



## SARAH CORTES, MS, CISA, PMP

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### SUMMARY

Senior Technology Manager, Harvard-educated, PhD candidate in Computer Science with extensive experience in all aspects of information security and delivering systems and services through the full software development life cycle to Fortune 500 firms in the financial services industry, global banking, and custody as well as biotechnology, media and higher education. Delivery-oriented with a focus on results.

Accomplishments and capabilities include:

- As head of DR for Putnam Investments, a subsidiary of Marsh & McLennan in the World Trade Center, successfully managed trading, pricing and other critical system failovers on September 11, 2001. Ran the technical command center coordinating senior management communications and technical recovery staff
- As head of Security, directly managed up to 100 staff and budget of \$20 million, delivered quality products and stable systems while coordinating over 50 audits per year by outside audit firms, regulatory agencies and clients, 14 major DR tests per year, and thousands of security activities. Worked closely with CIO and CFO to advise on control environment. Worked with senior staff at audit firms, regulatory agencies and clients' auditors to ensure smooth, effective audits.
- As manager of Applications Development for Trading and Analytics systems, Implemented dozens of major, complex applications, including fixed income and equity data warehouse and reporting system; global performance analytics package with custom reports; market data systems, Unix-based compliance system; version control, turnover systems and procedures, security, and backups for global, domestic and cash fixed income trading systems; system performance measurement, tracking and reporting for 12 equity and fixed income systems; Notes turnover application, incorporating signoff to multiple departments.
- Published and speak extensively on security, compliance, and the darknet
- Testified before the Massachusetts Legislature on Data Privacy Laws. See publications and Speaking sections for testimony.
- As a member, National Institute of Standards (NIST) SmartGrid Advisory Working

Group, develop security and privacy policies and recommendations for implementing National SmartGrid technology.

## OTHER EXPERIENCE

### INMAN TECHNOLOGY IT

2004-Present

Launched and run own company providing information security, data center operations, complex applications development management, financial and other consulting to Fortune 500 firms. Provide hands-on program/project management services with a preference for broadening industry experience and focus on improving business leverage of IT investment through fresh, new technologies and skill sets. Clients include:

**FIDELITY BROKERAGE COMPANY**

**HARVARD LAW SCHOOL**

**HARVARD UNIVERSITY INFORMATION SYSTEMS**

**FIDELITY MANAGEMENT & RESEARCH**

**BIOGEN IDEC**

**DRAPER LABORATORY**

### PUTNAM INVESTMENTS, BOSTON, MA

1993-2004

Sr Vice President, **Enterprise Computing and Communications**

Security Operations, Disaster Recovery/High Availability, Audits & Client Transmissions (2000-2004)

Vice President, Putnam-wide Year 2000 project (1998-2000)

Vice President, Investment Trading and Analytics Systems (1993-1997)

### THE BOSTON COMPANY, Boston, MA

1983-1993

A subsidiary of Mellon Bank

Sr Vice President, Data Center Operations (1992-1993)

Vice President, Disaster Recovery Planning (1992-1993)

AVP, Manager of Mutual Fund System Development and Support (1989-1992)

AVP, Manager, Portfolio Accounting Operations and Services (1989-1990)

Manager of Mutual Fund Performance and Analysis Services (1987-1991)

Management Training Program, Executive Assistant to CEO of The Boston Company, and Vice Chairman of Shearson Lehman (1983-1987)

### DEPARTMENT OF ENERGY, US FEDERAL GOVERNMENT

Washington, DC

1981-1982

Programmer Analyst- wrote programs to analyze price fluctuations to detect price gouging. GS-7 Office of Hearings and Appeals Analyst and law clerk.

## EDUCATION

Ph.D. candidate, Northeastern University 2017

College of Computing and Information Science (CCIS), Information Assurance Boston, MA

Graduate Advisor and PhD Committee:

- [László Barabási](#) (Northeastern University, College of Computing & Information Science)
- [Engin Kirda](#) (Northeastern University, College of Computing & Information Science)
- [Thomas Koenig](#) (Northeastern University)
- [Paul Syverson](#) (Center, High Assurance Computer Systems (CHACS), US Naval Research Lab)

Courses include:

Computer Networking	Network Security	Software Vulnerabilities
Cyberlaw	Operating Systems	Social Computing
Physics 5116: Dynamical Processes on Complex Networks	Physics 7331: Network Science Data	

Boston University Medical School, Dept of Biomedical Forensic Sciences, coursework 2015-16

Dr. Robin Cotton, Department Chair, Advisor

Forensic Sciences: Crime Scene Analysis

Forensic Sciences: Criminal Ethics and Law- Evidence

Forensic Sciences: Criminal Law II-Expert Witness

M.S., Computer Science - Information Security, Boston University Boston, MA

Courses include:

Digital Forensics	Database Security	Network Security
Data and Telecommunications	Analysis of Algorithms	Information Security
Database Management	Data Mining	Biometrics
Java Programming	IT Security Policies	Data Structures
Software Security		

A.B., Harvard University Cambridge, MA

Romance Languages and Literatures, with focus in Applied Mathematics.

