

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ERICSSON INC.,
Petitioner,

v.

KONINKLIJKE KPN N.V.,
Patent Owner.

Case IPR2023-00583
Patent 7,092,705

**DECLARATION OF REGIS J. “BUD” BATES, JR.
IN SUPPORT OF PATENT OWNER**

TABLE OF CONTENTS

I. INTRODUCTION.....	1
II. BACKGROUND AND QUALIFICATIONS.....	2
III. MATERIALS CONSIDERED.....	11
IV. MY UNDERSTANDING OF CERTAIN LEGAL STANDARDS.....	12
A. Claim Construction.....	12
B. Anticipation (35 U.S.C. § 102).....	13
C. Obviousness (35 U.S.C. § 103).....	14
D. Ordinary Skill in the Art.....	17
V. THE ’705 PATENT.....	19
A. The ’705 Patent’s Discussion of the Prior Art.....	20
B. The ’705 Patent’s Advantages Over the Prior Art.....	21
C. Prosecution History.....	25
D. The Challenged Claims.....	30
VI. THE ALLEGED PRIOR ART.....	31
A. The Petition’s Primary References.....	32
B. The Petition’s Secondary References.....	38
VII. CLAIM CONSTRUCTION.....	41
VIII. GROUND 1: MADEBRINK AND FEUERSTEIN DO NOT RENDER OBVIOUS THE CHALLENGED CLAIMS.....	42
A. Madebrink Does Not Teach Or Suggest [1a]	42
B. Feuerstein Does Not Teach Or Suggest [1a]	46
C. The Petition and Dr. Haas Are Inconsistent About What “Deviation” Applies To In [1a]	49
D. Madebrink And Feuerstein Do Not Teach Or Suggest [1b]	50
E. Dr. Haas’ Proposed Modification Of Madebrink With Feuerstein Would Change A Principle Of Operation Of Madebrink.....	51

F. Other Claims.....	52
IX. GROUND 2: MADEBRINK, FEUERSTEIN, AND SHIPMAN DO NOT RENDER OBVIOUS THE CHALLENGED CLAIMS.....	53
X. GROUND 3: DJOKO DOES NOT ANTICIPATE CLAIMS 1, 22, 26, 28, AND 31.....	56
A. Djoko Does Not Disclose [1pre]	57
B. Djoko Does Not Disclose [1a]	66
C. Djoko Does Not Disclose [1b]	67
D. Other Claims.....	68
XI. GROUND 4: DJOKO AND SHERIDAN DO NOT RENDER OBVIOUS CLAIMS 2-6, 23-25, 29, and 32.....	68
XII. CONCLUSION.....	69

I. INTRODUCTION

1. My name is Regis J. “Bud” Bates, and I have been retained as an expert witness by Patent Owner Koninklijke KPN N.V. (“Patent Owner”) for the Petition for *Inter Partes* Review of Claims 1-7, 22-26, 28, 29, 31, and 32 (the “Challenged Claims”) of U.S. Patent No. 7,092,705 (EX1001, “the ’705 Patent”). More specifically, I have been asked to render opinions regarding the patentability of the ’705 Patent with respect to the Petition for *Inter Partes* Review (Paper 1, “Petition” or “Pet.”) filed by Ericsson, Inc. (“Petitioner”) in IPR2023-00583.

2. I understand that the references relied on in the Petition include: (1) U.S. Patent No. 5,434,798 (EX1005, “Madebrink”), (2) U.S. Patent No. 6,141,565 (EX1006, “Feuerstein”), (3) U.S. Patent No. 6,085,335 (EX1007, “Djoko”), (4) U.S. Patent No. 6,725,032 (EX1008, “Sheridan”), and (5) GB Patent Application No. 0022743.9 (EX1010, “Shipman”). In forming my opinions in this matter, I considered these papers, as well as the other documents discussed and referenced in this Declaration.

3. I submit this Declaration to offer my expert opinion that the Challenged Claims are novel and nonobvious in light of the prior art at the time of the invention and thus, patentable.

4. I am being compensated at my standard hourly consulting rate of \$350 for my time spent in this matter. My compensation is not contingent on the outcome of the IPR or on the substance of my opinions.

5. I have no financial interest in KPN or Ericsson. I am not an employee of KPN, Ericsson, or any affiliate or subsidiary thereof.

