

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

LG ELECTRONICS, INC.

Petitioner

v.

UNILOC LUXEMBOURG, S.A. 1

Patent Owner

IPR2018-01503

PATENT 6,216,158

DECLARATION OF WILLIAM C EASTTOM II

¹ The owner of this patent is Uniloc 2017 LLC.

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APPLE, INC.,
Petitioners,

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UNILOC LUXEMBOURG S.A.,
Patent Owner.

IPR2158-00361
U.S. PATENT NO. 6,216,158

DECLARATION OF WILLIAM C EASTTOM II

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I, Chuck Easttom, hereby declare as follows:

I. INTRODUCTION

1. My name is William Charles Easttom II (Chuck Easttom) and I have been retained by Uniloc Luxembourg S.A. (“Uniloc” or the “Patent Owner”) to provide my expert opinions regarding U.S. Patent No. 6,216,158 (the ‘158 Patent). In particular, I have been asked to opine on whether a person of ordinary skill in the art (POSITA) at the time the inventions described in the ‘158 patent were conceived would have found all claims, claims 1-2, 6-9, 12, 14-15, and 20 (“Challenged Claims”) as unpatentable in light of the cited references and arguments in IPR2158-00361.

2. Based on my review of the Petition and its exhibits, and my understanding of the relevant requirements of patent law, and my decades of experience in the field of computer science including communications systems, it is my opinion that the Challenged Claims would not have been obvious in light of the proposed combinations.

3. I am being compensated for my time at my standard consulting rate of \$300 per hour. I am also being reimbursed for expenses that I incur during the course of this work. Apart from that, I have no financial interest in Uniloc. My compensation is not contingent upon the results of my study or the substance of my opinions.

II. BACKGROUND AND QUALIFICATIONS

4. In my over 25 years of computer industry experience I have had extensive experience in communications systems, including data networks in general that have messaging capabilities. I hold 42 industry certifications, which include (among others) networking certifications. I have authored 26 computer science books, several of which deal with networking topics. I am also the sole named inventor on thirteen patents.

5. I also have extensive experience with Java and remote programming with Java. Of my 26 published books, 2 are Java books and one of those is about Enterprise Java Beans, a means for accessing remote programming code via Java.

6. A more detailed description of my professional qualifications, including a list of publications, teaching, and professional activities, is contained in my curriculum vitae, a copy of which is attached hereto as Exhibit A.

III. LEGAL STANDARDS USED IN MY ANALYSIS

7. Although I am not an attorney and I do not offer any legal opinions in this proceeding, I have been informed of and relied on certain legal principles in reaching the opinions set forth in this Declaration.

A. Obviousness

8. I understand that a patent claim is invalid if the differences between the subject matter and the prior art are such that the subject matter as

a whole would have been obvious to a POSITA at the time of the alleged invention. I further understand that an obviousness analysis involves a review of the scope and content of the asserted prior art, the differences between the prior art and the claims at issue, the level of ordinary skill in the pertinent art, and objective indicia of non-obviousness such as long-felt need, industry praise for the invention, and skepticism of others in the field.

9. I have been informed that if a single limitation of a claim is absent from the cited prior art, the claim cannot be considered obvious.

10. I have further been informed that it is improper to combine references where the references teach away from a proposed combination; and that the following factors are among those relevant in considering whether prior art teaches away:

- whether a POSITA, upon reading the reference would be led in a direction divergent from the path that was taken by the applicant;
- whether the prior art criticizes, discredits, or otherwise discourages investigation into the claimed invention;
- whether a proposed combination would produce an inoperative result; and
- whether a proposed combination or modification would render the teachings of a reference unsatisfactory for its intended purpose.

11. In addition, I have been informed that a proposed combination that changes the basic principles under which the prior art was designed to operate may fail to support a conclusion of obviousness.

B. Priority Date

12. The 6,622,158 patent issued on Apr. 10, 2001 and the application was filed on Jan.25, 1999. For purposes of this declaration, I have assumed the priority date for the '158 patent is Jan.25, 1999.

C. Person of Ordinary Skill in the Art

13. I understand that a POSITA is a hypothetical person who is presumed to have ordinary skill in the art as of the priority date. I understand that factors that may be considered in determining the level of ordinary skill in the art may include: (a) the type of problems encountered in the art; (b) prior art solutions to those problems; (c) the rapidity with which innovations are made; (d) the sophistication of the technology; and (e) the educational level of active workers in the field.

14. I have been asked to provide my opinion as to the qualifications of the person of ordinary skill in the art to which the '158 patent pertains as of April 24, 2000. I understand that Dr. Houh opines that a person of ordinary skill in the art "B.S. degree in Electrical Engineering, Computer Engineering, or Computer Science, or equivalent training, as well as at least three years of technical experience in the field of computer networking." I agree with Dr. Houh's opinion of a POSA, except that I would add that more experience could compensate for less education and vice versa. For example, one with a

master's degree might only need 1 to 2 years' experience, or a person with no degree but over 5 years' experience in networking would qualify as a POSA.

15. Although my qualifications and experience exceed those of the hypothetical person having ordinary skill in the art defined above, my analysis and opinions regarding the '158 Patent have been based on the perspective of a person of ordinary skill in the art as of April 10, 2001.

D. Broadest Reasonable Interpretation

16. I have been informed that, for purposes of this Inter Partes Review (IPR), the terms in the claims of the '158 patent are to be given their Broadest Reasonable Interpretation (BRI) in light of the specification and prosecution history of '158 Patent as understood by a POSITA on the priority date. I have used this standard throughout my analysis.

IV. OVERVIEW OF THE '158 PATENT

17. The '158 patent is titled "System and method using a palm sized computer to control network devices." The '158 patent issued April 10, 2001, from U.S. Patent Application No. 09/237,609 filed January 25, 1999 and originally assigned to 3Com Corporation (3Com).

18. The inventors of the '158 patent observed that at the time, relative to desktop and laptop computers, palm sized computers had limited processing, display and input capabilities. These limitations prevented palm sized computers from running the same applications as desktop or laptop

computers. The portability of palm sized computers made the ability to run desktop applications advantageous.

19. According to the invention of the '158 Patent, a program on the palm sized computer is used to access a registry of network services. This registry includes descriptions for various services. Each description includes at least a reference to program code that can be downloaded to the palm sized computer. Executing this program causes the palm sized computer to issue commands directly to the specific network services needed. In some cases, these network services include application services for running desktop applications that the palm sized computer could not execute.

V. CLAIM CONSTRUCTION

20. I have been asked to provide my opinions regarding the construction of certain terms used in the claims of the '158 Patent as would be understood by a POSITA using the BRI.

A. palm sized computer

21. The petitioner has suggested the following definition: "For the purposes of this proceeding, it is sufficient to specify that a personal digital assistant (PDA) and a 3Com Palm Platform™ computer are examples of a "palm sized computer" in the context of the '158 Patent." It appears the petitioner has offered examples of what a palm sized computer is but has not offered a definition. It is my opinion that this term does not require definition.

B. means for accessing a description of a service”

22. The petitioner has suggested the following definition: “a palm-sized computer executing the Jini middleware from Sun Microsystems, and equivalents thereof.”

23. I disagree. I see nothing in the patent that would limit this claim element to the specific Jini middleware.

C. means for downloading the program code

24. The petitioner has suggested the following definition: “a palm-sized computer executing the Jini middleware from Sun Microsystems, and equivalents thereof”

25. I disagree. I see nothing in the patent that would limit this claim element to the Jini middleware. Furthermore, the petitioners definition does not actually address the ‘downloading’ portion of the claim limitation.

D. means for executing at least a portion of the program code

26. The petitioner has suggested the following definition: “a palm-sized computer executing a Java Virtual Machine, and equivalents thereof.”

27. I disagree, I see nothing in the patent that would limit this claim element to the Java Virtual Machine.

E. means for sending control commands to the service in response to the means for executing

28. The petitioner has suggested the following definition “a palm-sized computer executing a control protocol capable of issuing control commands or Java’s Remote Method Invocation (RMI) protocol, and equivalents thereof.”

29. I disagree, I see nothing in the patent that would limit this claim element to the Java RMI protocol.

VI. GENERAL ISSUES

30. In reviewing the petition for inter partes review, and the attached exhibits and declarations, several issues stood out as pervasive to the petition and need to be addressed separate from the specific claims. Those issues are addressed here.

A. Jini: Quick Study, COMPUTERWORLD (“Jini-QS”)

31. In Ground 1, in every single instance, the petitioner relies on some combination of the “Jini-QS”. This is inappropriate for several reasons.

32. The first being that my understanding while non-enabling prior art may qualify under Section 103, that non-enabling reference only qualifies as prior art for what is disclosed in it. However, “Jini-QS” is a marketing article in a general-purpose magazine. It does not provide any detail on how the elements in the article would actually be done.

33. Furthermore, the article itself admits that the product it describes is not yet complete “It will be available in the second half of next year. Jini’s

goal is to enable the creation of simpler, more flexible networks.” A POSA would readily understand that it is quite common for technology to not unfold according to plan. Frequently promised technology either is not completed in time, or does not have all the expected functionality.

34. The ComputerWorld article does not constitute prior art. Instead it is a marketing piece describing technology that the author hopes will be available “in the second half of next year.”

35. The ComputerWorld article cannot be prior art. It was allegedly published in December of 1998, and the article itself says this technology may be available in the “second half of next year”, which would be at least June of 1999. The application for the ‘158 patent was filed on January 25, 1999. Even if one ignores the fact that this article does not describe how to accomplish its goals in sufficient detail, and then ignores the fact that technology often fails to meet expectations, then further assumes that every item in the article is exactly what the petitioner claims it is, and it was all fully functional when the article said it would be, that would still be at least six months after the ‘158 patent was filed. This article cannot be considered prior art.

B. McCandless

36. The petitioner appears to completely misunderstand McCandless. The section the petitioner cites is from a section "In the pipeline"

which discusses various improvements to PDA's that the author believes will come at some point in the future. The author is not describing what PDA's can do at the time of the writing, or even what is in the immediate future, but rather a wish list for what may eventually happen.

37. Citations throughout this section of McCandless demonstrate this (emphasis added) "PDA's will soon come with built-in access to a ubiquitous wireless network". In the paragraph just preceding the one the petitioner cites (emphasis added) "Using this network your PDA will eventually subsume functionality of the remote controls in your home". Then in the paragraph immediately after the one that the petitioner cites (emphasis added) "In due time, your PDA will absorb the other things you now feel compelled to carry in your pockets". Taken in context, a POSA would immediately see that McCandless is not discussing what was available at the time of the writing, but rather things the author hoped would eventually be added to PDA's.

38. Reading all of McCandless it would be a clear to a POSA that the article is not describing any technology that existed at the time of the writing of the article. Rather, the article is the authors speculation about future improvements to PDA's that he believes may happen someday. It is therefore impossible for a POSA to combine McCandless with any other prior art.

C. Motivation to Combine

39. The preceding section leads naturally to a dissection of the alleged the motivation to combine. On paragraph 37 of Dr. Houh's declaration he states " (f) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference." On this issue I am in complete agreement with Dr. Houh.

40. However, throughout Dr. Houh's declaration, not once does he explain any motivation to combine. He continually recites "it is my opinion that one of ordinary skill in the art would have been motivated to combine.." but never provides any reason at all why a POSA would be motivated to combine.

41. Beyond that issue, since the Jini-QS article a) did not fully describe how to implement its technology and b) described technology it admitted did not yet exist, it would have been impossible to combine Jini-QS with anything. Jini-QS did not yet exist. There was simply an article that hoped it would be ready "in the second half of next year", at least six months after the application for the '158 patent was filed.

VII. GROUND 1 SPECIFIC CLAIMS

42. I have reviewed the claims in light of the proposed combinations and believe they do not disclose the claimed features.