Some French, Italian, Latin, Russian, Arabic, Swedish.

## CERTIFICATIONS

Boston University Certificate in Private Investigation 2010

- Investigative research, Investigative Interviewing, Investigative Surveillance
- Instructor: Former Chief of Police, Town of Winthrop & Town of Spencer, Massachusetts

CISA- Certified Information Security Auditor ISACA

Mastery of:

- Information systems audit, control and security auditing practices and techniques
- Gathering and preserving evidence in forensic investigations
- Control objectives and reporting techniques
- Applicable laws and regulations affecting investigation scope, evidence collection and preservation

- Evidence collection techniques (e.g., observation, inquiry, inspection, interview, data analysis, forensic investigation techniques, computer-assisted audit techniques [CAATs]) used to gather, protect and preserve audit evidence

PMP- Project Management Professional

PMI

## PUBLICATIONS

Sarah Cortes, *Cyberterrorism*. In *The SAGE Encyclopedia of War: Social Science Perspectives*, Ed. Paul Joseph (2017) DOI: <http://dx.doi.org/10.4135/9781483359878.n174>.

Sarah Cortes, *Legalizing Domestic Surveillance: The Role of Mutual Legal Assistance Treaties in Deanonymizing TorBrowser Technology*, 22 Rich. J.L. & Tech. 2 (2015), <http://jolt.richmond.edu/v22i1/article2.pdf>.

[20,000 in League Under the Sea, Anonymous Communication, Trust, MLATs, and Undersea Cables](#), (with Paul Syverson, Aaron Jaggard, Aaron Johnson (US Naval Research Laboratory) and Joan Feigenbaum (Yale University)), *Proceedings on Privacy Enhancing Technologies* (PETS-9th International Symposium). Volume 1, Issue 1, Pages 4–24, ISSN (Online) 2299-0984, DOI: 10.1515/popets-2015-0002, April 2015. <http://www.degruyter.com/view/j/popets.2015.1.issue-1/popets-2015-0002/popets-2015-0002.xml?format=INT>.

With Andrew Lewman (Farsight Security, Norse Threat Intelligence, The Tor Project), Aditya Rao and Christo Wilson (Northeastern University), “Jurisdictional Arbitrage in Anonymous Network Path Selection” (submitted).

Sarah Cortes, Rebecca Herold, Gal Shpantzer, Chris Veltsos, “Chapter 3: Legal Frameworks for Smart Grid Privacy,” (with the Smart Grid Interoperability Panel Cyber Security Working Group (CSWG)) *NIST: NISTIR 7628 2014 Guidelines for Smart Grid Cyber Security: Vol. 2. Privacy and the Smart Grid*, 2014, pp. 8-21 (pp. 304-317).

Sarah Cortes, Rebecca Herold, Gal Shpantzer, Chris Veltsos, “Chapter 3: Legal Frameworks for Smart Grid Privacy,” (with the Smart Grid Interoperability Panel Cyber Security Working Group (CSWG)) *NIST: NISTIR 7628 2010 Guidelines for Smart Grid Cyber Security: Vol. 2. Privacy and the Smart Grid*, 2010, pp. 7-15 (pp. 323-331).

## SOFTWARE APPLICATIONS

Some sample applications I have implemented for Fortune 500 clients or major educational institutions

- [DNA Mixtures](#)- Boston University Biomedical Forensic Sciences Department, BU Medical School- supported by Award No. 2008-DN-BX-K158 awarded by the National Institute of Justice, Office of Justice Programs, U. S. Department of Justice.
- Biopharmaceutical Clinical Trial System - major global Biopharmaceutical Company located in Cambridge, MA
- Global Equity, Fixed Income, Cash and Derivative Instruments MultiCurrency Accounting Systems - major Financial Services Company located in Boston, MA, New Hampshire and and Rhode Island
- Faculty Information System, Harvard Law School
- Held-Away Assets, for a major asset management company in the Boston area, Major complex application to incorporate all client assets from all financial institutions
- Global Multi-Currency Investment Company Fund Accounting system, for a major asset management company headquartered in the Boston area
- Cash Investment Company Fund Accounting system, for a major asset management company

