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MARK GIANTURCO, PhD

Chief Technology Officer

Mark Gianturco is a nationally recognized technologist with decades of experience as a software engineer, teacher, mentor and technology leader. He began his career working throughout college as a paid computer programmer for a defense contractor, and earned his Masters and PhD part-time while starting, growing and selling a software engineering consultancy, and then starting and growing a software healthcare company that was eventually sold to Pfizer.

He has qualified as an expert both federally and in many states with multiple software engineering disciplines. These disciplines include software, firmware and hardware plagiarism, Internet Service Provider standards of behavior and execution, cryptocurrency, Data Protection and Cyber-Security standards and practices, software development topics, patent and trademark issues and executive/employee malfeasance. Dr. Gianturco is also a technology damages expert, and has effectively expanded both the amount and types of damages identified multiple times.

Dr. Gianturco is a regular speaker and author on cutting edge technology topics. He serves as an adjunct professor at George Mason University, where he has taught masters level software engineering. He has been a featured speaker on various technology topics at conferences and universities.

Dr. Gianturco enjoyed a successful career founding, growing and selling multiple technology companies, including three companies in the litigation technology space. Subsequent to an entrepreneurial career founding, growing and selling multiple technology companies, Dr. Gianturco joined the National Center for Missing & Exploited Children (NCMEC) as their Chief Technology Officer. During his tenure he modernized and scaled NCMEC's technology capabilities in the face of massive content growth and static staff size. He has advised major technology corporations on best practices for handling child media (including Microsoft, Facebook, Twitter, Intel, Google, YouTube, etc).

Dr. Gianturco has also worked with international, national and global industry groups to provide guidance on technology practices, information security, content detection and other relevant issues.

SUMMARY OF QUALIFICATIONS

- 40 years of software engineering experience.
- Has been highly educated in the relevant topics, as shown by:
    - PhD in Information Technology, with research involving web-based software product lines
    - Masters Degree in Information Systems
    - BS in Computer Science
    - Participation in industry groups, conferences
    - Ongoing software engineering skills development
- Has been involved with dozens of cases for plaintiffs and defendants, in USPTO, federal, state and arbitration cases, never failing to pass a Daubert challenge. This encompasses all aspects of case preparation and execution, including:
    - Case strategy participation for technical topics
    - Information acquisition and analysis, and presentations of findings
    - Authoring of Affadavits and Declarations
    - Expert reports
    - Depositions
    - Testimony
- Is regarded as an expert by industry peers, as shown by:
    - Experience teaching Masters-level Software Engineering at University.
    - Authorship of many articles and papers on various software engineering topics in industry journals and publications.
    - Participation as a chair and panelist at technology forums and symposia.
    - Lecture invitations at multiple technology conferences over many years.
    - Invitations to speak as a guest-lecturer on technology topics at multiple universities.
    - Track record of contracts won and expanded at multiple exceptional software corporations and the federal government.
    - Demonstrated repeated success at building successful technology organizations.

AREAS OF EXPERTISE

- Software plagiarism, including architectural, design, algorithm and plagiarism of source code, supported by software artifact and source code inspection and review.
- IP, trademark and patent infringement issues.
- Employee malfeasance, including breach-of-contract, non-performance, norms of behavior for both employees and technology executives.
- O/S, Wireless Devices and Mobile Apps, including Windows, Mac OS, Unix, Apache, Android, iOS, Windows Mobile, Windows Phone, Blackberry OS, Qualcomm Brew, Java ME, Appcelerator/Titanium.
- Software Development Technologies – I have worked directly with over 30 software programming languages, dozens of frameworks, and countless libraries, APIs and 3rd party tools. My doctorate involved novel research on the structure of internet applications and websites, and I have taught web development at University.

