

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MOTOROLA SOLUTIONS, INC.

Petitioner,

v.

STA GROUP LLC

Patent Owner

U.S. Patent No. 8,489,134

IPR Case No.: 2023-01293

DECLARATION OF MICHAEL CRANER

STA Group Exhibit 2001
Motorola Solutions Inc. v. STA Group LLC
IPR2023-01293

I, Michael Craner, declare as follows:

I. Introduction

1. I am an telecommunications engineer, intellectual property analyst, and patent agent, and I have been retained on behalf of STA Group LLC (“STA” or “PO”) as an independent consultant in connection with the petition for *inter partes review* (“IPR”) filed by Motorola Solutions, Inc. (“Motorola” or “Petitioner”) seeking to invalidate claims 1-14 of U.S. Patent No. 8,489,134 (“the ’134 Patent”), entitled “System and Method for Providing Presence Based Trunking in a Network Environment,” by named inventors Zeeshan Khan, Keith Edmund O’Brien, and Shmuel Shaffer. I understand that the ’134 Patent is assigned to STA. I have been asked to provide technical review, analysis, insights, and opinions regarding the ’134 Patent, the petition for IPR, and the prior art references cited in the petition. Likewise, I have been asked to provide a declaration regarding the same.

2. This declaration sets forth the opinions I have formed and provides the bases and reasons for those opinions. This declaration is based on information currently available to me. All of my opinions stated in this declaration are based on my own personal knowledge and professional judgement, and I declare that I have personal knowledge of the facts set forth in the declaration and, if called to testify as a witness, could and would do so competently. In forming my opinions, I have relied on my education, experience, and knowledge. A copy of my current curriculum

vitae, which details my education, professional, and academic experience, is included as Appendix A to this declaration.

3. I am being compensated at my usual consulting rate of \$250 per hour for my work on this matter. I am also being reimbursed for any incurred expenses. My compensation is in no way dependent upon my opinions or testimony or the outcome of this proceeding.

II. PROFESSIONAL BACKGROUND AND QUALIFICATIONS

4. The following provides a brief overview of some of my experience that is relevant to the matters set forth in this declaration.

5. I received a bachelor's and master's degree in electrical and computer engineering in 1984 and 1986, respectively, from the State University of New York at Buffalo. Thereafter, I completed postgraduate work in parallel algorithms and architectures at Virginia Polytechnics in 1987 and at John Hopkins in 1989.

6. In addition to post graduate work, from 1987 to 1990, I worked fulltime for Martin Marietta Aero & Naval Systems in Baltimore, MD, analyzing, designing, and implementing matrix and FFT radar/sonar algorithms.

7. From 1990 to 1992, I worked for Ressler Associates, Inc. in collaboration with NASA's Goddard Space Flight Center to design and implement airborne, X-band, weather radar systems including multiprocessor development, FPGA/PLD design, and coding for data system control and DSP processing.

8. From 1992 to 1994, I worked for Mediastar, a subsidiary of Ressler Associates, Inc., as a co-founder, chief technology officer, and director of engineering. At MediaStar I implemented the industry's first 386/486 and VESA local-bus fax/modem/tam DSP co-processor on a WinTel PC.

9. From 1994 to 1995, I worked for Great Valley Products as director of engineering where I oversaw the development of a Commodore Amiga hosted accelerator, video time-based-corrector, SCSI accelerator, video effects processor, and early PCMCIA format soundcards.

10. From 1995 to 2001, I worked for Motorola, Inc. (formerly General Instrument Corp). At various times during this period I was employed as a senior manager for network controller development, a senior systems manager for worldwide digital cable systems integration, a product manager for HDTV consumer products, an integration manager for the rollout of next-generation broadband digital cable TV, and director of technology licensing where I served on the Standards committee and assisted the IP department in the management of the Motorola Broadband Communications Sector patent portfolio of over 500 patents. As part of my systems integration role, my team oversaw the rollout of the first digital TV system in North America and was involved in terrestrial and satellite based HDTV streaming trials and operations.

11. From 2001 to 2005 I worked at Mendelsohn & Associates, PC, as a registered patent agent. There I performed patent preparation/prosecution for various multinational telecomm clients including Lucent, Agere, HBO, Lattice, Freescale, and ATI (now part of Broadcom). Technologies protected included: CATV, DWDM optical, networking, MPLS, SDARS OFDM, VoIP, 3G wireless, ATM, 3D GUI, SDV, streaming media, and MPEG. I performed patent process development/training for outside firms and filed / prosecuted over 60 patents.

12. From 2005 to 2009, I worked as an IP Architect / Distinguished Engineer-Director / Patent Evangelist at Guideworks, a joint venture between Comcast and Gemstar directed toward integrating the interactive guides with both Cisco and Motorola STBs. My role was 75% patent portfolio development/management, and 25% systems analysis, engineering, & requirements setting for the next generation STB navigator/network. During this time I developed and managed processes for capture of patentable concepts, lead brainstorming, and managed outside counsel in patent development, prosecution, disclosure/selection and process management. I oversaw the filing of 77 patents and I was an inventor/contributor on half of those.

13. From 2009 to the present, I have been a sole proprietor at MediaComm Innovations working as a technology consultant, intellectual property analyst, and patent agent providing technology assessment opinions and patent preparation and

prosecution services related to multimedia compression techniques and related standards for telecommunications.

14. For a more detailed overview, my *curriculum vitae* is attached as Appendix A at the end of this declaration.

III. Materials Considered

15. The analysis that I provide in this declaration is based on my education, research, experience, and professional judgment, as well as documents I have considered, including the '134 Patent (Ex. 1001), its prosecution history (Ex. 1003), the Petition, the references it relies on, and all accompanying exhibits, including the Declaration of Dr. Sayfe Kiaei (Ex. 1002).

16. In addition to the above, I have considered additional materials which are cited below.

IV. LEGAL STANDARDS

17. I am not an attorney, and have relied upon counsel to explain the relevant legal standards. I express no opinion regarding whether counsel's explanation was correct. For purpose of forming my opinions, I have assumed that such an explanation was correct. My understanding of the relevant legal standards as described in this section is based on the communication of those standards to me by PO's legal counsel.

18. I understand that at this stage in the IPR, Petitioner must show that there is a reasonable likelihood of success against at least one challenged claim.

A. Claim Construction

19. I understand that the first step in determining whether a patent claim would have been anticipated or obvious is to ascertain how a person of ordinary skill in the art (“POSITA”) would have understood the claim terms.

20. It is my understanding that in proceedings before the USPTO, the claims of a patent are to be construed under what is referred to as the “Phillips standard.” I understand that this means that claim terms of a patent are given the ordinary and customary meaning the terms would have to a POSITA, in view of the description provided in the patent itself and the patent’s file history.

B. Obviousness

21. I understand that “obviousness” is a legal conclusion based on the underlying factual issues.

22. I understand that an invention is obvious when the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious to a POSITA at the time the invention was made. I understand that the following factors should be considered in analyzing obviousness: (1) the scope and content of the prior art; (2) the differences between

the prior art and the claims; (3) the level of ordinary skill in the pertinent art; and (4) other objective considerations identified below.

23. I have kept these considerations in mind when offering the opinions below.

V. OVERVIEW OF THE '134 PATENT

A. Priority Date

24. The '134 Patent was filed as Application No. 12/202,450 on September 2, 2008. For purposes of this proceeding, I have assumed that the '134 Patent is entitled to a priority date of September 2, 2008 and have applied this date in considering the prior art and the viewpoint of a POSITA.