A. Claim 1 “accessing a description of the service from a directory of services, the description of the service including at least a reference to program code for controlling the service”

43. The petitioner states:

“Jini-QS discloses this limitation because it teaches that the Jini platform includes a Lookup Service that keeps track of which services are available on the network – i.e., “Lookup is the equivalent of a network bulletin board for all available services.” APPL-1005, p. 29 (left column). Jini-QS illustrates the Lookup Service.”

and

“Jini-QS further teaches that the user requests (accesses) descriptions of the available services via the Lookup Service and in response is shown descriptive icons corresponding to the services: “[t]he user requests services that are available, and icons appear on his screen.” APPL-1005, p. 29 (main figure). “Lookup stores pointers to various sources on the network as well as code for other services,” and when a user selects a service from the list of services, the Lookup “server instantly sends proxy code back to the device.” Id. at p. 29(left column; main figure).”

44. Aside from the previously discussed fact that Jini-QS is not prior art, and in fact did not actually exist, but rather there was an article discussing what it might do “in the second half of next year”, nothing in Jini-QS teaches or even suggests “at least a reference to program code for controlling the service”

45. The petitioner appears to claim that the proxy code referenced by Jini-QS is a “reference to program code”. However, what Jini-QS actually states is:

Proxy: This is the piece of Java code that moves around from device to device acting as the front end for all the Jini-enabled or legacy systems. The proxy essentially tells the client how to use the device. For example, it may include a graphical user interface that shows the user how to work the network projector. In the PC world, the equivalent would be the device driver.

46. This proxy is first shared code for all the Jini-enabled or legacy systems. It has information about how the client could use the device, but does not include “a reference to program code for controlling the service”

47. The petitioner further claims:

Thus, Jini-QS’s teaching registering a new device in the Lookup Service and advertising its services by storing a descriptive name or icon associated with the service and a pointer to the service’s associated proxy code, in view of Arnold’s teaching of registering services with the lookup service, which stores in the lookup service an object corresponding to the service that facilitates access to the service, render obvious the claimed: “registering the service in the directory of services by storing the description of the service in the directory of services.”

48. Aside from the fact that Jini-QS was merely a description of technology that might exist “in the second half of next year” and therefore could not anticipate anything, nor be combined with anything, there are other errors in the petitioners claim.

49. The petitioner even states that Jini-QS stored “a described name or icon associated with the service’ and the petitioner does not claim that this in and of itself is a “a reference to program code for controlling the service”. Arnold describes in claim 1 “initiating a communications link between a browser stored on a client and a server; receiving selection of a service identifier from a set of service identifiers; receiving Downloadable code corresponding to the selected service identifier from the server;”

50. Arnold was not about finding services on a network one could control, but rather going through a web page, using the client browser, to find out what services a web server offered. Nothing in Arnold teaches, or even suggests controlling a network device.

B. Claim 1 “downloading the program code to the palm sized computer”

51. The petitioner equates the proxy code of Jini-QS with program code. In the early 2000’s I published a book about Enterprise Java Beans, a common way of accessing remote programming code in Java. I have a detailed understanding of remote programming code used in Java. As any POSA would understand, proxy code is what one uses *instead* of program code. Rather than download the actual program code, one downloads a proxy that

allows one to route commands to the actual program code that is remote¹. The following excerpt demonstrates this:

1.3.1.2.1 Proxy Code (Remote)

For each of the remoted functions, the proxy implementation requests a tag and a request handle from the dispatcher, serialize the in parameter into the tag, send it, and (in the case of a two-way call) wait for the server to return the dispatcher response for that call. The returned tag is then deserialized (including the returned HRESULT and the out parameters), and the function returns.

MSDN <https://msdn.microsoft.com/en-us/library/ee809525.aspx>

52. As the preceding excerpt describes, when using proxy code, the programmer is making calls to code that is running on a remote server. This requires some technical steps to be taken such as serializing and de-serializing information. More importantly, the code being executed is remote. That code is not on the client.

53. Proxy code is a completely different approach than downloading the program code. Proxy code is used when, for whatever reason, downloading the program code is infeasible or undesirable.

C. Claim 1 “sending control commands to the service from the palm sized computer in response to the executing”

54. The petitioner states “Jini-QS in view of Arnold render obvious this limitation. First, Jini-QS teaches that in response to and during execution of the proxy code, a user’s input to the graphical user interface results in

¹ <https://docs.oracle.com/javase/7/docs/technotes/guides/net/proxies.html>

sending control commands/instructions to the service in order to control the service: “The proxy essentially tells the client how to use the device. For example, it may include a graphical user interface[.]” APPL-1005, p. 29 (left column). Jini-QS further teaches that a service will receive a command or “instruction via that proxy code[.]” Id. at p. 29 (main figure). In the example described in association with item 3 in the main figure, the client controls a print service by issuing a “printing instruction.” APPL-1005, p. 29 (main figure).”

55. Aside from the fact that Jini-QS was merely a description of technology that might exist “in the second half of next year” and therefore could not anticipate anything, nor be combined with anything, there are other errors in the petitioners claim.

56. The petitioner misunderstands both Jini-QS and the ‘158 patent. As the petitioner sites, Jini-QS “The proxy essentially tells the client how to use the device”, however using a device is not the same thing as controlling the device. The Jini-QS system merely sends information. And as has been previously discussed, there is no executing program code. This claim limitation is ‘in response to the executing’.

D. Claim 8 “A method of controlling a program on a network device from a palm sized computer, the computer is not capable of executing the program by itself, the network device and computer

being coupled in communications via a network, the method comprising”

57. Aside from the fact that Jini-QS was merely a description of technology that might exist “in the second half of next year” and therefore could not anticipate anything, nor be combined with anything, there are other errors in the petitioners claim.

58. The petitioner claims “Jini-QS in view of Arnold and McCandless render obvious this limitation.” It is immediately obvious that neither Jini-QS nor Anderson ever discuss (emphasis added) “controlling a program on a network device from a palm sized computer, *the computer is not capable of executing the program by itself*”

59. The petitioner points to McCandless:

The network relaxes where and how computation occurs. For example, applications that are too compute- or space intensive to run directly on your PDA will run, instead, on a remote high performance computer, but then return the output of the computation. When new versions of applications are released, your PDA will automatically update.

60. The petitioner appears to completely misunderstand McCandless. The section the petitioner cites is from a section "In the pipeline" which discusses various improvements to PDA's that the author believes will come at some point in the future. The author is not describing what PDA's

can do at the time of the writing, or even what is in the immediate future, but rather a wish list for what may eventually happen.

61. Citations throughout this section of McCandless demonstrate this (emphasis added) “PDA's will soon come with built-in access to a ubiquitous wireless network”. In the paragraph just preceding the one the petitioner cites (emphasis added) “Using this network your PDA will eventually subsume functionality of the remote controls in your home”. Then in the paragraph immediately after the one that the petitioner cites (emphasis added) “In due time, your PDA will absorb the other things you now feel compelled to carry in your pockets”. Taken in context, a POSA would immediately see that McCandless is not discussing what was available at the time of the writing, but rather things the author hoped would eventually be added to PDA’s.

E. Claim 8 “loading the program code”

62. The petitioner again conflates proxy code with program code. As described previously in this declaration in reference to claim 1, proxy code is used specifically because, for some reason, program code is either impractical or undesirable.

F. Claim 9 “The method of claim 8, wherein loading the program code includes loading the program code onto the palm

sized computer and the issuing the control commands includes the palm sized computer issuing the control commands”

63. The petitioner states “As discussed in association with [8.2] and [8.3], Jini-QS and Arnold teach a Jini client, such as a PalmPilot, downloading and executing the proxy code and issuing commands to services.”

64. The first issue with the petitioners claim is, as has already been pointed out, Jini-QS is merely an article that briefly discusses technology that might exist at some future date. Therefore, Jini-QS does not actually teach or disclose any technology, including loading program code onto the palm sized computer.

65. The second issue with the petitioners claim is, as has already been pointed out in this declaration, proxy code is not code executing on the client. It is code that is executing on a remote device.

G. Claim 12 “The method of claim 8 wherein loading the program code includes loading the program code onto the palm sized computer from the directory of services”

66. The petitioner states “As discussed in association with [8.2] and [8.3], Jini-QS teaches that a Jini client, such as a PalmPilot, downloads and executes the proxy code from the Lookup Service.”

67. The petitioner is conflating proxy code with the program code of the 158 patent. As has already been demonstrated in this declaration, proxy

code is actually a method for executing code that is on a remote machine. It is not executing code that is on the PalmPilot.

H. Claim 20 “means for downloading the program code”

68. The petitioner states “Jini-QS discloses this limitation because it teaches, as discussed in association with [1.2], that the PalmPilot executing the “Jini code” (“means for”) downloads “proxy code.”

69. As has already been demonstrated in this declaration, Jini-QS is merely an article about technology that might someday be available. Therefore, it cannot teach or disclose anything.

70. The petitioner is conflating proxy code with the program code of the 158 patent. As has already been demonstrated in this declaration, proxy code is actually a method for executing code that is on a remote machine. It is not executing code that is on the PalmPilot.

VIII. GROUND 2

71. I will address specific claim limitations in this section, but I begin with addressing some general errors in the petitioners discussion of the prior art.

72. The petitioner states “First, a POSITA would have found it advantageous to control Riggins’ network services using a PDA because

doing so would advance Riggins' goal of supporting a "roaming user, i.e., a user who travels and accesses a workstation remotely."

73. This is a significant error. Riggins is specifically about using a web browser to access services. At the time of the '158 patent the web browser capabilities of PDA's were extremely limited and primitive. A POSA would have avoided any combination that used Riggins web browser-based technology on a PDA.

74. Furthermore, the petitioner states "Second, a POSITA would have also found it predictable to utilize Devarakonda's PDA to control Riggins' network services." One obvious issue with the petitioners claim is that Devarakonda does not actually have a PDA. The term appears only one time in Devarakonda and is merely one of a list of possible clients listed in passing "The Network Computers 106 can be embodied, for example, on a JAVA terminal, a personal digital assistant (PDA) or an internet terminal. The communication protocol is HTTP and TCP/IP."

75. A second issue is again, Devarakonda is depending on HTTP, which requires web browsers. Web browsers on PDA's were extremely primitive at the time of Devarakonda or the '158 patent. The following is an

image of a PDA browser² that is actually after the time of the '158 patent and more advanced than the browsers available for PDA's in 1999-2000.



76. As late as March 1999 it was impractical to access web services on a PDA and facilitating this was a topic of research³. This fact illustrates two issues. The first issue is that, contrary to the petitioners claims, a POSA

² <http://ilpubs.stanford.edu:8090/387/1/1999-32.pdf>

³ Kaasinen, E., Aaltonen, M., Kolari, J., Melakoski, S., & Laakko, T. (2000). Two approaches to bringing Internet services to WAP devices. *Computer Networks*, 33(1-6), 231-246.

https://www.google.com/search?q=PDA+web+browser&tbs=cdr:1,cd_min:4/3/1998,cd_max:4/3/2000&ei=-IDNWuP5DMqwjwSIjbX4DA&start=0&sa=N&biw=1536&bih=709

would have understood that combining Devarakonda and Riggins would not only have not worked but would have been disastrous. Riggins web-based process, combined with Devarakonda (even if one ignores that PDA was just one technology mentioned in passing) would have simply not provided a viable solution. The second issue is that this research demonstrates the long-felt need for a solution that did not depend on web browsers for PDA's, which is what the '158 patent provided.

77. All of the petitioners claims regarding combining Devarakonda and Riggins fail if one simply takes into account the state of PDA web browsers at the time.

A. A method of controlling a service on a network using a palm sized computer, the palm sized computer being coupled in communications with the network, the method comprising

78. The petitioner claims "Riggins in view of Devarakonda render obvious this limitation". This is flawed for several reasons.

79. The first issue is that Riggins is not about controlling devices on a network. It is about accessing services over the internet from a web server. This is shown in the abstract of Riggins "A system for communicating through a computer network. The system includes a communications engine for establishing a communications link with a server, a browser, coupled to the communications engine, for receiving applet information corresponding to a

service from the server, and an applet engine for using the applet information to control user interface I/O of the service.”