- Databases - Direct experience with dozens of relational and non-relational databases, including major engines such as Microsoft SQL server, MySQL, Oracle, DB2, Mongo, Postgres, Redis, SQLite, Neo4j and others.
- Networking and Protocols: Include TCP/IP, HTTP/HTTPS, IMAP/POP/SMTP, DNS, various WiFi standards, Bluetooth standards, cellular standards.
- Computer forensics and data recovery.
- Structured Data, Unstructured Data and MetaData Analysis – multiple years of experience with a variety of tools and technologies to discover data and create compelling narratives.
- Software Development Standards and Software Development Life Cycle (SDLC), Software Risk Management and Technology Management – Risk classification, Hazardous Operations Analysis, Agile, FedRamp, HIPAA/HITECH, HL7, COPAA, ISO, FDA, PMP, CMMI, DevOps, continuous integration, software governance, compliance, audits.

APPLICABLE CASE AREAS

- Patent Infringement / Non-Infringement
- Patent Validity / Invalidity
- IP and Trade Secret Misappropriation
- Software Intellectual Property
- Software Plagiarism code analysis
- Non-compete agreements
- Internet Service Provider (ISP) & Consulting Agreements
- Software/Computer Contracts and Licenses
- Open Source Issues
- Internet and Cloud Development & Deployment Issues
- Computer Software / Programming
- Software Project Failures
- Software Testing
- Software Analysis and Development
- Software Quality Assurance
- Software Project Estimating
- Software Schedule Delay and Analysis
- ISP/Service/Consulting Schedule Delay & Analysis
- Computer system analysis for timelines and activities
- Software Project Development and Delivery Analysis
- Software Product Economic Life
- IT Practices and Standards
- E-Discovery
- Software Product Acquisition Due Diligence
- Software Proposals and other artifacts
- Software Development Standards and Methods
- Dispute Resolutions
- Software Valuations and Appraisals
- Software Security
- Software Consultant Errors and Omissions
- Software and Tech Revenue Channel Analysis

EXPERT WITNESS HIGHLIGHTS

1. JAMS Arbitration (Miami, FL), **IRA Financial v Gemini**, 2023. In this matter before JAMS, Dr. Gianturco researched the actions surrounding a $35million Bitcoin theft to analyze party actions vis-a-vis information security best practices, provide declarations and an expert report detailing salient issues and an assessment of liability for events throughout the timeline of the theft, was deposed and testified during arbitration. *Dr. Gianturco was able to prove that the opposition did not meet standards necessary to protect the cryptocurrency from fraudulent access and subsequent theft, resulting in a victory for his client.*

2. US District Court (West Virginia), **S&S v Just Tech**, 2022. For this case alleging breach of contract for business technology services, Dr. Gianturco researched the issues, interviewed relevant parties, and developed an expert report for the Defendant. Dr. Gianturco was able to determine that the Defendant followed standard practices and procedures, performed reasonable risk analysis and mitigation, and was not responsible for a data breach that occurred during the services period. *The case was settled for a nominal amount shortly after delivery of Gianturco's expert report to the Plaintiff.*

3. US District Court (Colorado), **Junda v LivWell**, 2022. Dr. Gianturco provided affadavits, reports and testimony in this IP and technology ownership health services case. The scope of services included review of multiple codebases, level of effort analyses, technology validation and refutation of claims, plagiarism, reasonable measures, damage analyses, and plagiarism issues. The plaintiffs in the case alleged that Dr. Gianturco's client had utilized software for which they did not pay, and asserted standards of behavior for software contractors and ISPs. *Gianturco's testimony was directly quoted several times by the judge in his final ruling, which allowed the client to receive a summary judgment and punitive damages in his favor.*

4. US District Court (Colorado), **Dataken v Lumen**, 2022. For this trade secret and IP technology case alleging malfeasance on the part of a global telecommunications firm, Dr. Gianturco was engaged by the Defendant to provide a technology and software analysis of systems, and provide both declarations and an expert report on the relevant technology issues. *The judge directly cited Dr. Gianturco's testimony when ruling in support of his client's motions. Dr. Gianturco was able to show that all of the alleged trade secrets were either already in use by several competitors to the Plaintiff, based on derivations to open sources utilized by Plaintiff, discussed at length in academic journals, or previously described and utilized by other sources. This resulted in the case being settled without any financial implications for the defendants.*

