR
- Invited Member, ITU Workshop on the Future of Voice
- Invited Member, National Science Foundation Cloud Computing Security Workshop
- Invited Member, National Science Foundation Medical Cyber Physical Systems Workshop

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## Community Service

Sunday School Teacher, Beth Chaverim Reform Congregation (2010 – 2011)

Executive Board, Congregation Betenu (2006 – 2008): Took organization from chronic deficits (the board was considering mortgaging the building to raise operating funds) to running a surplus.

Technology Advisor, Brookfield School (1997 – 2000)

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## Visas and Work Status

Native-born United States citizen with full right-to-work; clearable but no active clearance

Belgian work permit of unlimited duration (Equivalent to Green Card in U.S.)

Have held business visas for Russian Federation, South Korea, People's Republic of China

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## Personal Interests

FAA Private Pilot Single Engine Land Certificate with Instrument Rating (Part 91)

FAA Commercial Drone Certificate (Part 107)

FCC Amateur (KN4RYL), GMRS (WPZB288), Restricted Radiotelephone Operator (RR00072904)

Novice Qi Gong (Wu Ming and Spring Forrest) and Tai Ji (Yang)

EA, FC, MM Sharon #327 VA.