80. The ‘158 patent is about locating devices and services on your network and controlling them. Riggins is about a very different topic. Accessing a web server using a URL and then finding out what services that web server offers. While there are superficial similarities between some portions of Riggins and the ‘158 patent, the two are fundamentally different.

81. Devarakonda uses middleware called the Virtual Environment Manager (VEM) to access, as claim 1 puts it “A method for dynamically providing access to and interaction with a plurality of network system and application services to an application executing on a network client”

82. Unlike the ‘158 patent, Devarakonda is specifically about using a particular middleware to allow an application running on a client to interact with network services.

83. The petitioner cites to figure 1 in Riggins shown here:

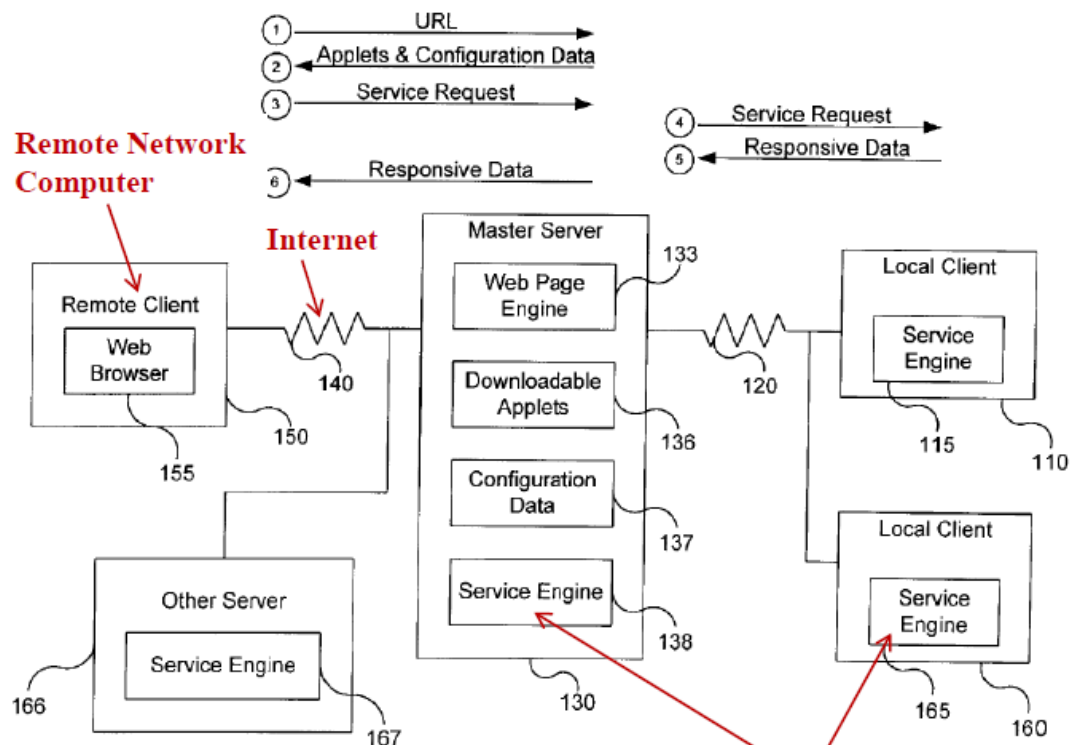


FIG. 1

**Services Controllable
by Client**

84. This figure shows the significant differences between Riggins and the '158 patent. Riggins requires a master server, that not only has a web page engine, but a service engine and configuration data. That master server must be accessed via a web client, that is needed to allow a separate local client to access services.

85. The requirement to have a master server, to access via a web client, and to have a service engine on the master server as well as the remote client, are all in Riggins and are not even suggested by the '158 patent. Even if one assumes that the ultimate goal of Riggins is substantially the same as

the '158 patent, the Riggins approach is a far more primitive one. Riggins requires extensive infrastructure, and then is limited to use with a web browser. The '158 patent requires no significant infrastructure and is not limited to using a web browser. The '158 patent is a substantially superior method for accessing services, even if one assumes that Riggins and the '158 are accomplishing the same goals.

B. accessing a description of the service from a directory of services, the description of the service including

86. The petitioner states “First, Riggins teaches that a master server maintains configuration data that includes a “list” of “services 396 which will be provided to the us” This is an important point, it seems the petitioner is aware of Riggins requirement for an entirely separate server, the master server. This would have been burdensome for smaller networks, and almost impossible for home networks. Unlike the '158 patent which could be readily implemented on any network with very little effort.

87. The petitioner then states “Second, Riggins teaches that a user accesses descriptions of the available services via a webpage, called a “roam page,” that displays “a listing of the provided services” It seems the petitioner is aware of Riggins requirement for a web client and a web server. This only serves to highlight the substantial differences between Riggins and the '158

patent. Riggins has significant infrastructure requirements, including a web server, and can only be accessed via a web browser.

IX. CONCLUSIONS

88. For the reasons set forth herein, claim 1 was not rendered obvious, anticipated, or unpatentable by the prior art asserted by the petitioner.

89. For the reasons set forth herein, claim 8 was not rendered obvious, anticipated, or unpatentable by the prior art asserted by the petitioner.

90. For the reasons set forth herein, claim 9 was not rendered obvious, anticipated, or unpatentable by the prior art asserted by the petitioner.

91. For the reasons set forth herein, claim 12 was not rendered obvious, anticipated, or unpatentable by the prior art asserted by the petitioner.

92. For the reasons set forth herein, claim 20 was not rendered obvious, anticipated, or unpatentable by the prior art asserted by the petitioner.

93. For the reasons set forth herein, Jini-QS cannot be considered prior art. It was merely a description of technology that the author hoped would be available at a future date, and that future expected date was after the filing of the application for the '158 patent.

94. For the reasons set forth herein, McCandless was did not describe any actual technology at the time of the writing. It was an article discussing

PDA's in general, and the section the petitioner cites is about future improvements that might eventually be made to PDA's. It was speculative.

95. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: April 13, 2018



William C. Easttom II (Chuck)

EXHIBIT A

EASTTOM CV

A. Education

1. University Degrees

- B.A. Southeastern Oklahoma State University. Major Communications with Minors in Chemistry and Psychology. Extensive coursework in science (chemistry, physics, and biology) as well as neuroscience (neurobiology of memory, cognitive science, etc.). Also, additional coursework in computer science including programming and database courses.
- M.Ed. Southeastern Oklahoma State University. Coursework included technology related courses such as digital video editing, multimedia presentations, and computer graphics. A statistics course was also part of the coursework.
- M.B.A. Northcentral University Emphasis in Applied Computer Science. Extensive course work in graduate computer science including graduate courses in: C++ programming, C# programming, Computer Graphics, Web Programming, Network communication, Complex Database Management Systems, and Artificial Intelligence. Approximately 30 graduate hours of graduate computer science courses. Additionally, a doctoral level statistics course was included. A semester research project in medical software was also part of the curriculum. I also took several research courses beyond the requirements for the degree.
- Doctor of Science (In progress) Capitol Technology University. Majoring in cybersecurity, dissertation topic is a study of lattice based cryptographic algorithms for post-quantum computing.

2. Industry Certifications

The following is a list of computer industry certifications I have earned.

3. Hardware and Networking Related Certifications

1. CompTIA (Computer Technology Industry Associations) A+ Certified
2. CompTIA Network + Certified
3. CompTIA Server+ Certified
4. CompTIA I-Net+ Certified

4. Operating System Related Certifications

5. CompTIA Linux + Certified
6. Microsoft Certified Professional (MCP) – Windows Server 2000
Professional Certification Number: A527-9546
7. Microsoft Certified Systems Administrator (MCSA) Windows Server
2000 Certification Number: A527-9556
8. Microsoft Certified Systems Engineer (MCSE) Windows Server 2000
Certification Number: A527-9552
9. Microsoft Certified Technology Specialist (MCTS) Windows Server
2008 Active Directory Microsoft Certification ID: 1483483
10. Microsoft Certified Technology Specialist (MCTS) Windows 7
Microsoft Certification ID: 1483483
11. Microsoft Certified IT Professional (MCITP) Windows 7 Microsoft
Certification ID: 1483483
12. Microsoft Certified Solutions Associate Windows 7 Microsoft
Certification ID: 1483483
13. National Computer Science Academy Windows 8 Certification
Certificate #: 4787829

5. Programming and Web Development Related Certifications

14. Microsoft Certified Professional (MCP) – Visual Basic 6.0 Desktop Applications Microsoft Certification ID: 1483483
15. Microsoft Certified Professional (MCP) – Visual Basic 6.0 Distributed Applications Microsoft Certification ID: 1483483
16. Microsoft Certified Application Developer (MCAD) - C# Microsoft Certification ID: 1483483
17. Microsoft Certified Trainer (MCT 2005-2012) Microsoft Certification ID: 1483483
18. Microsoft Certified Technology Specialist (MCTS) Visual Studio 2010 Windows Application Microsoft Certification ID: 1483483
19. Microsoft Certified Technology Specialist (MCTS) Visual Studio 2010 Data Access Microsoft Certification ID: 1483483
20. National Computer Science Academy HTML 5.0 Certification Certificate #: 4788000.
21. National Computer Science Academy ASP.Net Certification Certificate #: 4788342
22. Certified Internet Webmaster (CIW) Associate CIW0163791

6. Database Related Certifications

23. Microsoft Certified Database Administrator (MCDBA) SQL Server 2000 Microsoft Certification ID: 1483483
24. Microsoft Certified Technology Specialist (MCTS) Implementing SQL Server 2008 Microsoft Certification ID: 1483483
25. Microsoft Certified IT Professional (MCITP) SQL Server Administration Microsoft Certification ID: 1483483

7. Security and Forensics Related Certifications

26. CIW Certified Security Analyst CIW0163791
27. EC Council Certified Ethical Hacker v5 (CEH) ECC942445
28. EC Council Certified Hacking Forensics Investigator v4 (CHFI) ECC945708

29. EC Council Certified Security Administrator (ECSA) ECC947248
30. EC Council Certified Encryption Specialist (ECES)
31. EC Council Certified Instructor
32. CISSP – Certified Information Systems Professional #387731
33. ISSAP – Certified Information Systems Architect #387731
34. CCFP – Certified Cyber Forensics Professional #387731
35. Certified Criminal Investigator (CCI)
36. Forensic Examination of CCTV Digital VTR Surveillance Recording Equipment
37. Oxygen Phone Forensics Certified
38. Access Data Certified Examiner (ACE) 2014-2017
39. OSForensics Certified Examiner (OSFCE)
40. Certified Forensic Consultant (CFC)

8. Software Certifications

41. National Computer Science Academy Microsoft Word 2013 Certification Certificate #: 5078016
42. National Computer Science Academy Microsoft Word 2000 Certification Certificate #: 5078187

9. Licenses

Texas State Licensed Private Investigator. Registration Number 827827.
Associated with Allegiant Investigations & Security License Number:
A18596

B. Publications

1. Books

1. Easttom, C. (2003). Moving from Windows to Linux. Newton Center, MA: Charles River Learning. 1st Edition, Charles River Media.