5. US District Court (West Virginia), **USA v Minkkinen**, 2022. In this federal case alleging fraud by the Defendants, including software plagiarism, Dr. Gianturco was retained to analyze multiple large codebases (10s of millions of lines of code) for evidence of the same. Using both manual and automated techniques, *Dr. Gianturco was able to prove with statistical certainty that the alleged software plagiarism did not occur. Based on the evidence produced, the court dismissed the bulk of the charges in the case in June 2023, including all of the charges related to Dr. Gianturco's topics of engagement.*

6. US District Court (Delaware), **OsteoPlastics v Conformis**, 2022. In this medical software and hardware IP case, Dr. Gianturco analyzed software source code, patent claims, algorithms utilized and competitive market offerings. This research and anlysis was utilized to provide an expert report and testify on technology issues for the defense in this potential patent infringement case. Provided source of truth evidence to prove defense contentions on software novelty and

independent approach to software functionality. Further utilized to provide knowledge for personnel on sophisticated software algorithms and processes within the codebase. ***Dr. Gianturco was able to show that the patent claims made did not apply to the algorithms at issue for the case.***

7. American Arbitration Association (San Francisco, CA), **RealNexus v Markson**, 2021. In this case involving alleged employee misconduct by a former CIO, Dr. Gianturco was hired by the Plaintiff to review actions performed by the Defendant and damages incurred during and after termination. Dr. Gianturco researched all issues, developed an expert report, assisted with motions and declarations, was deposed and testified in the case. ***Dr. Gianturco uncovered additional damage types <u>that were directly cited by the judge</u> in awarding more than 4 times the monetary amount requested by the Plaintiff.***

8. Colorado District Court (El Paso County), **TCPA v Ringba**, 2021. Dr. Gianturco was retained by the Defendant in this telecommunications case involving purported theft of customer data. By thoroughly analyzing available evidence, Dr. Gianturco was able to prove that no theft in fact occurred, and that the Plaintiff had misrepresented information. Dr. Gianturco submitted seven declarations in addition to an expert report and rebuttals, and was deposed and testified in the case. ***The court asked several clarifying questions on the issues directly to Dr. Gianturco during the final hearing, and then issued an order granting summary judgment to the Defendant and punitive sanctions against the Plaintiff, and referred to the testimony of Dr. Gianturco in the order.***

9. US District Court (Maryland), **Phreesia v Certify**, 2021. Dr. Gianturco was retained by the Defendant in this software plagiarism case between two healthcare software providers. ***After preliminary analysis and feedback provided by Dr. Gianturco on the relevant technology issues to the Defendant, the case was settled favorably.***

10. USPTO Trademark Trial & Appeal Board (Washington, DC), **Seated Technologies v Seated**, 2021. On this action in front of the USPTO Trademark Trial and Appeal Board, Dr. Gianturco examined specimens and supporting artifacts for the plaintiff challenge of a trademark granted to the defense. ***Dr. Gianturco was able to prove through various technology analyses, including source code repositories and image analysis, that the trademark was not in fact "in use" in the timeframe indicated by the defense.***

11. US District Court (Nevada), **HP Tuners v Cannata**, 2020. For this software plagiarism case, analyzed software code and SDLC artifacts to resolve issues of authorship for the defendants, Dr. Gianturco provided declarations, an expert report, and testimony on the software, firmware and hardware technology issues surrounding the case.

12. Declarations on Defensibility of Electronic Discovery, **Nycomed v Glenmark**, 2010. Working for the plaintiff in the case, provided three declarations assessing the reasonability of e-discovery efforts for an IP case.

13. Electronic Discovery Workflow Analysis Declaration, **Lloyds et Al v Abramoff**, 2009. Provided declaration and an expert report on standards for electronic discovery process and metrics for analysis of same.