### ACADEMIC & RELATED POSITIONS

Northeastern University Law School, Legal Skills in Social Context Clinic (LSSC)	
Surveillance Law, Privacy Tools, and Tor	2014-15
Domestic Surveillance, Privacy and Anonymity Technology w/ACLU	2012-13
MIT CoDesign Studio, MIT Media Lab	2013-14
co-Leader: <a href="#">Domestic Surveillance, Privacy and Anonymity Technology, and Tor</a>	
Harvard Extension School	2011-13
Teaching Assistant (TA), Cloud computing	
The Tor Project, Inc.	2012-15
Researcher – File/Analyze FOIAs/FOIPAs, Collaborate with US Navy researchers	
Suffolk University: Sawyer School of Business, Strategy and International Business Dept, 2009	
Guest Lecturer, MBA class, Project Management and OpenSource	
Harvard Senior Common Room, Cambridge, MA	1990-20013
Tutor- SCR members are leaders in their field, appointed by House Masters to advise students	
Prospect Hill Academy, Cambridge, MA	2014-Present
Volunteer Teaching Assistant. Teach computer programming and related skills.	
Cambridge Rindge and Latin School, Cambridge, MA	2015-Present
Volunteer Teaching Assistant. Teach computer programming and related skills.	

### PROFESSIONAL ACTIVITIES

- National Institute for Science and Technology (NIST) [SGIP-CSWG](#): Smart Grid Interoperability Panel, Cyber Security Working Group
- Led sub-team that created, then updated, the privacy laws section of the report 2009-2014

- Privacy use cases team 2009-2012
- Smart Grid Interoperability Panel Cyber Security Working Group (CSWG) 2009-present

## LANGUAGES

Advanced: French. Working knowledge of: Italian, Russian. Latin, Greek, Arabic, Swedish.

## LEGISLATIVE TESTIMONY

Testimony before the Massachusetts Legislature on [Data Breach Laws](#), including [Massachusetts General Law \(MGL\) Chapter 93H](#) and its regulations, [201 CMR 17.00](#)

Testimony before the Massachusetts [Office of Consumer Affairs & Business Regulation \(OCABR\)](#) on [Data Breach Laws](#), including [Massachusetts General Law \(MGL\) Chapter 93H](#) and its regulations, [201 CMR 17.00](#)

## SAMPLE INVITED TALKS AND SPEAKING ENGAGEMENTS

- 2015: [NACACS15- North America Computer Audit and Control Symposium](#): invited speaker  
[Cybersecurity in the Financial Services Industry](#), University of Delaware
- 2014: PETS14: Privacy Enhancing Technology Symposium, Amsterdam: [MLATs& Path Selection ECA14 Eastern Communications Assn](#) panel on DV & film w/producer [Garland Waller](#)
- 2013: USENIX, FOCI, Washington DC: [Legal Hostility factors in Anonymous Network Routing](#)
- 2012: EnergySec Conference, Portland OR: [Legal Aspects and Case Law in Smart Grid Privacy](#)  
B-Sides Security Conference at Defcon/Black Hat: [SmartGrid, Surveillance & Subpoenas](#)
- 2011: Northeastern University NIST SmartGrid CyberSecurity Conference: invited speaker
- 2010: [Babson College Technology Council, Has IT Killed Privacy?](#): invited speaker  
Boston University, Craigslist Killer and Location-Based Technology: invited speaker  
Project Management Institute National Conf., [COBIT and IT Standards](#): invited speaker
- 2009: Bentley University Usability Forum: invited speaker  
Project Management Institute (PMI) Annual Conference, Waltham, MA: invited speaker

## HONORS & AWARDS

- 2013: First Prize, [World Bank Hack-a-Thon Team](#), Washington DC  
First Prize for team development of an application, [fuerza.is](#), to help fight domestic violence

## SOCIAL SERVICES, PROFESSIONAL ACTIVITIES AND ORGANIZATIONS

[Emerge Abuser Education](#), Director, Vice President, Clerk, 2009-present.  
Emerge is the first Batterer Intervention Program in the US, Court-Mandated and Voluntary, Domestic Violence (DV), Intimate Partner Abuse(IPA), Intimate Partner Violence (IPV), counseling and education, victim services, research, publications