2. Easttom, C., Hoff, B. (2006). Moving from Windows to Linux, 2nd Ed. Newton Center, MA: Charles River Learning. 1st Edition, Charles River Media.
3. Easttom, C. (2003). Programming Fundamentals in C++. Newton Center, MA: Charles River Learning. 1st Edition, Charles River Media.
4. Easttom C. (2002). JFC and Swing with JBuilder 8.0. Plano, Texas: WordWare Publishing.
5. Easttom, C. (2002). JBuilder 7.0 EJB Programming. Plano, Texas: WordWare Publishing.
6. Easttom, C. (2001). Beginning JavaScript, 1st Edition. Plano, Texas: WordWare Publishing.
7. Easttom, C. (2002). Beginning VB.Net. Plano, Texas: WordWare Publishing.
8. Easttom, C. (2001). Advanced JavaScript, 2nd Edition. Plano, Texas: WordWare Publishing.
9. Easttom, C. (2005). Introduction to Computer Security. New York City, New York: Pearson Press.
10. Easttom, C. (2006). Network Defense and Countermeasures. New York City, New York: Pearson Press.
11. Easttom, C. (2005). Advanced JavaScript, 3rd Edition. Plano, Texas: WordWare Publishing.
12. Easttom, C., Taylor, J. (2010). Computer Crime, Investigation, and the Law. Boston, Massachusetts: Cengage Learning.
13. Easttom, C. (2013). Essential Linux Administration: A Comprehensive Guide for Beginners. Boston, Massachusetts: Cengage Learning.
14. Easttom, C. (2011). Introduction to Computer Security, 2nd Edition. New York City, New York: Pearson Press.
15. Easttom, C. (2012). Network Defense and Countermeasures, 2nd Edition. New York City, New York: Pearson Press.
16. Easttom, C. (2013). System Forensics, Investigation, and Response, 2nd Edition. Burlington Massachusetts: Jones & Bartlett.

17. Easttom, C. (2014). CCFP Certified Cyber Forensics Professional All-in-One Exam Guide. New York City, New York: McGraw-Hill Publishing.
18. Easttom, C., Dulaney, E. (2015). CompTIA Security+ Study Guide: SY0-401. Hoboken, New Jersey: Sybex Press.
19. Easttom, C. (2015). Modern Cryptography: Applied Mathematics for Encryption and Information Security. New York City, New York: McGraw-Hill Publishing.
20. Easttom, C. (2016). Computer Security Fundamentals, 3rd Edition. New York City, New York: Pearson Press.
21. Easttom, C. (2017). System Forensics, Investigation, and Response, 3rd Edition. Burlington Massachusetts: Jones & Bartlett.
22. Easttom, C., Dulaney, E. (2017). CompTIA Security+ Study Guide: SY0-501. Hoboken, New Jersey: Sybex Press.
23. Easttom, C. (2158). Penetration Testing Fundamentals: A Hands On Guide to Reliable Security Audits. New York City, New York: Pearson Press. Writing complete, will be published in early 2158.
24. Easttom, C., Christy, R. (2017). CompTIA Security+ Review Guide: SY0-501. Hoboken, New Jersey: Sybex Press.
25. Easttom, C., Roberts, R. (2158). Networking Fundamentals, 3rd Edition. Goodheart-Wilcox Publishing. Writing complete, will be published in early 2158.
26. Easttom, C. (2158). Network Defense and Countermeasures, 3rd Edition. New York City, New York: Pearson Press. Writing complete, to be published in 2158.

2. Papers, presentations, & articles.

1. Easttom, C. (2010). RSA and its Challenges. EC Council White Paper.
2. Easttom, C. (2010). Finding Large Prime Numbers. EC Council White Paper
3. Easttom, C. (2010). A Method for Finding Large Prime Numbers. Haking Magazine. Hands-On Cryptography Issue.

4. Easttom, C. (2014). A method for finding large prime numbers. Open Source Article published by Academia.edu 2014.
5. Easttom, C. (2011). The RSA Algorithm - The ups and Downs. CryptoMagazine.
6. Easttom, C. (2011). Feistel Ciphers - An Overview. Presentation at Cast Security Conference. Washington, D.C.
7. Easttom, C. (2011). Steganography- History and Modern Applications. Presentation at Takedown Security Conference.
8. Easttom, C. (2012). Problems with RSA. Presentation at Takedown Security Conference – Dallas, TX.
9. Easttom, C. (2013). Cryptanalysis. Presentation at Takedown Security Conference. Huntsville, Alabama.
10. Easttom, C. (2014). An Overview of Cryptographic S-Boxes used in Block Ciphers. Research Gate. DOI RG.2.2.14084.94088.
11. Easttom, C. (2014). Cryptographic Backdoors. Presentation at ISC2 Security Congress. Atlanta, Georgia.
12. Easttom, C. (2014). Cryptographic Backdoors. Presentation at University of Texas Dallas ACM Chapter Conference.
13. Easttom, C. (2014). Windows Registry Forensics. Research Gate. DOI RG.2.2.29603.86561
14. Easttom, C. (2014). Artificial Intelligence, Fuzzy Logic, Neural Networks and Fuzzy Neural Networks and their impact on Electronic Medical Records. Academia.edu.
15. Easttom, C. (2014). A Basic Overview of Electro-Magnetic Interference. Academia.edu.
16. Easttom, C. (2014). An Overview of Targeted Malware. Academia.edu.
17. Easttom C. (2014). An Introduction to Mobile Forensics. Academia.edu.
18. Easttom, C. (2015). Cryptographic Backdoors. Academia.edu.
19. Easttom, C. (2015). The History of Computer Crime in America. Academia.edu.
20. Easttom, C. (2015). Spyware Techniques. Academia.edu.
21. Easttom, C. (2015). Recovering Deleted Files from NTFS. Academia.edu.

22. Easttom, C. (2015). Multi-dimensional analysis of cyber-forensic evidence. Academia.edu.
23. Easttom, C. (2016). Spyware coding techniques. Journal of Information Security Science & Digital Forensics (HJISSDF), 1 (1)
24. Easttom, C. (2016). Cryptographic Backdoors – an overview. Journal of Information Security Science & Digital Forensics (HJISSDF), 1 (1)
25. Easttom, C. (2016). A Look at Spyware Techniques. 2600 Magazine, 33(3). Autumn issue 2016.
26. Easttom, C. (2016). Multi-Dimensional Analysis of Digital Forensic Evidence. Forensic Examiner Journal, 25 (4).
27. Easttom, C. (2016). Applying Graph Theory to Evidence Evaluation. Research Gate DOI: RG.2.2.23391.0528
28. Easttom, C. (2017). An Overview of Pseudo Random Number Generators. Research Gate. DOI: RG.2.2.13941.58087
29. Easttom, C. (2017). A Model for Penetration Testing. Research Gate. DOI: RG.2.2.36221.15844
30. Easttom, C. (2017). The RSA Algorithm Explored. International Journal of Innovative Research in Information Security. (IJIRIS). 4(1).
31. Easttom, C. (2017). Utilizing Graph Theory to Model Forensic Examination. International Journal of Innovative Research in Information Security (IJIRIS), 4(2).
32. Easttom, C. (2017). Applying Graph Theory to Modeling Investigations. IOSR Journal of Mathematics (IOSR-JM) 13,2 PP 47-51. doi:10.9790/5728-130205475
33. Easttom, C. (2017). Enhancing SQL Injection with Stored Procedures. 2600 Magazine. 34(3).
34. Easttom, C. (2017). An Overview of Key Exchange Protocols. IOSR Journal of Mathematics (IOSR-JM). 13(4). DOI: 10.9790/5728-1304021618.
35. Easttom, C. (2017). An Overview of Quantum Cryptography with Lattice Based Cryptography. IOSR Journal of Mathematics, 13(6).
36. Easttom, C. (2018). A Generalized Methodology for Designing Non-Linear Elements in Symmetric Cryptographic Primitives. In

Computing and Communication Workshop and Conference (CCWC), 2158 IEEE 8th Annual. IEEE.

37. Easttom, C. (2158). The role of weaponized malware in cyber conflict and espionage. In 13th International Conference on Cyber Warfare and Security ICCWS, 2158.
38. Easttom, C. (2158) An Overview of Cryptographic Backdoors. Journal of Information System Security, 13 (3), 177-185.
39. Easttom, C. (2158). The Daubert Standard as a Framework for Digital Forensics. Digital Forensics Magazine, 35.
40. Easttom, C. (2158). A Study of Cryptographic Backdoors in Cryptographic Primitives. 26th Iranian Conference on Electrical Engineering (ICEE2158). Mashad Iran.
41. Easttom, C. (2018). Bluetooth Hacking 101. 2600 Magazine 35(1).

3. Patents

U.S. Patent No. 8,527,779 B1 Method and apparatus of performing distributed steganography of a data message

U.S. Patent No. 8,713,067 Stable File System

U.S. Patent No. 8,819,827 B1 Method and apparatus of performing data executable integrity verification

U.S. Patent No. 8,825,845 B1 Managing a network element operating on a network

U.S. Patent No. 8,825,810 B1 Domain name service based remote programming objects

U.S. Patent 8,984,639 Method and apparatus of performing data executable integrity verification

U.S. Patent No. 9,405,907 Method and apparatus of performing data executable integrity verification (a continuation patent of '639)

US Patent No. 9,313,167 Domain name service based remote programming objects

US Patent No. 9,619,656 Method and apparatus of performing distributed steganography of a data message (continuation patent of 8,527,779 B1)

US Patent No. 9,686,227 Domain Name Service based remote programming objects (continuation patent of U.S. Pat. No. 9,313,167)

US Patent No. 9,755,887 Managing a network element operating on a network

US Patent No. 9,754,108 Method and apparatus of performing data executable integrity verification

US Patent No. 9,753,957 System and method for document tracking

C. Standards and Certification Creation

1. Member of the advisory board for Embry Riddle University cyber security program within the Homeland Security degree program.
1. Created the course and certification test for Certified OSForensics Examiner (OSFCE). OSForensics is a forensic software tool used to analyze computers.
2. Reviewer for scientific papers submitted to IEEE Security & Privacy.
3. Member of the IEEE Systems and Software Engineering Standards Committee.
4. Editorial board member for the year 2016 for *Journal of Information Security Science & Digital Forensics*. This is an international peer reviewed information security journal.
5. Editorial board for the year 2016 member for *The Forensic Examiner*. This is a peer reviewed forensic journal.
6. Subject matter expert for the Computer Technology Industry Association (CompTIA) Server + exam creation team. I was part

of the team that helped create the CompTIA Server+ certification test.

7. Subject matter expert for the Computer Technology Industry Association (CompTIA) Linux+ exam review team. I was part of the team that helped create the CompTIA Linux+ certification test.
8. Subject matter expert for the Computer Technology Industry Association (CompTIA) Security+ exam Job Task Analysis team. I was part of the team that helped create the CompTIA Security+ certification test.
9. Subject matter expert for the Computer Technology Industry Association (CompTIA) Certified Technical Trainer exam revision team.
10. Created the EC Council Certified Encryption Specialist course and certification test. Then revised the course and certification in 2017.
11. Created the EC Council CAST Advanced Encryption course.
12. Worked on the Job Task Analysis Team for the Certified Ethical Hacker v8 test.

D. Professional Awards and Memberships

1. Distinguished Speaker of the ACM (2017 to 2020)
2. Member of the International Association of Cryptological Research (IACR)
3. Member of the ACM (Association of Computing Machinery)
4. Member of the ACM Special Interest Group on Artificial Intelligence
5. Member of the ACM Special Interest Group on Security, Audit and Control
6. Member of the IEEE (Institute of Electronics and Electrical Engineers)
7. Member of the IEEE Computing group
8. Associate Member of the American Academy of Forensic Sciences (2015 to 2158)
9. Member of InfraGard (FBI-Civilian group for cyber security)
10. 1992-1993 National Deans List

11. Who's Who in American Colleges and Universities 1998
12. Marquis Who's Who in America
13. Marquis Who's Who in Education
14. Marquis Who's Who in Science and Engineering

E. Speaking Engagements

1. Mid-Cities PC Users Group September 19, 2003. The topic was computer security in general.
2. The Harvard Computer Society April 5, 2004. The topic was computer security.
3. The ACM Chapter of Columbia University November 15, 2005. The topic was computer viruses.
4. DeVry/Keller University in Dallas December 2009 Commencement Speaker.
5. Public presentation on computer crime in McKinney Texas in July 2008.
6. Southern Methodist University Computer Science and Engineering Colloquium September 2010. The topic was organized computer crime and computer terrorism. I was an invited speaker.
7. Takedowncon security conference in Dallas Texas, May 2011. The topic was steganography. I was an invited speaker.
8. An Overview of Modern Cryptography, May 5, 2011 Webinar
9. CAST Conference in Washington D.C. August 2011. The topic was Cryptography: Feistel Ciphers. The audience was primarily Department of Defense personnel and contractors. I was an invited speaker.
10. Digital Certificates: An Expert View, January 12, 2012 Webinar
11. Takedown security conference in Dallas Texas, May 2012. The topic was RSA cryptography. I was an invited speaker.
12. Problems with RSA, November 4, 2012 Webinar
13. Takedowncon security conference in Huntsville Alabama, July 15, 2013. The topic was cryptanalysis. The audience was primarily Department of Defense personnel and contractors. I was an invited speaker.
14. September 25-26, I conducted a 2-day master class in hacking techniques, in Singapore for Clariden Global. I was an invited speaker.