14. Data and Forensic Expert, **Wachovia v. Seacrest**, 2006. Retained as independent court appointed expert to forensically acquire, review and assess electronic data as specified in agreed protocols, to help resolve intellectual property matters in dispute in this Georgia case. Authored declaration on process and findings, and testified in the case.

15. Data and Forensic Expert, **Purafil v. Jameson**, 2005. Retained as court-appointed expert to forensically acquire and analyze data from multiple computers, and provide results to all parties, in connection with an intellectual property case in superior court in Georgia.
16. Software Plagiarism, **Bell v. Digital**, 1997. Wrote report and testified for plaintiff in successful action on software plagiarism of IP and theft of trade secrets. Analyzed source code and created statistical metrics as domain expert for the plaintiff, provided expert report that established theft of software code with statistical certainty, and testified on same.
17. Wyoming District Court (Fremont), **Wiese v Riverton**, 2023. In this ongoing case involving access to Patient Health Records, Dr. Gianturco was retained to perform a forensic acquisition of relevant data systems, followed by an examination of hospital records, backups and audits. Gianturco also assisted with verbiage for communications between the parties, the development of multiple motions, and an expert report detailing the data analysis and findings.
18. JAMS Arbitration (San Francisco, CA), **NovaDine v Panda Restaurant Group**, 2023. In this case alleging software technology theft of IP and trade secret claims for an international restaurant group, Dr. Gianturco provided analysis, declarations, deposed testimony, an expert report, and testimony at arbitration on generally accepted standards for application service providers, network infrastructure and stability, software algorithms, risk mitigation, and other software engineering issues. Gianturco also provided content in a post-hearing brief to summarize salient issues to the arbitrator after the case was fully heard.
19. California Superior Court (Santa Clara), **Zerastion v Demko**, 2023. In this employment discrimination case, Dr. Gianturco analyzed technology matters central to the case, including technology processes in place, software functionality and electronic signature validity. The client and legal team credited Dr. Gianturco's report with driving the resolution of the matter with a favorable settlement shortly after the delivery of Dr. Gianturco's findings.
20. US District Court (Western District, NY), **Moog v Skyryse**, 2022. In this large multiparty case involving allegations of trade secret misappropriation, Dr. Gianturco provided a proposed review protocol for all parties, and implemented the technology to enable a secure environment to allow controlled access and active monitoring of all users and their interactions with sensitive materials produced for the litigation.
21. US District Court (New Jersey), **IQVIA v Veeva**, 2022. In this case involving alleged intellectual property (IP) misappropriation by the Defendant, Dr. Gianturco analyzed the technology data available for the Plaintiff, and developed an expert report on the technology issues Dr. Gianturco researched the development and deployment over time of competing features, data mappings and data, proving that IP had in fact consistently been misappropriated over a period of several years.
22. American Arbitration Association (New York, NY), **Halabi v Gemini**, 2023. In this matter before the AAA, Dr. Gianturco researched the actions surrounding a $35million Bitcoin theft to analyze party actions vis-a-vis information security best practices, and provide an expert report detailing salient issues and an assessment of liability for events throughout the timeline of the theft.
23. US District Court (Wisconsin), **Fiskars v Woodland**, 2023. In this IP and trade secret claim involving an assessment of software code for plagiarism, Dr. Gianturco is providing an expert report, support for motions before the court, deposition and testimony for the case.
24. Illinois Circuit Court, **Holmes v Methodist**, 2021. In this medical liability case, Dr. Gianturco examined technology issues before the court, analyzing the issues and providing strategic advice to the defense, support for court filings, and testimony at trial.