6. This Declaration contains statements of my opinions formed to date and the bases and reasons for those opinions. I may offer additional opinions based on further review of materials in this case, including opinions and/or testimony of other expert witnesses.

II. BACKGROUND AND QUALIFICATIONS

7. This section summarizes my career history, education, publications, and other relevant qualifications. My full *curriculum vitae* (“CV”) is included as EX2009.

8. I am the founder and President of TC International Consulting, Inc. (“TCIC”). Our offices are located at 3413 Ponderosa Loop, Heber, AZ 85928. At TCIC, I have consulted and worked with the telecommunications industry since 1989.

9. I earned a bachelor’s degree in Business Management (BSBM) in 1979 from Stonehill College in Easton, Massachusetts, and I completed

coursework towards a Masters of Business Administration (“MBA”) degree at Lehigh University in Bethlehem, Pennsylvania and St. Joseph’s College in Philadelphia, Pennsylvania.

10. I completed all the coursework but not a thesis required for the MBA degree.

11. Since 1966, I have been involved in designing, building, optimizing and training others in many aspects of telecommunications systems, including multiuser cellular and cable-based systems as well as Private Branch Exchange (“PBX”) and computer networks. In that time, I have had an active role in the growth of the telecommunication industry and have personally witnessed, and contributed to, the industry’s growth in terms of various technologies, infrastructure, and legal, regulatory and technical services.

12. My experience spans all layers of Open Systems Interconnection (“OSI”) model, including the physical, data-link (including media access control) and network layers. For example, in my various professional roles, described below, I have been responsible for implementing telecommunications systems up to the application layer.

13. I have written numerous books on telecommunications technology, many of which have been best sellers for publisher McGraw-Hill. My textbook

titled "Voice and Data Communications Handbook" led McGraw-Hill's sales for three consecutive years and has been used by over 166 colleges and universities around the world. Other books that I have written include "Wireless Networked Communications," "Wireless Broadband Communications," "cdmaOne and cdma2000," "General Packet Radio Services (GPRS)," "Principles of Voice and Data," "Broadband Telecommunications Handbook" and "Optical Networking and Switching." I am the co-author of a book entitled "Wireless Networks Dictionary" published by Althos Publishing.

14. I have personally developed curricula and taught telecommunications classes on-site with many of the world's leading manufacturers and providers of telecommunications equipment and services. These have included classes titled or on the following topics: "Introduction to Voice Communications," "Hands on Telephony," "Installing and implementing a PBX solution," "Hands on Voice over IP," "Implementing VoIP," "Securing VoIP," "IP PBX Solutions," "Call Center Convergence," "Introduction to Data Communications," "Hands on Data Communications," "LAN and WAN communications," "Introduction to T1 and T3," "Optical Networking and SONET," "Data and Internet Communications, a How to Course for implementing solutions," "Ethernet and Gigabit Ethernet," "Asynchronous Transfer Mode (ATM)," "Frame Relay a Data Communications

design," "Wireless Communications," "Hands on Securing Wireless Networks," "Hands on Integrating Wireless Networks," "TCP/IP," "Linking LANs and WANs with Bridging and Routing," "GPRS," "GSM (including WAP and MMS)," "Next Generation Wireless," "Cisco RF Design" and "Cisco Wireless Mesh." As indicated by these names and titles, I have deep experience teaching others about the implementation of use of telecommunications networks at varying levels of generality and at most layers of OSI protocol stack.

15. I have also been personally involved in developing curricula and teaching courses on the certification of products and services with various technical specifications and standards, including Wi-Fi Certifications (CWNA), Wi-Fi Security Certification (CWSP), and CompTIA courses on WiMAX certification (Wi-MAX RF Engineer), RFID Certification (RFID+) and Convergence Technologies Professional (CTP) Certification.

16. Through my decades of involvement with the telecommunications industry, I have first-hand knowledge regarding the relationship between service providers and carriers on one hand, and their equipment vendors, on the other, including on the extent to which providers and carriers dictate and require that equipment be certified to, or otherwise comply with, standards specifications and other technical requirements. I am also familiar with the extent to, and manner in

which, providers and carriers evaluate vendor equipment on technical and business grounds, select certain equipment for use in their network, evaluate the equipment's performance and determine whether to upgrade such equipment or its associated software. I am also familiar with the criteria and methodologies that providers and carriers use to monitor data activities on their network and the extent to which providers and carriers disallow certain types of network activities or traffic patterns.