15. March 2014, I conducted a presentation for the University of Texas ACM chapter. The topics were distributed steganography and cryptographic backdoors.
16. May 26-27, 2014. I conducted a 2-day workshop in software testing in Singapore for Clariden Global. I was an invited speaker.
17. June 2014, I conducted a public talk on computer crime and internet safety in Melissa Texas, sponsored by the Melissa Police Department.
18. October 1, 2014 presentation of a talk on cryptographic backdoors at the ISC2 Security Conference in Atlanta Georgia.
19. October 5, 2014 presentation of a talk on cryptographic backdoors at the Hakon convention in Indore, India. I was an invited speaker.
20. October 17, 2014 U.S. Secret Service, North Texas Electronic Crimes (N-TEC) Task Force presenting a talk on the history and current state of computer crime. I was an invited speaker.
21. November 7, 2014 North Texas Crime Commission-Healthcare Cyber Security Symposium presenting a talk on health care breaches. I was an invited speaker.
22. January 27, 2015: Collin County Sheriff's Academy Alumni Association. "Cybercrime and online predators".
23. April 14, 2015 Brighttalk webinar "What you don't know about Cryptography and how it can hurt you".
24. May 4, 2015 North Texas Crime Commission-Healthcare Cyber Security Symposium presenting a talk on the causes and remediation of health care breaches. I was an invited speaker.
25. May 12, 2015 SecureWorld Houston "What you don't know about Cryptography and how it can hurt you".
26. August 20, 2015. Southwest Financial Crimes Forum "7 biggest mistakes of incident response." I was an invited speaker.
27. September 30, 2015 ISC2 Security Congress "Cryptanalysis for Forensics".
28. October 3, 2015. Conducted a 1-day workshop in Malware at Hakon India. I was an invited speaker.
29. October 4, 2015. Hakon India Indore India. 2015 "Cyberwar and Terrorism".
30. November 4, 2015 iSMG Fraud Summit in Dallas Texas "Business Email Masquerading: How Hackers Are Fooling Employees to Commit Fraud". I was an invited speaker.

31. November 5, 2015 SWACHA Electronic Payments Summit in Irving Texas “Emerging Trends in Cyber Crime”. I was an invited speaker.
32. May 25, 2016 “Improving Professional Standards in Cyber Forensics” Keynote speaker for Association of Digital Forensics Security and Law. I was an invited speaker.
33. June 22, 2016 the topic was “Cyber Security Issues Facing Business” Texas Security Bank Business Institute meeting. I was an invited speaker.
34. August 4, 2016 “Steganography: The in’s and Out’s” DefCon 24, Las Vegas.
35. September 12, 2016 USMCOC Third North American Sustainable Economic Development Summit Cyber Security, Information Technology & Innovation Panel. I was an invited speaker.
36. September 13, 2016 Tarleton State University CyberSecurity Summit at the George W. Bush Institute. The topic was "A template for incident response". I was an invited speaker.
37. September 28, 2016 Secure World Dallas. A presentation on "Analyzing Forensic Evidence -Applications of graph theory to forensic analysis”.
38. October 2, 2016 Hakon India (Indore India). A presentation on “The Dark Web Markets – Implications for Law Enforcement and Counter Terrorism”. I was an invited speaker.
39. October 18-19, 2016 Jordan Cyber Security & Forensics Forum (JCSFF-2016) Presenting two presentations. The topics were “Zero Day Exploits” and “How to forensically analyze Zero Day Exploits”. I was an invited speaker.
40. December 1-2. I conducted a 2-day advanced workshop on cyber-threat intelligence in Singapore for Clariden Global. I was an invited speaker.
41. January 17, 2017 the 2nd International Congress of the International Association of Law and Forensic Science (IALFS), in Cairo Egypt January 17, 18, 19. The topics were “Improving Digital Forensics” and “Applying Graph Theory to Model Forensic Examinations”. I was an invited speaker.
42. February 11, 2017. North Texas Cyber Security Association bi monthly meeting. Speaking on Dark Web Markets and their impact for law enforcement and intelligence agencies. Plano Texas Collin College Courtyard Campus.

43. February 17, 2017. American Academy of Forensic Sciences 69th Annual Meeting. Speaking on a novel approach JTAG phone forensics.
44. March 3, 2017. University of North Texas. A presentation on Applying Graph Theory to Analyzing Digital Evidence.
45. May 24, 2017. Enfuse 2017 conference in Las Vegas. A presentation on Applying Graph Theory to Analyzing Digital Evidence.
46. July 27, 2017. Defcon 25 2017 conference in Las Vegas. A presentation entitled "Windows: The Undiscovered Country" on undocumented features of Windows and SQL Server that can be used for hacking and penetration testing.
47. September 25, 2017 ISC2 Security Congress in Austin Texas. A presentation on "Applying Graph Theory to Analyzing Digital Evidence".
48. September 27 and 28, 2017. Secure Jordan conference in Amman. I presented two talks. The first is "An overview of current challenges in phone forensics". The second is "How to address dark web markets".
49. October 18-19 SecureWorld Dallas 2017. A presentation on "Cryptography, what you don't know and how it can hurt you".
50. January 8 to 10th Annual IEEE Computing and Communication Workshop at the University of Nevada in Las Vegas, a presentation on my paper "A Generalized Methodology for Designing Non-Linear Elements in Symmetric Cryptographic Primitives". I also chaired a session on Artificial Intelligence, and another session on Computer Architecture and VLSI.
51. March 8 to 9 ICCWS conference (13th International Conference on Cyber Warfare and Security) presenting my paper "The Role of Weaponized Malware in Cyber Conflict and Espionage". Also presenting a research poster on "A Modified McCumber Cube as a Basis for a Taxonomy of Attacks"
52. March 23, 2158 presenting "Penetration Testing as a Profession Rather than a Dark Art". at the ISC2 Dallas Chapter Meeting in Murphy Texas.
53. April 11, 2158 University of Texas at Dallas ACM chapter is hosting my Distinguished Speaker of the ACM Talk "Quantum Computing and Lattice Based Cryptography"
54. May 17, 2158. SecureWorld Houston 2158. Presentation on "Quantum Computing and Cryptography"

55. September 25, 2018 I will be presenting "Dark Web Market Investigations" at the Global Security Exchange (GSX) 2018 (formerly the Annual Seminar and Exhibits) in Las Vegas Tuesday, September 25, 2018 (11 am Session 5127)
56. October 8-10, 2018 "An exploration of quantum computing and post quantum cryptography" ISC2 Security Congress in New Orleans.

F. Litigation Support Experience

I have worked for both plaintiffs and defendants in computer science related cases. These cases include software copyright, trademark infringement, patent cases, and computer crime related cases. In patent cases I have opined on both infringement and validity issues. I have also testified as to the valuation of computer software.

1. 2004-2005 AVG v. Microsoft, consulting for the firm of McKool Smith on behalf of the plaintiff AVG. This was a patent infringement case involving six patents. I was the testifying expert for one patent (the '286 patent) and a consulting expert for the others. This case involved software analysis for several hundred gigabytes of software source code as well as preparation of claim charts.
2. 2006 Harrison v. Comtech Solutions Worldwide Inc., consulting for the firm of Winthrop & Weinstine on behalf of Comtech Solutions. This was a software copyright infringement case. I was a consulting expert for this case.
3. 2006 The Weidt Group v. Cold Spring Granite Company, consulting for the firm of Winthrop & Weinstine on behalf of The Weidt Group. This was a software copyright infringement case. I was a consulting expert for this case.
4. 2008 Countryman v. NextMedia Inc., consulting for the firm Siebman, Reynolds, Burg, & Phillips on behalf of the plaintiff, Countryman. This case involved an alleged breach of network security. I was a testifying expert, the case settled before trial.
5. 2008-2009 Virnetx v. Microsoft, consulting for firm of McDermott, Will, and Emery on behalf of the plaintiff Virnetx. This was a patent infringement case. This case involved software analysis for several hundred gigabytes of

software source code. I was a consulting expert for this case. The case went to trial in 2010.

6. 2010 SSL Services LLC v. Citrix Systems Inc., consulting for the firm of Dickstein and Shapiro LLC on behalf of the plaintiff SSL Services. This was a patent infringement case. I was a consulting expert for this case. Case No. 2-08-cv-158 (E.D. Tex.)
7. 2009-2012 Uniloc v. multiple defendants, consulting for the firm of Ethridge Law Group on behalf of Uniloc. This was a patent infringement case. I consulted and performed the analysis of over 100 potential defendants, determining if the products in question infringed. This involved analyzing the software utilizing standard network forensics techniques as well as reviewing source code. The case also required me to prepare over 100 claim charts. Case numbers including: No. 6:14-cv-00415 (E.D. Tex.) (ArcSoft, Inc.), No. 6:14-cv-00420 (E.D. Tex.) (Canon U.S.A., Inc.), No. 6:14-cv-00424 (E.D. Tex.) (Embarcadero Technologies, Inc.).
8. 2011-2012 Virnetx v. Cisco et. al.; Virnetx v Mitel, et. al., consulting for the firm of McKool Smith on behalf of Virnetx. This was a patent infringement case. I was a consulting expert for this case. This case involved software analysis for over 20 gigabytes of software source code for various Cisco products. I also worked on the related Alcatel case and reviewed source code for those products as well. Case No. 6:10-cv-00417 (E.D. Tex.)
9. 2011 Parallel Networks v. Abercrombie & Fitch, multiple defendants and multiple law firms on behalf of approximately 80 defendants. This was a patent infringement case. Most of the defendant's I was working on behalf of, won summary judgement Case No. 6:10-cv-00111 (E.D. Tex.).
10. 2011 Nuance v. Vlingo, consulting for the firm of Hays, Bostic, & Cronnin, on behalf of Vlingo. This was a patent infringement case. I was a consulting expert for this case that involved extensive source code review. Case No. 1:09-cv-11414 (D. Mass.).
11. 2011 Eolis v. Adobe Systems Inc., et al., Consulting for the firm of Locke, Lord, Bissel, and Liddell on behalf of defendant Citibank. This was a patent infringement case. I

was a consulting expert for this case. Case No. 6:09-cv-00446 (E.D. Tex.).

12. 2012 Smartphone case v. Apple on behalf of the firm of Hayes, Bostic, and Cronin on behalf of Smartphone. This was a patent infringement case. I was a consulting expert for this case. As part of my work on this case I reviewed Apple iOS source code. Case No. 6:13-cv-00196 (E.D. Tex.).
13. 2012 Smartphone case v. Android (HTC and Sony) on behalf of the firm of Nelson, Bumgardner, and Castro on behalf of Smartphone. This was a patent infringement case. I was a consulting expert for this case. As part of my work on this case I reviewed source code for several Android based phones. Case No. 6:10-cv-00580 (E.D. Tex.).
14. 2012-2013 Market One Models v. Tekcenture. For the plaintiff. This was a software copyright infringement case. This case also involved valuation of software and intellectual property. I was a testifying expert in this case. The case settled during trial. Dallas County CAUSE NO. CC-10-05682-A.
15. 2012-2013 Allstate v. Nationwide consulting for the firm Banner & Whitcoff, on behalf of AllState. This was a patent infringement case; I was a consulting expert for this case. My work on this case involved software source code review for insurance applications. The case settled before trial. Case No. 1:12-cv-03609 (N.D. Ill.).
16. 2012 Unified Messaging Solutions LLC v. Facebook Inc., Google inc., Intuit, etc. consulting for the firm of Nelson, Bumgardner, and Castro on behalf of Unified Messaging Solutions LLC. This was a patent infringement case. I was a consulting expert for this case. This case involved extensive software source code analysis. Cases No. 6:11-cv-00120 (E.D. Tex.) (Facebook), No. 6:12-cv-00085 (E.D. Tex.) (Intuit), No. 6:11-cv-00464 (E.D. Tex.) (Google).
17. 2012- 2013 DN Lookup Technologies v. Charter Communications et. al. Consulting for the firm of Lee, Jorgensen, Pyle & Kewalraman on behalf of DN Lookup Technologies. This was a patent infringement case. I was a consulting expert for this case. Case No. 1:11-cv-01177 (D. Del.).