25. Pre-court discovery and analysis, **Johnson & Johnson**, 2023. In this potential matter involving IP and trade secrets in the pharmaceutical industry, Dr. Gianturco analyzed evidence produced and evidence available to determine the veracity and validity of potential defendants' claims, and wrote a report to the client summarizing the declarative findings from the data analysis.
26. California Superior Court (Sacramento, CA), **Smartrise v Alpha**, 2023. In this technology plagiarism case involving firmware and software, Dr. Gianturco analyzed millions of lines of source code and other SDLC artifacts to determine unique Smartrise algorithms for comparison to Alpha technology, delivering an expert report summarizing findings. This case is ongoing.
27. New Jersey Superior Court (Monmouth County), Artha v Monmouth, 2021. In this software technology matter involving custom software development, software estimates and standard practices, and software testing, processes, and practice, Dr. Gianturco served as an expert and advisor. He analyzed evidence produced by both parties to determine categories of work performed by the software and ISP vendor, and produced a comprehensive report detailing the reasonability, veracity and support for vendor positions concerning their actions and software development and hosting practices. This case is ongoing.

EDUCATION

- BS in Computer Science, College of William and Mary
- MS in Information Systems, George Mason University
- PhD in Information Technology (Software Engineering and Cloud research), George Mason University
- PMP Certification, Project Management Institute (PMI)
- Executive Leadership Certification, College of William and Mary
- Several Technology Certifications

PROFESSIONAL AFFILIATIONS

- Institute for Electrical and Electronics Engineers (IEEE)
- Association for Computing Machinery (ACM)
- International High Technology Crime Investigation Association (HTCIA)
- Washington Area CTO Roundtable
- Project Management Institute

PATENTS & TRADEMARKS

- April, 2006 - Home Navigation Technology Tool, Patent US-7025333.
- November, 2012 – Method and System for HRS Idenification and Maximization (Provisional Patent)
- May, 2019 – Novel Realtime Electronic Training Device (Provisional Patent, App 62845441)
- November 2020 – Design and Text Trademark (KUDOS), 90305167.

PUBLICATIONS AND LECTURES

1. "How to Ensure Success on Security, Technology and Forensics Projects", Techno-Security Conference, Myrtle Beach, South Carolina, June 2021.

2. "AI for Good: Harnessing Power to Solve Problems", South by Southwest Conference (SXSW), Austin, TX, March 2017.
3. "Protecting Children with Biometrics", International Biometric Conference, London, England, October 2016.
4. "Managing Infrastructure Risks During Cloud Adoption", Techno-Security Conference, Myrtle Beach, SC, June 2015.
5. "Machine Learning and Visualizations", LegalTech Conference, New York City, February 2015.
6. "Managing Enterprise-Wide Unstructured Data", General Counsel Conference, New York City, June 2014.
7. "GRC and Big-Data Analytics", Guest Lecturer, U Albany, Spring 2014.
8. "Infrastructure Development and Evolution", Seminar Leader, Rensselaer Polytechnic Institute, Troy, New York, Spring 2013, Fall 2013.
9. "HIPAA and HiTech Compliance", HIMSS Seminar, December 2011.
10. "Web-based Infrastructure and Software Development", Masters-level CS, George Mason University, Fall, 2010.
11. "Should You Fear the Cloud: Legal, Technical and Governance Risks", Techno-Security Conference, Myrtle Beach, South Carolina, June 2010.
12. "Computing Technology Trends and Structured Data Analysis", HTCIA Mid-Atlantic, Arlington, VA, March 2010.
13. Optimizing IT and Security Operations for Success in E-Discovery", Techno-Security Conference, Myrtle Beach, South Carolina, June 2009.
14. "Search and Retrieval Methodologies", Member of The Sedona Conference Working Group on Electronic Document Retention and Production, April 2006.
15. Pattern-Based Modeling and Application Generation for Web-Based Software Product Lines, UMI, Ann Arbor, Michigan, 2004.
16. "Domain Modeling for World Wide Web Based Software Product Lines with UML", Proc. 7th International Conference on Software Reuse, Austin, TX, Apr 2002 (Co-author w/ H. Gomaa).
17. "Software Development in the Real World: How to Build High-Quality Commercial Software Systems Quickly and Efficiently", American University, Guest Lecturer, Spring 1995, 1996.