B. The Subject Matter of the Challenged Patent

25. The '134 Patent, broadly speaking, discloses a method and system for satellite communications wherein a first communications resource manager located in a first domain is operable to interact with a second communications resource manager located in a second domain. The first communications resource manager is configured to determine to establish a satellite link for multicasting between users in the first domain and users in the second domain, further configured to determine an application to be used in a communication session of the link; and further configured to allocate a bandwidth level for the link based on a change in the application and an identification of additional presence data for additional users; and wherein each

communication resource manage includes a trunking element automatically configured to select a transcoding based on available bandwidth, to adjust the bandwidth level based on a determination of which of the users can transmit data simultaneously during the communication session, to detect the absence of users, and tear down the link based on absence. *See, e.g.*, '134 Patent, Abstract; '134 Patent at 1:66-2:8; '134 Patent at 7:55-8:20.

C. The Challenged Claims of the '134 Patent

26. The Petition challenges claims 1-14. For ease of discussion, I will adopt the claim limitation designations used in the Petition. Petition, pp. 3-6.

D. Level of Ordinary Skill in the Art

27. I have been asked to consider the level of ordinary skill in the field that someone would have had at the time the claimed invention of the '134 Patent was made. My opinions regarding the level of ordinary skill in the art are based on, among other things, nearly forty (40) years of experience in the field of telecommunications. My assessment of the level of ordinary skill in the art of the '134 Patent includes the levels of education and experience of persons working in the field, the types of problems encountered in the field, and the sophistication of the technology.

28. Based on my review and analysis of the '134 Patent, the prior art cited herein, in my opinion, I accept the level of skill assigned by the Petition to a POSITA of the '134 Patent. Petition, p. 10.

29. Based on my education and experience, I meet this definition of one of ordinary skill in the art, and I believe that I am qualified to provide opinions about how a POSITA at the relevant time would have interpreted and understood the '134 Patent and the prior art relied upon herein. Although my qualifications and experience exceed those of a POSITA, both in September 2008 and today, I have nevertheless applied the perspective of a POSITA in rendering my opinions below.

E. Claim Construction of Terms in the Challenged Claims

30. I have considered both party's constructions argued in the district court proceedings (Ex. 1002, ¶57), and my conclusions would not change under either party's proposal. In other words, even if the Board or district court accepts Petitioner's proposed claim constructions, I do not believe that the prior art of record discloses or suggests the limitations of each challenged claim. It is my opinion, as expressed below, that the prior art asserted by the Petition does not render obvious the challenged claims under any reasonable construction of the claim limitations.

31. However, it must be pointed out that the Petition here applies a unique definition to the term "transcode" or "transcoding" to which I do not agree. More specifically, the Petition asserts that "transcoding" includes "coding techniques

applied to previously encoded data.” Petition, p 40. I do not agree that the term “transcoding” should be construed to include any and all “coding techniques applied to previously encoded data,” but instead should be given its plain and ordinary meaning. *See, infra* ¶¶ 39-47. As discussed below, independent of the Petition’s mischaracterization of “transcoding,” it is still my opinion as expressed below that the prior art asserted by the Petition does not render obvious the challenged claims.

VI. OPINIONS REGARDING PETITIONER’S GROUNDS FOR INVALIDITY

32. As part of my work in this proceeding, I assessed the Petitioner’s and its expert Dr. Sayfe Kiaei’s opinions that claims 1-14 of the ’134 Patent are rendered obvious by ETSI-156 in view of ETSI-157, ETSI-985, and RFC-2205. Respectfully, I disagree. Before addressing the shortcomings of the cited references, a high-level overview of coding for data transmission is appropriate for context.

33. Data transmission requires applying coding to a data signal, which includes both encoding for transmission and decoding upon receipt of the transmission. The following figure (“Fig. A”), which I created, will help illustrate.

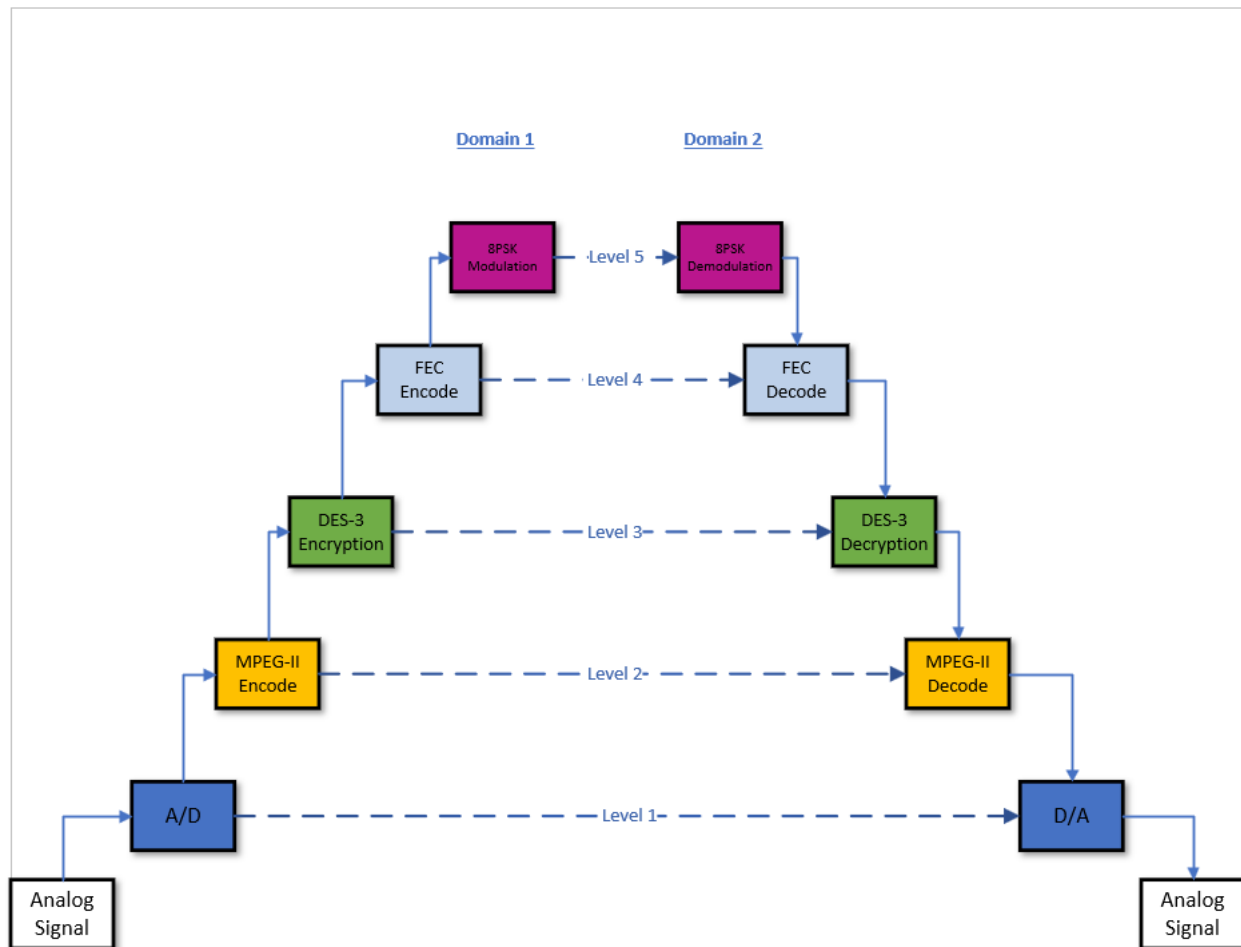


Fig. A – Encoding and decoding at various levels of a digital communication between domains via satellite

Within Fig. A, dotted lines indicate logical interfaces, while solid lines indicate physical interfaces. The first level of coding in any data transmission includes the initial encoding or conversion of an analog input signal to a digital signal using an analog-to-digital converter or A/D as shown on the bottom left of Fig. A. Continuing up the left hand side of Fig. A, additional coding levels may be applied such as: compression encoding such as MPEG-2 to reduce the size or transmission

requirements of the data (level 2); encryption encoding for security (level 3); and forward error correction coding for error correction (level 4). For transmission, the digital signal will undergo modulation coding specific to the transmission medium, e.g., coaxial cable, twisted pair, terrestrial wireless, or satellite wireless. In Fig. A, the left hand side represents a first communications domain (1) in transmission mode and the right hand side represents a second communications domain (2) in a receiving mode.