18. 2013 Droplets v. Amazon, et al Consulting for the firm of Wilson, Sonsini, Goodrich, & Rosati on behalf of the defendants E-Trade, Charles Schwab, Ameritrade, and ScottTrade. This was a patent infringement case. I was a consulting expert for this case. The case settled before trial. Case No. 3:12-cv-03733 (N.D. Cal.).
19. 2013 Andrews v. Medical Excesses LLC. Consulting for the firm of Maynard, Cooper & Gale on behalf of the defendant. This was a liability case involving a breach of network security. The case settled before trial. Case No. 2:11-cv-1074 (M.D. Ala.).
20. 2013 Macro Niche Software, Inc. and Michael j. Ruthemeyer v. 4 Imaging Solutions, L.L.C., Protech Ledged Eyewear, Inc. And Imaging Solutions of Australia consulting for the firm of Kevin R. Michaels, P.C on behalf of the plaintiff. This was a software copyright infringement case. This case also involved valuation of software and intellectual property. I was a testifying expert in this case. The case settled before trial. Case No. 4:12-cv-2292 (S.D. Tex.).
21. 2013 Geotag v. Frontier Communications et al. Consulting for the firm of Reese, Gordon, & Marketos on behalf of the plaintiff. This was a patent infringement case involving multiple defendants. I was a testifying expert in this case. The case involved extensive source code and product analysis. The cases settled before trial. Case No. 2:10-cv-00265 (E.D. Tex.).
22. 2013-2014 Geotag v. Starbucks et al. Consulting for the firm of Reese, Gordon, & Marketos on behalf of the plaintiff. This was a patent infringement case involving multiple defendants. I was a testifying expert in this case. The case involved extensive source code and product analysis. The cases settled before trial. Case No. 2:10-cv-00572 (E.D. Tex.).
23. 2013-2014 Geotag v. AT&T et al. Consulting for the firm of Malouf & Nockels LLP and the Winstead law firm, on behalf of the plaintiff. This was a patent infringement case. I was a testifying expert in this case. The case involved extensive source code and product analysis. The case settled before trial. Case No. 3:13-cv-00169 (N.D. Tex.).

24. 2013 MCNE, Inc. and David Todd McGee v Amarone Partners LLC, et. al. District Court of Dallas County. Consulting for the firm of Howie Law PC on behalf of the defendant. This was a software copyright infringement case. I was a testifying expert in this case, but the case settled before trial. Case Dallas County, Texas DC-11-03860.
25. 2013 PiNet v. J.P. Morgan Chase. Consulting for the firm of Puziniak Law Office on behalf of the plaintiff. This was a patent infringement case. I was a testifying expert on invalidity issues. The case settled before trial. Case 1:12-cv-00282 (D. Del.).
26. 2014 Pragmatus Telecom LLC v Volkswagen Group of America. Working for the defendant on behalf of the firm Locke Lord LLP. I was a consulting expert. The case settled before trial. Case 1:12-cv-01559 (D. Del.).
27. 2014 API Technical Services LLC vs Anthony Francis et. al. working for the defendant on behalf of the Wade Law Firm. I was a testifying expert in this case, the case settled before trial. Case 4:13-cv-627 (E.D. Tex.).
28. 2014 Ameranth, Inc. v. Genesis Gaming Solutions, Inc., for the defendant Genesis Gaming Solutions. This was a patent infringement case. I was a testifying expert in this case, the case settled before trial. This case was in the Central District of California. Case 8:13-cv-00720 (C.D. Cal.).
29. 2014 Ameranth, INC v. ITCS INC., for the defendant ITCS. This was a patent infringement case. I was a testifying expert in this case, the settled before trial. This case was in the Central District of California SA 8:13-00720 AG. Case 8:13-cv-00720 (C.D. Cal.).
30. 2014 Neomedia Inc. vs Dunkin Brands Inc. Civil Action No.: 13-cv-02351-RM-BNB. I was retained by the firm of Nutter law on behalf of the defendant Dunkin Brands Inc. The case settled before trial. Case 1:13-cv-02351 (D. Colo.).
31. Neomedia v Marriot Intl. Inc Civil Action No. 14-cv-001752-KLM. I was retained by the firm of Ballard Spahr LLP for the defendant. The case settled before trial. Case 1:13-cv-001752 (D. Colo.).
32. 2014 Federal Trade Commission vs Boost Software Inc. for the defendant. Case 14-cv-81397 (S.D. Fla.). The case settled.

33. 2014 Federal Trade Commission vs PC Cleaner Pro Inc. for the defendant. Case 14-cv-81395 (S.D. Fla.). The case settled.
34. 2015 E AutoXchange LLC vs Academy, LLC. I am working on behalf of the defendant for the law firm of Wolfe & Wyman LLP. This was a software copyright infringement case. Case 1:14-cv-01278. The case settled.
35. 2015 Attorney General of Florida v ASAP Tech Help LLC, Working for the firm of Lubell & Rosen for the defendant. This case settled before trial. Case 2015 CA002751XXXXMB. Case concluded.
36. 2015 SNA1 S.p.A. v Barcrest Group Ltd. For the firm of Winget, Spadafora, & Schwartzberg on behalf of Illinois Insurance Company. I was a consulting expert. The case settled.
37. 2015 Suncoast Post-Tension LTD vs Peter Scoppa, et. al. US District Court Houston. For the firm of Macdonald Devin P.C., on behalf of the defendant. Case No. 4:13-cv-03125. Case concluded.
38. 2015-2017 Walmart Stores Inc. v. Cuker Interactive LLC. for the Henry Law Firm on behalf of Cuker Interactive LLC. Software trade secrets is the underlying matter in the case. Case has concluded.
39. 2015 United States of America vs. Anastasio N. Laoutaris. District Court for the Northern District of Texas, Dallas Division case no 3:13-CR-00386-B. Working for the firm of Law Office of John R. Teakell on behalf of the defendant. This was a criminal case involving alleged violation of 18 U.S.C. 1030 (a)(5)(A) and (c)(4)(B)(i). Case concluded.
40. 2016 VPN Multicast Technologies LLC vs AT&T Corp., Civil Action No.: 3:15-cv-02943-M. Patent infringement case. For the firm of The Simon Law Firm on behalf of the plaintiff. This case settled.
41. 2015-2016 Bradium Technologies vs Microsoft Cause 35:27 Patent infringement case. For the firm of Kenyon & Kenyon LLP on behalf of the plaintiff.
42. 2016 United States v Michael Thomas. Eastern District of Texas Sherman Division Case No 4:13CR227. For the firm of Tor Ekeland, P.C. on behalf of the defense. Case concluded.

43. 2016 Motio Inc. VS. BSP Software LLC, Brightstar. United States District Court for the Northern District of Texas Dallas Division Civil Action No. 3:16-cv-00331-O. For the firm of Walsh Law on behalf of the plaintiff. The case settled.
44. 2016-2017 Sanders et. al. v. Knight et. al. For the firm of Bradley, Murchison, Kelley, and Shea.
45. 2016 – 2017 Thomas Sisoian v. IBM. United States District Court for the Western District of Texas Austin Division Case No. 1-14-CV-565-SS. For the firm of DiNovo Price Ellwanger & Hardy LLP on behalf of the plaintiff.
46. 2016 – 2017 Evicam International, Inc. v. Enforcement Video, LLC, d/b/a WatchGuard Video. US District Court for the Eastern District of Texas, Sherman Division Case No. 4:15-cv-00105-ALM. For the firm of Reese, Gorden, and Marketos on behalf of the defendant WatchGuard Video on the topic of patent invalidity. Case has concluded.
47. 2016 – 2017 Uniloc USA v Cisco Systems Inc. Civil Action No. 6:15-cv-1175. Eastern District of Texas Tyler Division. Working for the firm of Prince Lobel, on behalf of the plaintiff.
48. 2016 – 2017 Uniloc USA v Facebook Inc. Civil Action No. 6:15-cv-223. Eastern District of Texas Tyler Division. Working for the firm of Prince Lobel, on behalf of the plaintiff.
49. 2016 – 2017 Uniloc USA v Huawei Enterprises Inc. Civil Action No. 6:15-cv-0099. Eastern District of Texas Tyler Division. Working for the firm of Prince Lobel, on behalf of the plaintiff. This case has settled.
50. 2016 – 2017 Uniloc USA v Unify Inc. Civil Action No. 6:16-cv-101. Eastern District of Texas Tyler Division. Working for the firm of Prince Lobel, on behalf of the plaintiff. This case has settled.
51. 2017-2017. Dale Oliver v Bruce Johanson, Blair Johanson, and DB Squared LLC. United States District Court for the Western District of Arkansas, Fayetteville Division. Case No. 5:17-cv-05129-TLB. Hired by the Mark Henry Law firm for the defendant/counter claimant.

52. 2017-2018. Bascom Global Internet Service Inc., v AT&T Corp. Case No. 3:14-CV-3942-M. I was hired by the firm of Susman Godfrey LLP for the plaintiff. Case has settled.
53. 2017-2158. Kathy Whiting v Gurjit Singh Dhillon, C.H Robinson Worldwide, Inc. District Court of Lincoln County State of Oklahoma. Case No. CJ-2013-120. Hired by the firm of Kane, Russell, Colman, and Logan PC for the defendant.
54. 2017-2158. John M. Money, LLC dba Auditors Recovery Service v. AmWins Speciality Auto, Inc. Cause No. DC-16-05483 101st Judicial District Court, Dallas County Texas. Hired by the firm of Kessler Collins for the defendant.

1. Testifying Experience

1. March 02, 2158. My deposition was taken in the matter of Dale Oliver v Bruce Johanson, Blair Johanson, and DB Squared LLC.
2. December 22, 2017, I testified at a hearing in the matter of John M. Money, LLC dba Auditors Recovery Service v. AmWins Speciality Auto, Inc. Cause No. DC-16-05483 101st Judicial District Court.
3. My deposition was taken 27 November 2017 in the case of: Case IPR2017-00221, U.S. Patent 7,535,890; Case IPR2017-00222, U.S. Patent 8,243,723; and Case IPR2017-00225, U.S. Patent 8,995,433
4. I testified at trial regarding patent invalidity on July 13th and July 14th, 2017 in the case of Evicam International, Inc. v. Enforcement Video, LLC, d/b/a WatchGuard Video.
5. My deposition was taken on June 27th in the case of Thomas Sisoian v. IBM. United States District Court for the Western District of Texas Austin Division Case No. 1-14-CV-565-SS.
6. My deposition was taken on June 17th in the case of Evicam International, Inc. v. Enforcement Video, LLC,

d/b/a WatchGuard Video, on the issues of patent invalidity.