<a href="#">Transition House</a> , Director, Clerk, Volunteer.	2012-Present
Work with survivors providing computer training, resume and job search advice. One of the first Domestic Violence(DV) Shelters and service providers in the US	
<a href="#">Each One Teach One</a>	2012-Present
<a href="http://www.EachOneTeachOne.is">http://www.EachOneTeachOne.is</a>	
Founded nonprofit Founded nonprofit	
<a href="#">Cambridge Technology Violence Prevention Council</a>	2012-Present
<a href="http://www.CambridgeTechnologyCouncil.org">http://www.CambridgeTechnologyCouncil.org</a>	
Founded nonprofit helping technologists collaborate to help end domestic abuse with technology	
<a href="#">IPV Tech</a> , Founder.	2012-Present
Technologists collaborating to end Domestic Violence(DV), Intimate Partner Abuse(IPA)	
<a href="#">Northeastern Law School LSSC</a>	2012-2015
Collaborated on leading a Legal Skills in Social Context (LSSC) Program on Cyber stalking Law	
<a href="#">Cambridge Family and Children's Service (CFCS)</a> , Director	1996-2002

## FUNDRAISING

### Educational Organizations

Harvard University - Annual Giving Co-Chair, Reunion Giving Co-Chair	2013
National Cathedral School for Girls - Capital Campaign Special Gifts Committee	2004
Milton Academy - Annual Giving Committee,	2003-2014
Shady Hill School - Capital Campaign Major Gifts Committee	2008
Cambridge Ellis Nursery School - Board of Directors. Capital Campaign Steering Committee	

### Social Services Organizations

Emerge, Inc. - various fundraising campaigns	2007-Present
Transition House - Board Development campaigns	2013-Present

## JOURNALISM

[CCTV NeighborMedia](#), correspondent

[Security Watch blog](#)

[TechTarget](#) National News Media- [IT Knowledge Exchange](#), [IT Compliance Advisor](#), regular columnist

[Squashsite.co.uk](#), correspondent

[Harvard Crimson](#), editor, consultant

[Video](#)

[The Boston Globe](#), stringer

Samples: Technology-related

- State moving to rework data security law - Boston Business Journal
- The Future of Healthcare IT
- HIPAA becoming a standard for data protection regulations
- What's in the White House Cyberspace Policy Review you need to know?
- Understanding the risk of penalties for violating data privacy laws
- Prepare for compliance auditors: Tighten access control

Database logging and privileged access control  
 Prepare for compliance auditors: Review policies and standards  
 How do you align an IT risk assessment with COBIT controls?  
 Harvard Business School Series: Branding and Search Engine Optimizers (SEOs)  
 Can unfiltered e-discovery result in violations of data breach laws?

Samples: Sports-related

Squashsite.co.uk, correspondent	2010 - present
World Jr Women’s Squash Championships, CCTV, correspondent	2013
New England Squash Open	2010
US Amateur Racquets Tournament, YouTube	2010

**VIDEO PRODUCTION/APPEARANCES**

2016: DNS Frontrunning, Dr. Paul Vixie, DEFCON  
 2012: Digital Surveillance and Geo-location, Defcon 20, CCTV  
 Data Vulnerability Research: How To Hack, CCTV  
 2011: Abuser Education Program, CCTV

**COMMUNITY SERVICE**

**SPORTS**

Tennis & Racquet Club, Membership Committee	2006-2012
University Club, Squash Tournament Liaison Committee	2001-2004
US Squash Open at Murr Center, Host Committee	2001- 2004
Tournament of Champions, pro Squash Tournament Host Committee	2002-2009
Players Cup Committee, Boston professional tennis tournament	2007-2011

**OTHER TRAINING**

Emerge Observations: over 40 hours of observations with supervision of court-mandated 2-hour abuser intervention sessions and parenting classes	2007-Present
Boston Police Department 16 hour Domestic Violence training	2010
Met qualifications for MA State Certified Batterer Intervention Program Counselor	2008
Lundy Bancroft Domestic Violence Victims Retreat Assistant	2008
Mandatory State of MA 40-hour training to work with victims of Domestic Violence	2008
Transition House, Dating Violence Intervention Project (DVIP) training	2007
State of MA, Dept of Children and Families (DCF), Community Advisory Board training	2007
Emerge 2-day advanced Domestic Violence training	2007
Emerge 3-day introductory Domestic Violence training: Counseling Abusers	2006