34. When a data signal is received by the receiving domain (2), the coding added to the signal at each level must be decoded to recover the lower-level encoded signal and ultimately the original content/payload carried by the digital signal. Thus, for example, a signal that was modulated for satellite transmission (level 5) is demodulated upon receipt as shown at the top of Fig. A. Subject to which intermediary encoding levels were included, the data signal is also error corrected (level 4), decrypted (also commonly known as “deciphered”) (level 3), and decompressed (level 2) as depicted on the right hand side of Fig. A. Lastly, the digital signal is converted back into an analog signal to produce an output that approximates the input as depicted in the bottom right hand corner of Fig. A.

35. A “codec” was known in the art at the time of the ’134 Patent as a portmanteau of “coder-decoder” and “compressor-decompressor.” A coder-decoder or compressor-decompressor is a device or software that compresses a digital signal

to reduce the file size for faster transmission and reduced storage requirements and decompresses a digital signal for playback. The term “codec” is also used to describe the coding scheme or format, e.g., MPEG-2 for video or MPEG-3 for audio, used at a particular encoding level. In Fig. A, only the transmission path of domain (1) is illustrated and only the receiving path of domain (2) is shown. However, in a bi-directional implementation of the system of Fig. A, where transmission from domain (2) to domain (1) could also occur, it would be clear that, for example, at each encoding level, both a coder and a decoder (i.e., “codec”) appropriate to the level of encoding would be required. In other words, at level 2, each domain would include a compression codec capable of both compressing outbound traffic and decompressing inbound traffic.

36. A “transcoder” was known in the art at the time of the ’134 Patent as a device or software that decodes from one coding format and re-encodes into an alternative format at the same encoding level. The following figure (“Fig. B”), which I created, will help illustrate “transcoding,” which is quite distinct from encoding and/or decoding.

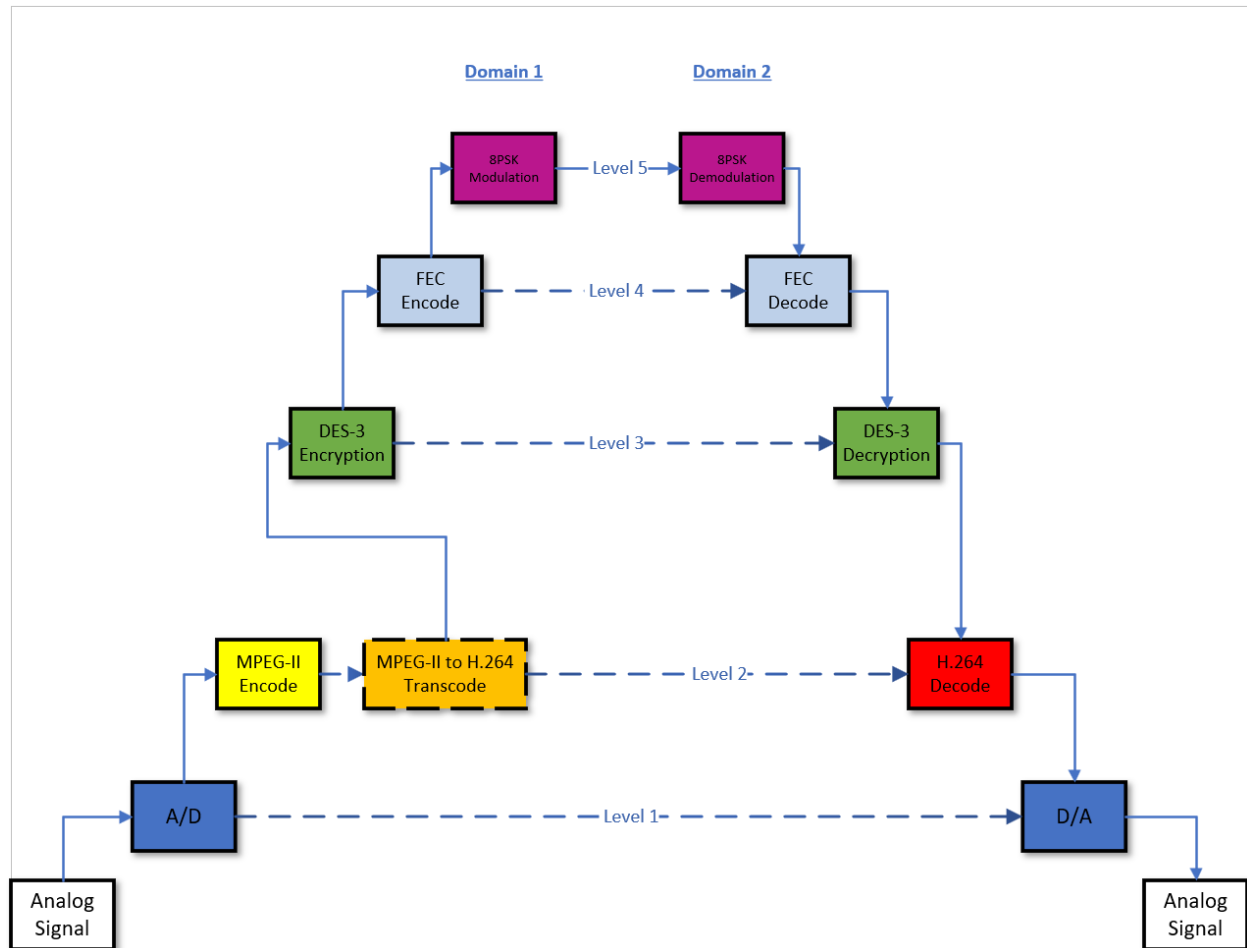


Fig. B – Encoding, decoding, and transcoding at various levels of a digital communication between domains via satellite

In the art at the time of the ‘134 Patent, the term “transcoding” was most commonly used to refer to decoding and re-encoding at the compression level. Therefore, Fig. B shows an example of a transcoder inserted into the processing of the transmitting domain (1) at level 2. As illustrated, assuming the encoder was an MPEG-II encoder and the peer level decoder on the receiving side was an H.264 decoder, a transcoder from MPEG-II to H.264 would be required at that level so that when the data was decoded from the level 3 encoding on the receiving side, the peer level compression

encoding of H.264 would be presented to the H.264 decoder of the receiver in domain 2. Note that the transcoder was not used to “further encode” the MPEG-II but rather to decode that compression and re-encode it with another peer level (i.e., level 2) compression algorithm (H.264).