7. I testified at trial April 17 and 18, 2017 in the case of Walmart Stores Inc. v. Cuker Interactive LLC. July 12, 2016. Case No. 5:14-CV-5262
8. I testified at a hearing regarding multiple motions in the case of Walmart Stores Inc. v. Cuker Interactive LLC. December 12, 2016. Case No. 5:14-CV-5262
9. My deposition was taken in the case of Walmart Stores Inc. v. Cuker Interactive LLC. July 12, 2016. Case No. 5:14-CV-5262
10. I testified in the trial of United States v Michael Thomas June 7, 2016.
11. My deposition was taken in the case of Federal Trade Commission and State of Florida v Inbound Call Experts, LLC, et. al. Case No. 14-81395-CIV-Marra/Matthewman US District Court Southern District of Florida
12. I testified in the trial of Suncoast Post-Tension LTD vs Peter Scoppa, et. al. October 9, 2015.
13. I testified in the trial of United States of America vs. Anastasio N. Laoutaris, September 25, 2015 and September 28, 2015.
14. My deposition was taken in the Suncoast Post-Tension LTD vs Peter Scoppa, et. al. case August 27, 2015.
15. My deposition was taken in the Attorney General of Florida v ASAP Tech Help LLC case May 22, 2015.
16. I testified at a non-jury trial/hearing in the Federal Trade Commission vs PC Cleaner Pro Inc. case December 17, 2014.
17. I testified at a non-jury trial/hearing in the Federal Trade Commission vs Boost Software Inc. case November 24, 2014.
18. My deposition was taken in the Neomedia Inc. vs Dunkin Brands Inc. case relating to patent indefiniteness/invalidity issues on November 13, 2014
19. My deposition was taken in the Geotag v AT&T case relating to validity issues on July 9, 2014.

20. My deposition was taken in the Geotag v AT&T case relating to infringement issues on June 11, 2014.
21. My deposition was taken in the Geotag v. Starbucks et. al. case relating to invalidity issues in regard to the defendants Dominos and Darden May 15 2014
22. My deposition was taken in the Geotag v. Starbucks et. al. case relating to infringement issues in regard to the defendant Darden May 14 2014
23. My deposition was taken in the Geotag v. Frontier Communications et. al. case relating to infringement issues in regard to the defendants Gander Mountain and Abercrombie and Fitch 24 January 2014.
24. My deposition was taken in the Geotag v. Frontier Communications et. al. case relating to infringement issues in regard to the defendants Trane and Genesco 23 January 2014.
25. My deposition was taken in the Geotag v. Frontier Communications et. al. case relating to infringement issues in regard to the defendants Cinemark, Spencer's Gifts, and Regis Corp. on 22 January 2014.
26. My deposition was taken in the Geotag v. Frontier Communications et. al. case relating to infringement issues in regard to the defendants Walmart, Nike, and Advanced auto on 21 January 2014.
27. My deposition was taken in the PiNet v. J.P. Morgan Chase case relating to invalidity in January 2014.
28. My deposition was taken in the Geotag v. Frontier Communications et. al. case relating to infringement issues in regard to the defendants in Judge Gilstrap's court in December 2013.
29. My deposition was taken in the Geotag v. Frontier Communications et. al. case relating to alleged invalidity issues in regard to the defendants in Judge Gilstrap's court in December 2013.
30. My deposition was taken in the Microsoft v. Geotag case in regard to Google in December 2013.

31. I testified at an evidentiary hearing in the matter of Macroniche Software Inc. v 4 Imaging Solutions LLC, et. al. Southern District of Texas Houston Division.
32. I testified at the trial of Market One v. Tekcenture case in the Dallas County Courts in February 2013.
33. My deposition was taken in the Geotag v. Frontier Communications case in regard to the defendant Yellow Pages in September 2013.
34. My deposition was taken in the Market One v. Tekcenture case in December 2012.
35. My deposition was taken in 2011 in Eolas Tech. Inc. v. Adobe Systems, Inc., et al., Civil Action No. 6:09-cv-446 (E.D. Tex.) (On behalf of defendant, Citibank).

G. Professional Experience

From: 2005
To: Present
Organization: Chuck Easttom Consulting
Title: Computer Scientist/Consultant

As an independent consultant, I have developed 2 electronic medical records software solutions, several small financial and web based applications, microcontroller programming, and consulted with various companies on networking and security issues. My consulting work has included security audits, penetration tests, and forensic analysis. I have also done corporate training and college teaching in a wide range of topics including network administration, network security, web development (HTML, JavaScript, CSS, ASP, ASP.Net etc.), programming (C, C++, C#, Java, VB, etc.) and database operations (MS SQL Server, MySQL, PostGRES, Microsoft Access, Oracle, etc.). I also developed the advanced cryptography course for the EC- Council. I developed training courses for various companies such as SkillSoft and SimpliLearn in topics such as NoSQL, MongoDB, VMWare cloud, Information Systems Auditing, CSSLP certification prep, CISA certification prep, and others. I frequently consult with various companies on computer security, cryptography, forensics, and related issues. My consulting activities have included a variety of government

agencies including U.S. and Foreign governments. Some of my training courses are through my own training company CEC-LLC, which is approved by the U.S. Department of Homeland Security National Initiative for Cyber Security Careers and Studies (NICCS) <https://niccs.us-cert.gov/training/search/cec-security-llc>

From: 2003
To: 2013
Organization: Collin College (Professional Development Department)
Title: Adjunct Instructor (Part Time)

I taught professional development courses to IT professionals in programming (C, Java, C++, and C#), web development (HTML, JavaScript, CSS, and .net), networking, and network security. I have also designed and taught computer security courses for the college.

These courses include:

- CompTIA Security+ Certification Prep.
- CISSP Certification Prep
- Hacking & Penetration Testing
- Computer Forensics
- Network Administration

From: 2003
To: 2005
Organization: Great American Insurance Company- Professional Liability Division
Title: Systems Director

Summary: In this position I oversaw all application development including complex insurance Windows applications, web development including extensive online systems, database administration with SQL Server, network administration on a Windows based network, and network security for a division of an insurance company. This role combined management with hands on work in all of these areas. I was first hired as Systems Manager, then after 12 months promoted to Systems Director. While in this role I oversaw and participated in the development of a web portal to allow customers to apply for insurance, renew policies, and check status. I personally developed an extensive reporting application. I also oversaw and participated in a complete re-writing of the

underwriting application used by our underwriters. Development was primarily using .Net with Microsoft SQL Server as a backend.

From: 2000
To: 2003
Organization: Remington College
Title: Department Chair for Computer Information Systems department
Summary: I was initially hired as an instructor but was later promoted to department chair. I taught a variety of computer science courses and managed the Computer Information Systems department. I taught courses in programming, systems analysis, web development (HTML, JavaScript, Java Applets, and .Net), e-commerce, and information security.

From: 1999
To: 2000
Organization: Digital Speech Systems Inc.
Title: Senior Software Engineer
Summary: I began at digital speech as a software engineer and was later promoted to senior software engineer. My duties included developing voicemail and related software as well as mentoring new programmers. The programming work included work on voicemail server software, unified messaging software, and related applications. I worked extensively with C, Visual C++, SQL Server, and Visual Basic.

From: 1998
To: 1999
Organization: Southeastern Oklahoma State University
Title: Director of Academic Computing
Summary: I began as the Director of Educational Technology for the School of Arts and Letters but then took over the management of the entire universities information systems when I was promoted to the Director of Academic Computing for Southeastern Oklahoma State University. In this position I managed all technical support for the campus as well as overseeing all network administration, network security, and web development.

From: 1996
To: 1998
Organization: Alegis Corporation Systems Group
Title: Software Engineer
Summary: I began as a programmer/analyst and was later promoted to Software Engineer. I worked developing Windows based financial and collections applications for companies such as Boatman's Bank of St. Louis, Chrysler Financial, and Western Union. I worked extensively with C, C++, and Visual Basic (Versions 4.0 and 5.0). I also developed and oversaw the website or the company using HTML, JavaScript, and Cascading Style Sheets.

From: 1995
To: 1996
Organization: Boeing Aerospace Operations
Title: Contract Programmer/Analyst
Summary: I worked as part of a team developing a Windows application to manage the maintenance and engineering tasks for the NATO AWACS. I worked with C, C++ and Visual Basic (starting with version 3.0) as well as Microsoft SQL Server.

From: 1991
To: 1995
Organization: Worked various technical support and computer related jobs while attending college. From late 1993 to 1995 a great deal of time was spent developing websites with HTML (1.0), JavaScript (beginning with its release in late 1995). Among the websites I created were websites for: a computer store, two martial arts studios, a quarter horse ranch, and a university chess club. During that same time period I worked extensively with some of the early browsers such as Mosaic and Netscape (late 1994). Prior to 1992, in 1991 to 1993 I worked building and repairing PC's.

From: 1987
To: 1991
Organization: United States Army

HHC 5/21 Infantry Battalion
7th Light Infantry Division
Title: Highest rank E-4
Summary: Awards received – Army Service Ribbon, National defense medal, marksman badge with grenade component. Honorable discharge.

H. Continuing Professional Education

I am always interested in updating and expanding my education, and therefore participate in seminars, webinars, online courses, continuing education/professional development training, etc. In some cases, I retake introductory or intermediate courses as a refresher. Here is an exemplary list of such courses.

- Paul Deitel, Teaching Strategies for Visual C# 2008 from Pearson Publishing – 2010.
- Design and Analysis of Algorithms from Massachusetts Institute of Technology – 2012.
- Parallel Computing from Massachusetts Institute of Technology – 2013.
- Microsoft Technet - Windows 7 Feature Overview – 2011.
- Programming Methodology from Stanford University Center for Professional Development – 2012.
- Perl fundamentals from the Association of Computing Machinery 2012.
- Key Issues in Distributed Systems from Stanford University Center for Professional Development – 2013.
- Introduction to HTML5 and CSS3 from the Association of Computing Machinery – 2013.
- Software Program Control Flow Fundamentals from the Association of Computing Machinery – 2013.
- Harvard Extension School CS 50 Intensive Introduction to Computer Science. This was an intensive coverage of C, PHP, MySQL, Algorithms, and Data Structures. I took this course as a refresher – 2014.
- The Fundamentals of Conducting an Internal Investigation from Guidance Software (webinar) – 2015

- Carnegie Mellon University Software Engineering Institute - Trends and New Directions in Software Architecture (webinar)- 2015
- Analyzing Evidence from Mobile Devices, Including Hidden and Deleted Data. Oxygen Forensics (webinar) – 2015
- Technical Debt in Large Systems: Understanding the Cost of Software Complexity. Massachusetts Institute of Technology (webinar) – 2015
- Current Trends in Computer Security. Stanford University (webinar) – 2015
- Windows FE and Live Forensic Triage (webinar) Forensic Magazine. – 2015
- American College of Forensic Examiners course - Forensic Examination of CCTV Digital VTR Surveillance Recording Equipment. 2015
- American College of Forensic Examiners course - Developmental and Motivational Factors of Transnational Terrorists. 2015
- American College of Forensic Examiners course - Psychological Profiles of Terrorists. 2015
- Oxygen Forensics Trainer Certification Course – 2015
- Access Data FTK Online training course – 2015
- American College of Forensic Examiners course - Digital Forensics in the 21st Century – 2016
- Specialized Forensic Photography and Diagramming – June 2017
- IEEE Course: Integrated Circuit Digital Design Methodology November 2017
- IEEE Course: Integrated Circuit Digital Design Methodology: Advanced Analysis and Simulation November 2017
- IEEE Course: 4G Broadband LTE December 2017

I. References to my work

The following sections are provided as examples of the impact my work in computer science has had in the field.

1. Media References

My computer science expertise has been sought out by reporters including:

- CNN Money interviewed me regarding alleged unbreakable cryptography
http://money.cnn.com/2011/09/02/technology/unhackable_code
- CBS SmartPlanet interviewed me regarding NSA and cryptography
<http://www.smartplanet.com/blog/bulletin/nsa-proof-products-protective-or-a-profit-motive/>
- "NSA proof products: protective or a profit motive?" also appeared on ZDNet
- E-Books directory lists my "Moving from Windows to Linux" book as one of the top 10 Linux books
<http://www.e-booksdirectory.com/linux/top10.html>.
- Lawrence Journal World interviewed me for a hacking story that was published August 6, 2006. The article was entitled "Hackers infiltrate Web site".
- GoCertify.com Author Interview "Author Interview: CCFP Certified Cyber Forensics Professional All-in-One Exam Guide" January 2015
- ISMG interviewed me regarding the JP Morgan Chase Breach of 2015
<http://www.bankinfosecurity.com/interviews/what-jpmorgan-chase-breach-teaches-us-i-2982>
- CIO Magazine (Nov 14, 2016) in the article "12 steps to lower your espionage risk" references my book Computer Security Fundamentals 3rd Edition
- Forensic Focus Magazine (June 2017) interviewed me regarding my work in applying graph theory to digital forensics.