37. This is best illustrated by the detail transcoder view of the figure (“Fig. C”) below, which I also created.

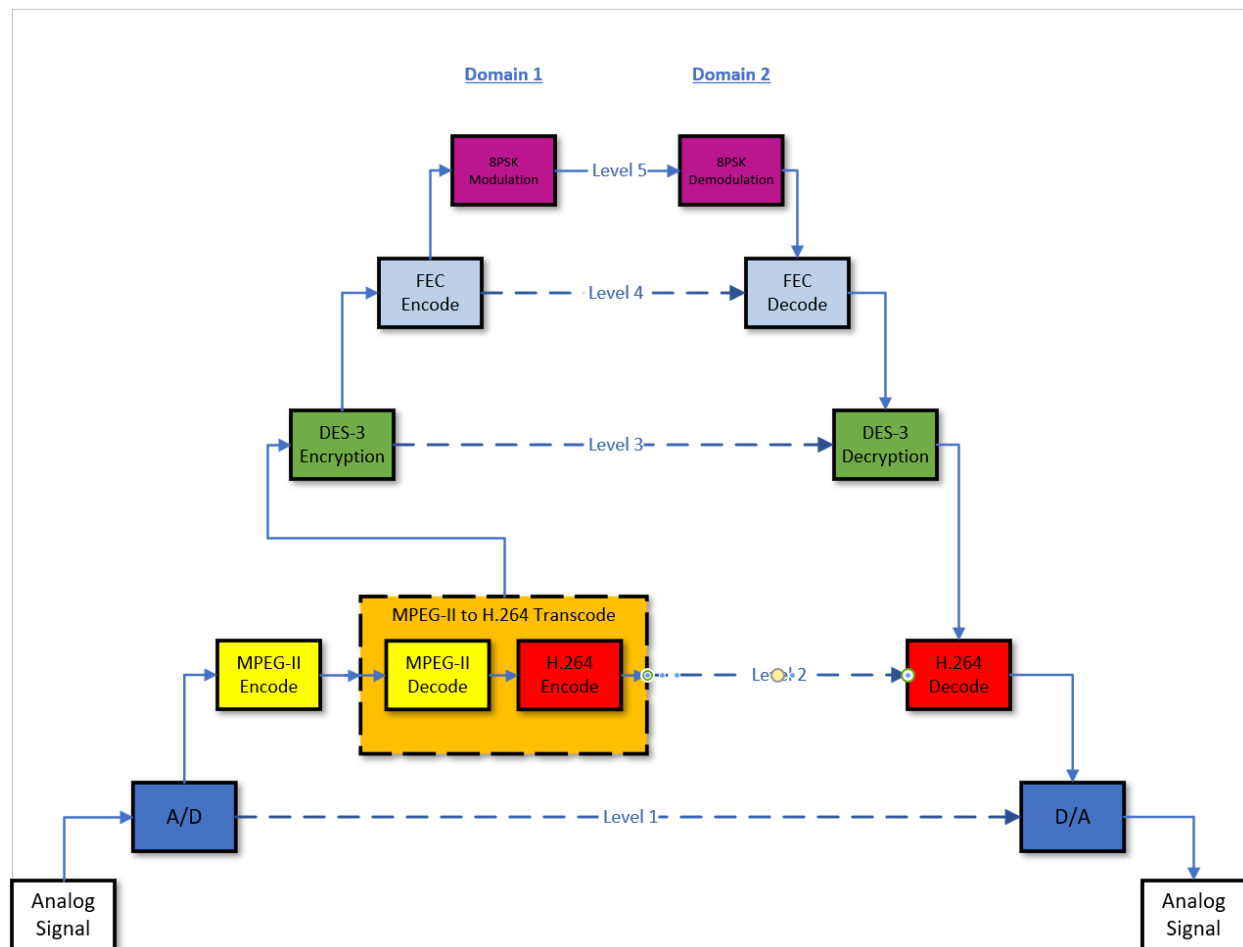


Fig. C – Encoding, decoding, and transcoding at various levels of a digital communication via satellite showing transcoding detail

A transcoder does not transcode from a compression level encoding to a different level of encoding. In other words, it does not transcode an MPEG-2 video into a triple-DES encrypted signal or an 8PSK modulated signal. It operates on a peer level, transcoding one encoding algorithm to a different format, bitrate, or quality peer level algorithm at the same level that can be later decoded by the peer level decoder. In the art at the time of the '134 Patent, “transcoding” was most commonly used to refer to decoding and re-encoding one audio or video compression format to another peer level audio or video compression format, respectively.

A. The '134 Patent is not rendered obvious by ETSI-156 in view of ETSI-157, ETSI-985, and RFC-2205

38. The references cited for ground 1 in the Petition do not teach or disclose all of the limitations of claim 1. More specifically, the referenced art does not teach or disclose at least limitations 1[f], 8[f], and 12[f]¹ which each state “wherein the communication resource managers each includes respective trunking element that is automatically configured to select a transcoding based on available bandwidth.” The petition argues that ETSI-156 in view of ETSI-157 discloses or suggests this claim

¹ For simplification, hereinafter I will only refer to limitation 1[f]. However, it should be understood that my opinions as they relate to 1[f] are applicable to 8[f] and 12[f].

limitation. I disagree for two reasons. (i) ETSI-157 does not teach or suggest the transcoding by any reasonable definition understood to a POSITA, and (ii) ETSI-157 does not teach or suggest the further constraint of a system “automatically configured to select a transcoding.”

i. ETSI-157 does not Teach or Suggest Transcoding

39. The Petition argues that ETSI-157 teaches or discloses transcoding as claimed in limitation 1[f]. I disagree. ETSI-157 does not teach, disclose, or suggest transcoding in any relevant way to render the '134 Patent obvious. For instance, ETSI-157 does not mention “transcode” or “transcoding” in its teachings. Instead, the term “transcoding” appears in ETSI-157 only twice and not in the body of the document but only in the titles of two references. Ex. 1011, p. 9 (references [6] and [7]). Neither of those references discloses automatically transcoding based on bandwidth but instead they are directed to creating format compatibility between two different voice codecs used in IP telephony. Otherwise, ETSI-157 does not teach, disclose, or suggest transcode, transcoding, or any technique to decode data at one level of encoding and re-encode that data into another format at the same level, and the Petition fails to identify anywhere in ETSI-157 where transcoding is disclosed. Accordingly, it is my opinion that a POSITA would not conclude that ETSI-156 in view of ETSI-157 teaches transcoding as claimed in limitation 1[f].

40. The Petition nonetheless argues that ETSI-157 teaches or discloses transcoding as claimed in limitation 1[f]. In order to overcome the absence of support for transcoding in ETSI-157's, Petitioner and Dr. Kiaei espouse a fundamentally incorrect definition of "transcoding." In particular, they claim "Modifying bit rate using compression or changing codec type are methods of transcoding because, e.g., they are *coding techniques applied to previously encoded data*." Petition, p. 40 (emphasis added). However, as described previously with respect to Fig. A, Fig. B, and Fig. C, transcoding is NOT applying a coding technique to previously encoded data but rather decoding at a specific encoding layer (e.g., the compression layer 2) and then re-encoding in an alternative format at the SAME level. To make this perfectly clear, I created the figure below ("Fig. D") which illustrates what "coding techniques applied to previously encoded data" looks like in the context of a satellite communication system.

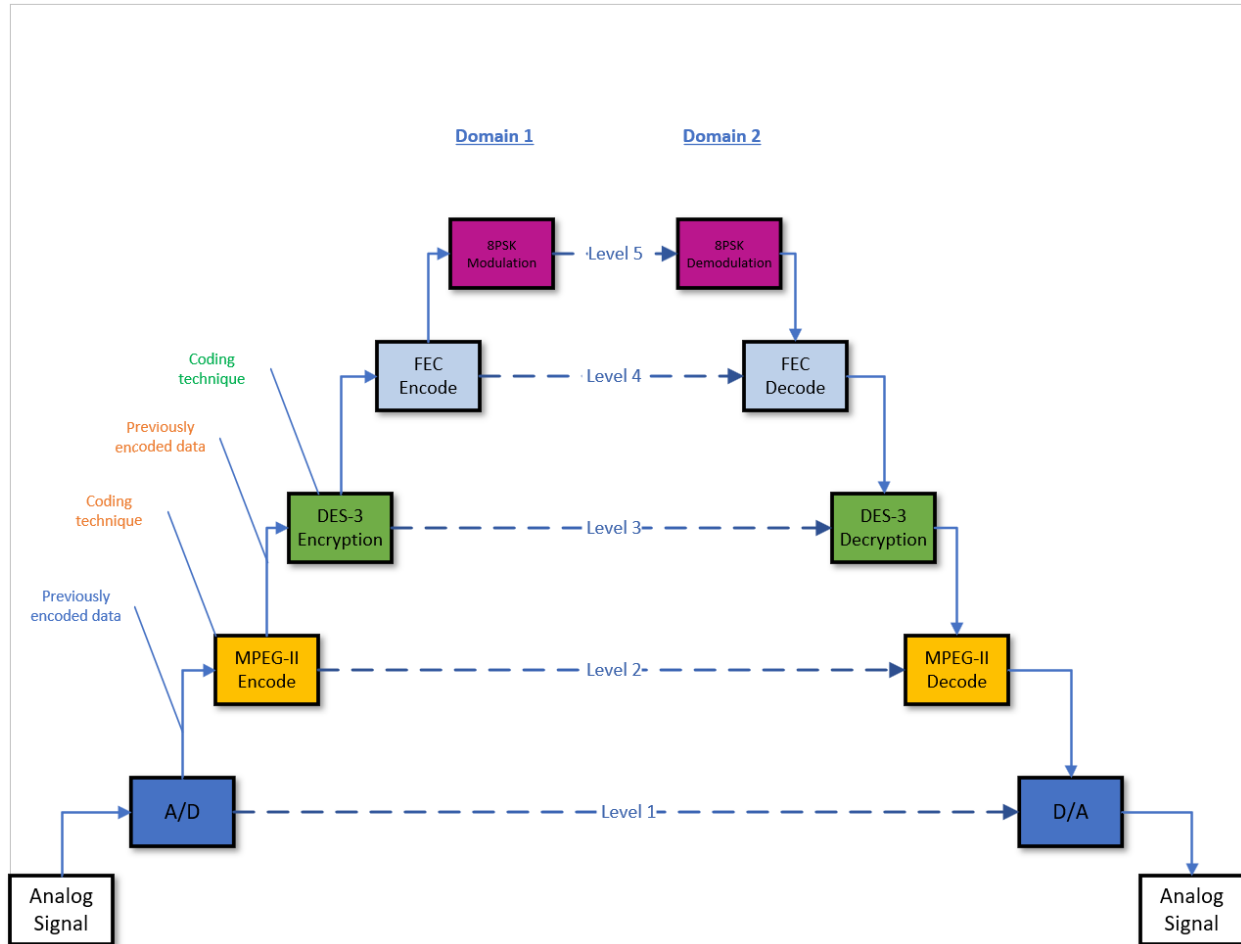


Fig. D – Encoding and decoding at various levels of a digital communication via satellite showing coding techniques applied to previously encoded data

41. One reason the Petitioner’s definition is fundamentally incorrect is because it conflates encoding and transcoding. All digital data is “encoded.” For example, an analog signal that is converted via A/D to the digital domain is now considered digitally “encoded”. All digital encoders (e.g., an MPEG-2 compression algorithm) further encode digitally encoded data, i.e., by applying “coding techniques [] to previously encoded data.” Thus, according to Petitioner’s definition

all encoders are therefore transcoders! In the art at the time of the '134 Patent, a POSITA would definitely not agree with such a definition.

42. It is important to understand that encoding, decoding, and transcoding are, and were distinct in the art at the time of filing of the '134 patent. This is evident from the literature of the time of the filing of the '134 patent and from the recognition that there were distinct semiconductor chip cores or software modules for each. For example, at the time of the invention, you could find one chip to encode in MPEG-2, a different chip to decode MPEG-2, and similarly encoders and decoders for H.264. To create a MPEG-2 to H.264 transcoder, a POSITA at the time of the '134 Patent would have to wire together the output of an MPEG-2 decoder to the input of an H.264 encoder. In contrast, each of the above encoders would instead input a raw video signal (encoded in digital format only) and output a compressed video signal. These cores/modules were combined in various ways into a system that can do more than one of these functions concurrently, e.g., an encoder and a decoder would be used to form a codec system. To conflate a codec and a transcoder or coding and transcoding, as is attempted by the Petitioner, is simply incorrect. Accordingly, I do not agree with the Petition's definition of transcoding.

43. As previously mentioned, the Petitioner's and Dr. Kiaei's fundamentally incorrect transcoding definition is necessary for the Petition to argue that ETSI-157 teaches claim limitation 1[f]. Consistent with the fundamentally

incorrect definition, there is no doubt that ETSI-157 teaches a system that may request additional coding or request a change to existing coding. *See, e.g.*, Ex 1011, p. 67 (the BSM Project Manager “may also request ... compression, encryption and so on.”). However, the addition of another layer of coding and/or the substitution or request of one compression in lieu of another is wholly different than transcoding.

44. The Petitioner argues that “a CRM could receive an MPEG video encoded at a certain bit rate and, using QoS functionality in ETSI-157, reduce the bit rate to accommodate available bandwidth using another codec type.” Petition, pp. 40-41, (citing ¶150 of Ex. 1002). Ultimately, Dr. Kiaei simply suggests ETSI 157 would support “using another codec type” to reduce the bit rate to accommodate available bandwidth. He does not suggest ETSI 157 supports applying additional “coding techniques” to the already compressed MPEG video data as that is not supported in ETSI 157. Instead, the Petition attempts to argue that the mere presence of a “codec type” field in the metadata somehow empowers the BPM to invoke some sort of MPEG video post-compression compression. This additional coding, at a minimum would have had to have been signaled in the metadata as an optional “additional codec type” if such a thing even made sense – but it doesn’t. ETSI 157 merely provides an identifier to the BPM in the metadata of what codec type, and what packetization for that codec type, is used in the data being delivered to the

BSM. And again, neither further compressing a compressed signal nor substituting one codec for another is transcoding.

45. ETSI-157 indicates that the BPM may request compression or encryption from the link layer. *See, e.g.,* Ex. 1011, p. 67 (“The BPM may also request from a suite of other available *link layer services* such as compression, encryption and so on.”) (emphasis added). Accordingly, the argument’s implication that ETSI-157 teaches that MPEG video data may be further compressed by QoS functionality disclosed in ETSI-157 is unsupported because MPEG compression is not the type of compression that is supported by the link-layer. Instead, examples of link-layer compression include TCP header compression and HTTP compression. *See, e.g.,* https://www.effnet.com/pdf/Whitepaper_Header_Compression.pdf; <https://developer.mozilla.org/en-US/docs/Web/HTTP/Compression>.

46. Further, ETSI-157 teaches that the BPM will provide support “by requesting a change to modulation and coding when appropriate.” Ex.1011, p. 67. However, neither “a change to modulation [or] coding” as taught by ETSI-157, Ex.1011, p. 67, nor “changing codec type” as argued in the Petition, at p. 40, mean or imply “transcoding.” By way of illustration, consider the following example for the transmission of packets A-F through the BSM. Packets A through C arrive at the BSM encoded in MPEG-2, but for one reason or another (e.g., send-receive format compatibility), after the transmission of packet C, the BPM determines that H.264 is

preferred for further transmissions. In a scenario which may be supported by ETSI-157, the BPM “request[s] a change to ... coding” or “chang[es] codec type” to H.264. “Change” implies here that packets D through F will arrive encoded in H.264, which is accomplished by encoding the raw data into H.264 before transmission to the BSM. That is not transcoding. In contrast, in an alternative scenario taught by the ’134 Patent, “transcoding” implies that packets D through F can continue to arrive encoded in MPEG-2, but they are then decoded and reencoded into H.264. Simply put, neither “change ... coding” nor “changing codec type” described in the ETSI-157 standard means the same thing as “transcoding” as taught by the ’134 Patent.