2. References to publications

My books and articles have been referenced by numerous computer scientists, including being referenced in several Ph.D. dissertations and Master's Thesis'. A few of those references are included here:

a. Dissertations and Thesis citing my work

- An assessment of user response to phishing attacks: the effects of fear and self-confidence by Deanna House, Ph.D. Dissertation in Information Systems, University of Texas Arlington.
- Assessment of Users' Information Security Behavior in Smartphone Networks- Ph. D dissertation of Mohammad Jafar Esmaeili Eastern Michigan University.
- A cryptographically-based operating system security model that protects against privileged attackers. By Christian Pain Ph.D. Dissertation Murdoch University School of Information Technology
- Assessing and Mitigating Information Security Risk in Saudi Arabia. Ph.D. dissertation of Abdulaziz Saad Alarifi. University of Wollongong
- Reference Model Based High Fidelity Simulation Modeling for Manufacturing Systems by Hansoo Kim Ph.D. Dissertation, School of Industrial and Systems Engineering Georgia Institute of Technology.
- Leadership Styles and Information Security in Small Businesses: An Empirical Investigation by Debasis Bhattachary, Ph.D. Dissertation, University of Phoenix.
- The adoption of business-to-business systems by small and medium enterprises in Amman and the perceptions of its influence on performance and efficiency by Anals A. AlBakry, Ph.D. Dissertation, University of Southern Queensland.
- Models, Services and Security in Modern Online Social Networks, Ph.D. dissertation of Alessio Bonti Deakin University, Australia.
- Design of a Forensic Overlay Model for Application Development Linlin Ke, Master's Thesis, College of Engineering, University of Canterbury.

- Forensic Analysis of Linux Physical Memory: Extraction and Resumption of Running Processes. ED Mougoue, Master's Thesis, James Madison University.
- Motivations behind Software Piracy: From the viewpoint of Computer Ethics Theories. Bethelhem Tadele, Master's Thesis University of Oulu (Scandinavia).
- Securing CAN Bus Communication: An Analysis of Cryptographic Approaches by Jennifer Ann Bruton. Master's Thesis National University of Ireland, Galway.
- Guidelines for the Adaptation of the TETRA Educational Programme at Nelson Mandela Metropolitan University to Address Human Behavioural Issues. Master's thesis of Nico Pieter Fouché.
- A DDoS Security Control Framework. Post graduate thesis of Lars Drost.
- The Value of the Automated Fingerprint Identification System as A Technique in The Identification of Suspects. Madimetja Edward Mokwele, Master's Thesis University of South Africa.
- Securing CAN Bus Communication: An Analysis of Cryptographic Approaches by Jennifer Ann Bruton. Master's Thesis M.Sc. in Software Engineering. National University of Ireland
- Radical Reddits: into the Minds of Online Radicalized Communities. Utrecht University. Master's Thesis. Verhaar, P.
- Encryption, storage technology and security of data at rest. Alkorbi, Mohammed. Master's Thesis, Unitec Institute of Technology.
- Proactive Forensic Support for Android Devices. Karthik Rao. Master's Thesis: Master of Technology in Cyber Security. Amrita School of Engineering
- The Value of The Automated Fingerprint Identification System as A Technique in The Identification of Suspects. Adimetja Edward Mokwel. Master of Technology Thesis University of South Africa.

b. Papers citing my work

1. **Hackers, spies, and stolen secrets: protecting law firms from data theft by Alan W. Ezekiel. Harvard**

Journal of Law & Technology Volume 26, Number 2 Spring 2013
Taming the diversity of information assurance & security - Journal of Computing Sciences in Colleges Volume 23, Issue 4 (April 2008)
J. Paul Myers, Sandra Riela.

2. **Adding information assurance to the curriculum** - Journal of Computing Sciences in Colleges Volume 22, Issue 2 (December 2006) Richard Weiss.
3. Effect of Windows XP Firewall on Network Issues in Informing Science and Information Technology Volume 4, 2007 *Al-Rawi (King Faisal University Saudi Arabia), Lansari (Zayed University UAE)*.
4. Ahssan, M., Abdulkareem, I. (2017). A Proposed Non Feistel Block Cipher Algorithm. *The 1st International Conference on Information Technology*.
5. Assessing Risks of Policies to Patch Software Vulnerabilities Radianti, Sveen, and Gonzalez.
6. A study of efficient avoidance in the event of DNS (domain name system) failure - Proceedings of the 8th Conference on 8th WSEAS International Conference on Automation and Information - Volume 8 Lin, Hwang, Lin.
7. Embracing the Diversity of Information Assurance & Security - Myers
8. A study of efficient avoidance in the event of DNS (domain name system) failure - Yang, Hyon, and Hankyu.
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3. Universities using my books

A number of colleges and universities around the world have used, or are using one or more of my books as textbooks. Below is an exemplary sample of some of those universities.

1. Auburn University
2. University of Texas at Dallas
3. University of Dallas
4. University of Oklahoma
5. Arizona Western College
6. Kent State University Ohio

7. California State University, Los Angeles
8. Pennsylvania State University
9. University of Nebraska
10. University of North Dakota
11. Illinois State University
12. University of Southern California
13. Western Illinois University
14. University of South Carolina
15. University of Wyoming
16. Florida State University
17. East Tennessee State University
18. The Citadel
19. University of The Incarnate Word
20. Midwestern State University
21. University of S Carolina-Lancaster
22. Southeast Missouri State University
23. George Mason University
24. Queen's College New York
25. American Military University
26. Columbus State University
27. Texas Christian University
28. Liberty University
29. Illinois Institute of Technology
30. Rochester Institute of Technology
31. California State Los Angeles
32. Wentworth Institute of Technology
33. Western Nevada College
34. Eastern Florida State College
35. Florida State College
36. University of Southern Florida Sarasota
37. University of Alaska at Fairbanks
38. College of So Nevada-Cheyenne

- 39.College of S Nevada-W Charleston
- 40.Colorado Mesa University
- 41.Temple University
- 42.Calumet College – University of St. Joseph
- 43.University of Dhaka (Bangladesh)
- 44.Kurukshetra University (India)
- 45.Universiti Malaysia Sarawak (Malaysia)
- 46.Al-Zaytoonah University of Jordan
- 47.Trinity College of Puerto Rico
- 48.Technological Institute of the Philippines
- 49.Nigeria University
- 50.SRM University Chennai India
- 51.Louisiana Technical University
- 52.Brookdale Community College
- 53.Hagerstown Community College
- 54.Wake Technical Community College
- 55.Nashville State Community College
- 56.Delmar College
- 57.Southwestern Community College
- 58.Charter Oak State College
- 59.Triton College
- 60.Hartford Community College

In addition to the universities using my books, some of my books have been translated into additional languages including German, Arabic, Korean, and Mandarin.

J. Training

Since the late 1990's I have been teaching at least on a part-time basis. I have taught courses at colleges, technical schools, corporate training environments, and on site for companies and government agencies. Some of my training courses are through my own training company CEC-LLC, which is approved by the

U.S. Department of Homeland Security National Initiative For Cyber Security Careers and Studies (NICCS) <https://niccs.us-cert.gov/training/search/cec-security-llc>

I have taught courses in the following topics:

1. HTML (including HTML 5 and CSS3)
2. JavaScript (including advanced courses)
3. Java
4. C and C++
5. VB.Net, ASP.Net, and C#
6. Objective C/iPhone programming
7. Microsoft SQL Server
8. Oracle
9. Microsoft Access
- 10.NoSQL (including MongoDB and CouchDB)
- 11.Computer Networks (routers, switches, virtualization, SDN, NFV, etc.)
- 12.Computer Hardware (motherboards, chips, etc.)
- 13.JTAG techniques for phone forensics
- 14.Certification preparation courses for the following certifications: CompTIA A+, CompTIA Network+, CompTIA Security+, CISSP, ISSAP, CEH, CISA, CSSLP, ECES, CND, and CHFI.
- 15.Computer forensics (phone forensics, Windows forensics, general forensic science, etc.)
- 16.Computer security (principles, IDS/IPS, Honey Pots, policies, DRP/BCP, cyber threat intelligence, etc.)
- 17.Cryptology (including advanced courses)
- 18.Math for cryptography including statistics, number theory, combinatorics, abstract algebra, graph theory, and related topics.
- 19.Windows Server (NT 4.0, Server 2003, Server 2008, Server 2012)
- 20.Secure programming (including web programming)
- 21.Linux
- 22.Hacking and penetration testing
- 23.Cloud Computing

I have conducted computer security (computer forensics, network security, penetration testing cryptography, etc.) related courses for a variety of government and law enforcement

agencies, various law enforcement officers, friendly foreign governments, and a variety of corporations.

I have also created a number of video courses for companies such as Skillsoft on topics such as Secure Programming, MongoDB, NoSQL, Virtualization, Cloud computing, Digital Forensics, and other topics.

K. Technical Skills

The Following is an exemplary list of technologies. This is not meant to be an exhaustive list, but rather to provide a sample of computer technology areas within which I have expertise. I have experience and/or knowledge with:

Computer Hardware: CPU architecture, motherboard structure, chip programming/testing (using HDLs, SystemVerilog, etc.) and testing, etc.

Programming Languages: C, C++, Assembly, .Net (C#, VB.Net, etc.), Pascal, Python, PHP, Ruby, Perl, Objective C, Java, and SmallTalk.

Software Engineering: Design and testing methodologies. ISO 9000, ISO 15504, also known as Software Process Improvement Capability Determination (SPICE), UML, software complexity measurements, etc.

Web development technologies: HTML, JavaScript, PHP, CSS, ColdFusion, Flash, and Dream Weaver.

Artificial Intelligence: Expert systems, Fuzzy Logic, and AI Programming.

Cryptography: I have extensive knowledge of cryptographic algorithms such as: DES, Blowfish, Twofish, AES, Serpent, RSA, Diffie-Hellman, ElGamal, MQV, ECC, GOST, and others. I also have extensive understanding of cryptographic hashes, message authentication codes, and cryptographic protocols.

Mathematics: Discrete math, number theory, graph theory, and statistics.

Cell Phones: I am experienced with iOS and Android. I have worked with both operating systems extensively including

teaching programming for both operating systems, and reviewing source code for both operating systems.

Networking: Network protocols, routers, switches, servers, IPv4, IPv6, Network models and concepts (TCP/IP, OSI, etc.), telecommunications, and network management. Also, very familiar with cloud computing with both theoretical knowledge and hands on experience with VMWare cloud.

Databases: MySQL, SQL Server, DB2, PostGres, Progress, Microsoft SQL Server, MS Access, Oracle, and SQL Anywhere. I have also worked with NoSQL databases including MongoDB and CouchDB.

Computer/Network Security: PCI standards, Common Criteria, penetration testing, computer viruses and other malware, disaster recovery planning, cryptology, firewalls, IDS, Honey Pots, biometrics, chip security, cyber threat intelligence, and security policies & procedures.

Cyber Forensics: PC forensics, network forensics, cell phone forensics (including JTAG). Experience with a wide range of tools, including but not limited to: Guidance Software Encase, Access Data FTK, Paraben Sim Seizure, Oxygen Forensics, OSForensics, WindowsFE, and various open source tools.

Domains: The domains within which I have practical IT experience include finance & banking, insurance, education, customer management, geographical mapping/tracking, defense department applications, and medical applications.

Soft Skills: I have experience in valuing software and intellectual property as well as IT management related issues.