47. Of the remaining arguments presented by the Petition to support the fundamentally incorrect definition of transcoding, each fails for similar reasons. For example, “[m]odifying bit rate using compression” like “using the QoS functionality in ETSI-157” to “reduce the bit rate,” Petition, p. 40, is an example of either further encoding or substituting in a different codec resulting in a different compression ratio, but not decoding one format and re-encoding into another format at the same level as shown in Fig. B or C. Likewise, changing the “Codec type” field for “the codec with the highest compatible fidelity” is not transcoding. Petition, p. 40. Interestingly, while there is a “codec type” field in the metadata example of Section 9, suggesting that different codecs may be specified for the transmitted data, there is

no “transcoder type” fields in the metadata. If transcoding was supported by the ETSI-157 QoS protocol, a transcoder type field would be evident in the metadata, but it is not.

ii. ETSI-157 does not Teach or Suggest “Automatically Configured to Select a Transcoding”

48. Further, ETSI-157 does not teach or suggest a system that is “automatically configured to select” transcoding as claimed in limitation 1[f]. Instead, ETSI-157 teaches a system that may “request” compression. *See, e.g.*, Ex .1011, p. 67 (“The BPM may also request from a suite of other available link layer services such as compression, encryption and so on. Joint Network/Link mechanisms can only exist within the BPM and once a DS class has been established the BPM will support it by requesting a change to modulation and coding when appropriate.”).

49. The Petition makes the following argument to suggest that ETSI-157 teaches or suggests that transcoding can be “selected”:

[T]o address changes in bandwidth, ETSI-157 discloses a “Codec Type” field included in the “QoS metadata.” [Ex. 1011] p. 68. A POSITA would have understood that this field would only change if necessary and that the codec with the highest compatible fidelity would generally be selected.

Petition, p. 40. This is misleading since neither page 68 of ETSI-157 nor section 9 of ETSI-157 (upon which page 68 relies) teaches that any field of the QoS metadata would “change ... and that the codec with the highest compatible fidelity would generally be selected.”

50. Section 9 describes the “BSM Protocol Manager” or BPM. Ex. 1011, pp. 64-68. The BPM is described as “an ‘intelligent’ traffic manager with *packet classifier*” that “*manages traffic* with reference to *policies, admission control and other essential BSM metadata* kept in an accessible and operator-controlled database.” Ex.1011, p. 64 (emphasis added). The BPM software includes an arbitrator that uses a database of metadata to direct the flow of traffic based upon packet classification. Ex. 1011, p. 66 (the arbitrator “supports a central database of metadata describing IP (or other protocols) and traffic characteristics and managed different modules.”); *also*, Ex. 1011, p. 66 (the information in the metadata “will contain the list of supported IP protocols and their version, the list of supported SI functions and other specific information that will allow an application to receive appropriate service over the BSM.”) “Table 19 illustrates the type of metadata that the arbitrator will use to manage the QoS protocols over the BSM.” Ex. 1011, p. 66. “Codec type” is a field entry in Table 19 entitled “QoS metadata (example)” located at the end of section 9 of the ETSI-157. Ex. 1011, p. 68. Other examples include “QoS service class,” “Transport QoS parameters,” “Traffic descriptor,” “Source and

destination IDs,” “Application data transport protocol,” “Packet transport protocol,” “QoS policy,” and “QoS mechanism.” Ex. 1011, p. 68. The arbitrator compares the characteristics of the incoming signal against the database of metadata in order to classify the packet and direct traffic. Ex. 1011, p. 66.

51. I do not find that section 9 of ETSI-157 or the citation to the “codec type” field in the “QoS metadata” table teaches or suggests “that [any] field [associated with the QoS metadata] would change ... and that the codec with the highest compatible fidelity would generally be selected.” And the Petition fails to detail how its conclusion is supported by ETSI-157. Accordingly, I do not agree with their statements.

52. Instead, section 9 of ETSI-157 teaches

The BPM may also *request* from a suite of other available link layer services such as compression, encryption and so on. Joint Network/Link mechanisms can only exist within the BPM and once a DS class has been established the BPM will support it by *requesting* a change to modulation and coding when appropriate.

Ex. 1011, p. 67 (emphasis added). The disclosure is “request,” which does not mean “automatically configured to select.” To a POSITA, a request is a message from one node to another asking for information or resources, which implies that the request can be denied. “Automatically configured to select” conveys a decision without

potential for denial. As a result, I do not find that ETSI-157 teaches or suggest a system that can “select” transcoding.

VII. CONCLUSION

53. Based on the above analysis, I do not find that the '134 Patent is rendered obvious by ETSI-156 in view of ETSI-157, ETSI-985, and RFC-2205. Without suggesting whether these references fail for any other reason, the references at least fail to teach the limitations found in 1[f], 8[f], and 12[f]. Of the remaining challenged claims, each depends on either claim 1, 8, or 12. To the extent that the cited references do not render obvious the independent claims, the same references do no render obvious the dependent claims.

Executed on December 19, 2023

Respectfully submitted

Michael Craner



APPENDIX A

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SUMMARY

Seasoned USPTO-registered patent agent with over 20 years of experience with patent preparation/prosecution, infringement and validity analysis, licensing, and portfolio development/management/protection for various large, midsize, and start-up clients worldwide (over 80 applications prepared/prosecuted). Principal electrical/computer/electronics engineer with significant experience with hands-on cutting-edge hardware/software/systems development/integration working with diverse teams in Europe and Asia. Successful concept-to-revenue track record with a broad range of products, from advanced telecommunication and military systems, to high-volume consumer multimedia, broadcast, and CATV digital appliances. Versatile, creative, and motivational leader with outstanding interpersonal/consensus-building skills. Licensing executive with LES International.

KEY COMPETENCIES

- Patent Preparation & Prosecution
- IP Portfolio Development & Management
- Strong & Broad Technical Background
- Telecomm Standards / Essentiality
- Infringement Analysis and Defense
- CATV/Telecomm/Internet/Wireless/HDTV

PROFESSIONAL EXPERIENCE

MEDIACOMM INNOVATIONS, Chester Springs/Philadelphia, PA (www.mcinnovate.com) **2009 - present**

Intellectual Property Analysis, Licensing & Protection / Patent Agent

- Technology assessment, patent prep/pros, prior art research, infringement/assertion support, competitive analysis • Relevance, evidence of use, reverse engineering, validity and essentiality analysis to MPEG-1/2/4, H.261/3/4/5, VP8 and related mobile, streaming, wireless, cable, and telecommunications standards • Video/audio expert support for telecomm clients • “Strategic Inventing” involving the development and capture of portfolio-strengthening IP • New business development & management consulting • Licensing agent for digital cellular technology (>\$20M revenue, 41 licensees) & facsimile patents • Analysis and claim charting for OTT, video streaming, micro-grid, plug-in/hybrid/electric vehicle, battery, inverter, power semiconductors, and renewable-energy technology • Design and IP capture for Internet-telephony streaming-media ASP • Analysis of SOI processing/sensor technology for market applicability to 802.11x. • Optical Sat-com systems analysis • Standards, patent pools, and FRAND analysis • Recent research/prep in IOT, VR, AR, AI, medical devices, electro/mechanical devices, semiconductor fabrication, social networks, and blockchain/cryptocoin art areas. R&D tax credit research/assessment. Renewable Energy Consultations.

KINETECH POWER COMPANY LLC, Allentown, PA (www.kinetechpower.com) **2013 - 2017**

Co-Founder and VP Patents, Licensing & Business Development (part-time)

- Manage and prosecute international patent portfolio and develop strategic international partnership / sales opportunities for next generation disruptive flywheel energy storage system (“FESS”) in Europe, India, Singapore, and Central America. Assess and advance FESS application to emerging micro-grid, vehicle2grid, energy recapture, renewable/transient energy, UPS, demand-response, and ISO-regulation markets. Managed introduction of technology to investors and strategic partnership on automotive hybrid / turbo generation applications. Successful International (EPO, Germany & India) and US prosecution of FESS and advanced bearing patents.

COMCAST/GUIDEWORKS, LLC (JV between Comcast and Gemstar/TV Guide), Radnor, PA **2005 - 2009**

IP Architect / Distinguished Engineer-Director / Patent Evangelist

- Patent portfolio development/management (75% of role) • Systems analysis, engineering, & requirements setting for next generation STB navigator/network (25% of role) • Develop and manage process for capture of concepts, lead brainstorming, manage outside counsel in patent development, prosecution, disclosure/selection process management • 77 patents filed in 4 years, inventor/contributor on 50% • Key contributor on various system design efforts • Built early OCAP integration organization.

MENDELSON & ASSOCIATES, Philadelphia, PA**2002 - 2005**Registered Patent Agent

• Patent preparation/prosecution for various multinational telecomm clients including Lucent, Agere, HBO, Lattice, Freescale, and ATI (now part of Broadcom). Technologies include: CATV, DWDM optical, SDARS OFDM, VoIP, 3G wireless, ATM, 3D GUI, SDV, streaming media • Patent process development/training for outside firms • Over 60 applications filed / prosecuted.

MOTOROLA INC (formerly GENERAL INSTRUMENT CORP (GI)), Horsham, PA**1995 - 2001**Director of Technology Licensing – Broadband Communications Sector (BCS) – (Motorola)

Managed all licensing in/out worldwide for BCS as well as patent portfolio management (~500 issued patents). Technical advisement to IP law, standards leaders, and business development groups. Technical due diligence on acquisitions, structuring IP as an equity component, and analyzing business models. Position reported to CTO and VP Intellectual Property Law. Represented MPEG-LA as owner, licensor, and licensee at international meetings.

- Negotiated major RTOS, audio & security licenses for VoIP and MPEG-2 Satellite/CATV products saving \$100M NPV in royalties. Led technical support on infringement defense in MPEG-2 system litigation.
- Led infringement analysis for video compression technology yielding \$20M NPV savings in reduced royalties.

Engineering Program Manager, Multi-company CATV Integration Mngr. - Interactive Digital Cable (Motorola)

Coordinated major broadband operators including AT&T, Comcast, Charter and Cox related to the initial industry rollout of next-generation broadband digital cable TV based on DCT5000+ (High-definition, PVR, 1394, DOCSIS enhanced home entertainment hub). Oversight/management of development, integration, and rollout schedules.

- Coordinated first successful field trial of Microsoft-TV based interactive cable set-top / web server system.
- Pioneered 24x7 system integration services organization (START) resulting in successful P&L center.
- Managed implementation of secure Internet B2B info-tracking system & process.
- Managed development of XML based external B2B portal to internal Oracle based change control system.
- Led multi-vendor integration of joint AT&T, Microsoft, Sun, Sony, Excite@Home advanced set-top system.

Product Manager – HDTV Consumer Products (Motorola)

Developed business case, defined product line, and managed engineering activities with South Korean design team for a consumer-retail High-definition Digital Television set-top appliance. Performed technology trade studies on MPEG-2/HD decoder, VSB/QAM/tuner, CPU/RTOS/graphics/audio/peripheral, PVR/DVD/CD/MP3, Dolby 5.1 decode/amplification, EPG/NAV, and access ctrl/billing subsystems. Managed RFP/bid process and strategic partnerships / subs.

- Produced successful OEM-funded virtual company business plan for advanced consumer HDTV product line.
- Technology assessment for acquisition/investment and counseled sales and marketing groups.
- Coordinated successful HBO HDTV over cable service trials and directed trade-show demonstrations.

Senior Systems Manager – Worldwide Digital Cable Systems Integration (Motorola)

Established and managed 30-person 24x7 on-call team of systems engineers, integrators, programmers, and technicians in the development of software and tools to integrate all customer specific variants of GI's MPEG-2 compliant digital CATV local & Euro/international networks. Managed lab & capital budget averaging \$3M/yr.

- Bid, won and executed Bell Canada integration program for full ATM video-on-demand distribution system.
- Led team that launched first U.S. end-to-end consumer digital cable system (GTE Florida).
- Integration included EPGs, VOD, billing systems, satellite transcoders, encryption, SNMP, & access control.

Senior Manager - Network Controller Development (Motorola)

Formed and directed 15-person team to develop cable upstream manager (NC) for Bell Atlantic Video Dialtone initiative. Led system engineering, product definition, and design; established lab and software development procedures, tools and processes. NC performed forwarding of ATM packets over DS3. Motorola 68040 SBCs in VME chassis, custom DS3 interface and TDMA time distribution card, C/C++ code under VxWorks real-time OS.

- Negotiated RTOS licenses and COTS vendor services, established RTOS as standard for business.
- Delivered only on time / under budget and fully Bellcore-compliant product for BA system in business unit.

GREAT VALLEY PRODUCTS (GVP), King of Prussia, PA**1994 - 1995**Director of Engineering – Amiga and PC multimedia products

Coordinated activities of engineering groups in U.S.A., Germany, and Switzerland comprising new PC Multimedia Products division. Performed new product definition, team development, project and staff management for Commodore Amiga accelerator, video time-base-corrector (TBC), SCSI accelerator, and video effects processor. Performed PCI interface design using Flex FPGA for DSP3210 multiprocessor based digital audio workstation.

- Introduced Merging Technology (Swiss subsidiary) to venture capital opportunity in US leading to purchase.
- Directed development of industry's first consumer PCMCIA-format full-function soundcard on WinTel laptop.

MEDIASTAR (Subsidiary of RAI), Laurel, MD**1992 - 1994***Co-Founder, Chief Technology Officer, and Director of Engineering*

Performed all aspects of start-up business and engineering activities including venture capital acquisition, trade-show presentations (Comdex Las Vegas, CeBit Germany), P&L management, product line marketing, B & P. Initiated and coordinated projects for successful concept-to-volume on PC Multimedia / DSP card integrating fax / modem / tam / audio / image. Performed all aspects of hardware and driver-level software development & debug including modem DAA and data pump as well as high-speed DRAM and VESA-local bus interfaces and audio subsystem design.

- Implemented industry's first 386/486 and VESA local-bus fax/modem/tam DSP co-processor on WinTel PC.
- Co-founded and secured initial seed and \$1M first-round funding (IPC Singapore) for multimedia/DSP startup.
- Led task team on multi-company JV between AT&T, MediaStar, IPC, & MediaChips for WinTel PCI card.

NASA-GODDARD / RESSLER ASSOCIATES (RAI), Laurel, MD**1990 - 1992***Project Engineer - Airborne Doppler Weather Radar Signal Processor*

Performed B&P, budget management, design, implementation, integration, and programming of complete data acquisition, signal processing and data storage subsystem for an airborne, X-band, weather radar for NASA.

- Developed and negotiated commercialization of DoD multiprocessor for application to NASA airborne radar.
- Complex FPGA/PLD-based board design, C/OS-9 data system control and DSP processing coding,

Principle Investigator - Small Business Innovative Research (SBIR)

Coordinated experts, performed design, analysis and costing. Generated Phase I & II reports and Phase II B&P. ONR/NASA - Wideband mono-pulse sonar array, Airborne polarization imager, parallel pn-code histogrammer.

MARTIN MARIETTA AERO & NAVAL SYSTEMS, Baltimore, MD**1987 - 1990***Senior Engineer - Advanced Sonar Signal Processor Research and Development*

Performed matrix and FFT radar/sonar algorithm analysis and parallel mapping. Designed and implemented novel parallel processor supporting mapping. Presented results to NAVY IRAD directors, supported B&P and marketing. C programming in VRTX RTOS and UNIX environment, FPGA/PLD design, schematic capture, debug.

EDUCATION

MS and BS Electrical & Computer Engineering: '86 and '84, State University of New York at Buffalo, top 5%

Postgraduate: Parallel Algorithms/Architectures, DSP, VLSI; '89 Johns Hopkins, '87 Virginia Polytechnic

PROFESSIONAL AFFILIATIONS

USPTO - Registered to Practice as a Patent Agent - 2001

LES - Licensing Executive Society, Deputy Chair High Technology Sector - Web 3.0/IoT

SCTE - Society of Cable Telecommunications Engineers

IEEE - Institute of Electrical and Electronics Engineers, Senior Member

TAU BETA PI - National Engineering Honor Society, Pres, Philadelphia Chapter 2012-present

TECHNICAL EXPERIENCE

Project management tools: MS Ofc/Project'02, MAC project, Lotus, Primavera, PVCS tracker, MS Access

Networking: ATM-AAL5 for video, TCP/IP protocol suite, Ethernet, Routers, Bridges, Gateways, 802.11x,

SNMP, MPEG-2 transport, ATVEF, Mobile IP, IPSEC, QoS, MPLS, DASH, HLS, MS Smooth Streaming

A/V Compression: MPEG-1/2/4 pt. 2/10, H.261/263/264/265/AVC/3GP, Dolby, Musicam, and G.xxx.

Languages: C, CONCURRENT C, FORTRAN, BASIC, PASCAL, dbaseIV, Modula-2, HTML, XML, Java

FPGA/CPLDs: Xilinx, AT&T ORCA; AMD/Lattice MACH4000, 5000VG; Intel/Altera FLEX

Assembly and Real-Time OSs: AT&T DSP3210/07/C, TMS 9900/32010; INTEL 80x86/85/82586/ 82501/432;

RCA 1802; MOTO 680x0/DSP56k, LSI 11/02 : OS-9, VCOS, VxWorks, Posix std, VRTX

Hardware Design/Sim & Synthesis: Verilog, AHPL, Palasm, VHDL, X'mpl'r CORE

Schematic Capture: ORCAD, Symed, Neted (Mentor Graphics), McCAD

Microcode: E570 (TTL custom RISC system), Am2900 based 16-BIT controller, bit-slice

Systems/OSs: Open Cable App Platform (OCAP), Sparc/SUN-3 (BSD 4.2), Iris/Indigo (SGI Unix), Apollo

(Mentor Aegis), VAX 11/780 (UNIX & VMS), AT&T 3B2/500 (UNIX 5.3), CDC CYBER (SCOPE), IBM

MAINFRAME (MVS/TSO and MVT), IBM PC/XT/AT (Win'XP/2k/98/95/3.1, DOS), Mac, Amiga, Android.

SELECT PATENTS HELD AND PUBLIC APPLICATIONS IN PROGRESS

- US Pat. No. 7,099,400 “Multi-level pulse amplitude modulation receiver,” August 29, 2006
- US Pat. No. 6,882,971 “Method and apparatus for improving listener differentiation of talkers during a conference call,” April 19, 2005
- US Pat. No. 7,765,235 “Systems and methods for resolving conflicts and managing system resources in multimedia delivery systems,” July 27, 2010
- US Pat. No. 8,582,946 “Systems and methods for recording programs using a network recording device as supplemental storage,” Nov 12, 2013
- US Pat. No. 8,640,166 “Systems and methods for content surfing,” Jan 28, 2014
- US Pat. No. 8,624,908, “Systems and methods of transitioning from buffering video to recording video,” Jan 7, 2014
- US Pat. App. No. 13207390, “Systems & Methods for Allocating Bandwidth in Switched Digital Video Systems Based on Interest,” Dec. 1, 2011
- US Pat. App. Nos. 11888637 and 11888676, “Systems and methods for providing media guidance planners,” Jul 31, 2007
- US Pat. App. No. 11267200, “Systems and methods for recording programs using a network recording device,” Nov 4, 2005
- US Pat. App. No. 11240552, “Systems and methods for managing local storage of on-demand content,” Sep 30, 2005
- US Pat. App. No. 10815123, “Restoration time in mesh networks,” Mar 31, 2004
- US Pat. App. No. 10190255, “Voice-controllable communication gateway for controlling multiple electronic and information appliances,” Jan 8, 2004
- US Pat. App. No. 11974259, “Storage management of a recording device in a multi-user system,” Apr. 16, 2009
- US Pat. App. No. 12581522, “Systems and methods for recording multiple programs simultaneously with a single tuner,” Jun 24, 2010
- US Pat. App. No. 13102763, “Systems and methods for enhanced trick-play functions,” Nov 24, 2011
- US Pat. App. No. 11644294, “Systems and Methods for Viewing Substitute Media while Fast Forwarding Past an Advertisement,” Dec. 22, 2006
- Craner, M.L., "System and method for enabling remote updating of on-demand multimedia files to a web site, portal, Intranet, or VPN using a telephone," patent application, Mar. 2002.
- Craner, M.L., "System and method for momentarily deferring, without interrupting, a connection-oriented communication," patent proposal, July 2002.

SELECT PUBLICATIONS

- Craner, M. L., “Selected Advanced Transportation Trends Part 1—The Giga-Factory,” les Nouvelles, June 2014
- Craner, M.L., "A Wideband Monopulse SONAR System," Final Report, Carderock Division, Naval Surface Warfare Center, Report #RAI-N00167-91-C-0086, June 1992.
- Craner, M.L., Ameen, S.S., "ER-2 Doppler Radar (EDOP) Data System Design Document," NASA Goddard Space Flight Center, Jan. 1992.
- Craner, M.L., "Automated Radar Cross Section (RCS) Enhancement and Location of Power Lines from Polarimetric Synthesis and Optimization of Synthetic Aperture Radar (SAR) Imagery," Final Report, Defense Advanced Research Projects Agency, ARPA Order No. 5916, Contract DAAH01-91-C-R066, Aug. 1991.
- Heymsfield, G.M., Dod, L.R., Miller, L., Craner, M., "Update on the NASA ER-2 Doppler Radar System (EDOP), AMS Conference, Paris, Spring 1991.

- Craner, M., "A Polarimetric Airborne Laser Imaging System for Terrestrial Measurements", Final Report, NASA/GSFC, Contract NAS5-30863, Aug. 1990.
- Craner, M.L., Hassan, S., "MVDR Adaptive Beamforming Using Iterative Covariance Inverse Technique", submitted to ICASSP, Jun. 1989.
- Craner, M. L. and Snell, C.K., "Linear Mapped Array Processor (LMAP)," Invention Disclosure, Martin Marietta, 89-YC-42, Feb. 1989.

SELECT PROFESSIONAL STUDIES

Advanced Licensing Strategies and Skills: Licensing Executive Society

MPEG-1/2/4/7, H.261/2/3/4 Advanced Video Coder (AVC): KNK Seminars & Strategies

Wireless LAN Security: Technologies, Standards, and Deployment Issues: IEEE CES

Broadband HFC / CATV system architecture: General Instrument/Motorola

TCP/IP, Network Management, Telecomm Protocols, and Systems Engineering: Learning Tree

Management/Negotiation/Ethics: Motorola, General Instruments, NASA, Martin Marietta, BDM

Finance: MIT Sloan School of Management; Motorola Core Training