17. From 1966 to 1972, I served as a Captain of the United States Army Signal Corps. In this role, I was immersed in telecommunications technology. I performed communications systems and signal analysis on an almost daily basis and worked in communications system algorithm design, modulation and demodulation techniques and other technical issues often in the context of rapidly changing and unpredictable network deployment scenarios. For example, while in Vietnam, I worked with mobile and fixed location radio-based systems, and installed a system that spanned over 400 miles for military tactical forces. I was responsible for the operation and control of the Automatic Voice Network (AUTOVON) system in Donnersberg, Germany, and I had operational responsibility for the Pirmasens, Germany Satellite terminal. At Ft. Devens, I ran the Communications Center, which facilitated telex, Teletype and facsimile

services for the military. I also participated in a six-month program on communications systems and RF basics. I worked in and with fixed and mobile Radio relay VHF systems, satellite systems, long haul troposcatter and various two-way communications models. Based on my work on these and other projects, I received significant telecommunications system training while working for the Army.

18. From 1972 to 1974, I was a Telecommunications and Facilities Manager for Damon Corporation. My responsibilities included overseeing voice and data (limited analog dial up) communications for locations across the country. The corporate communications budget was approximately \$2.5 million annually.

19. From 1974 to 1977, I was Manager of Administrative Services for Hills Department Stores in Canton, MA. In this role, my responsibilities included analyzing, selecting, and implementing major communications projects in 50 stores spread throughout the east and mid-west of the United States.

20. From 1977 to 1979, I was Telecommunications Manager for Manufacturing and International Sites for Data General Corporation in Westboro, MA. In this role, I was responsible for selecting equipment (from Bell and competitors) for 100 sites across the world, selecting services (voice, data and fax traffic) from the common carriers and selecting the appropriate means and

protocols to use these goods and services. I installed a T1 network from coast to coast. I was also responsible for the installation of 30 PBXs and 40 key telephone systems.

21. From 1979 to 1986, I was Telecommunications Manager for Air Products and Chemicals, Inc., with an annual budget of \$50 million. In this role, I designed, selected, analyzed, and implemented all communications projects for the use of voice and data communications at the corporation’s 440 sites around the US and 35 international sites. This included the use of telephone systems, dial up telephony and data, leased lines for voice and data and analog and digital circuits (including T1, T3 and fiber optics). I was also responsible for research, selection, and installation of over 250 telephone systems (PBX and Key Systems along with integration systems).

22. I also worked on a project to integrate the company’s voice, data, TV-video and local area network (LAN) services into what is now known as a Campus Area Network (CAN). The CAN was on a broadband cable television (CATV) system and implemented a “triple play” service on campus well before CATV companies started offering such services. In connection with this work, I worked with major cable providers on various Data Over Cable Service Interface Specification (DOCSIS) services. I understand that the CAN system was studied

and written up as a Harvard Business School case related to the integration scheme and other business aspects.

23. From 1986 to 1989, I was Chief Information Officer (CIO) for the law firm, Pepper, Hamilton and Scheetz, in Philadelphia, PA. In that role, I performed complete automation of the firm's multiple offices around the country. I was also responsible for the selection and installation of 10 PBX systems, all with major integration services, and the design, final installation and testing of local area networks (LANs). I also created the WAN access and usage through a network of digital circuits using T1 services from many of the common carriers and new competitors in the industry.

24. As noted above, I am President and Founder of TCIC, where I have worked since 1989. At TCIC, I have consulted and worked with many of the leaders in the telecommunications industry. I have provided analyses and findings to clients regarding the selection of vendors or products and directly provided training in various technologies including Voice, Telephone Systems, Data Networks, Video, Internet, Wireless, Wireless LAN Technologies, VoIP systems and services, Fiber Optics and Infrastructure. My company has been responsible for selecting and implementing over 100 PBX systems for client companies.

25. At TCIC, I develop and conduct training for corporate users, manufacturers, and telecommunications carriers. I have personally trained individuals at all of the Regional Bell Operating Companies ("RBOCs"), over 150 Competitive Local Exchange Carriers ("CLECs"), LTE carriers, including AT&T, MCI/WorldCom (now Verizon), Sprint (now T-Mobile), MetroPCS and Cellular One, and most of the large telecommunications equipment manufacturers (Nortel-Networks, Lucent (now Nokia), Avaya, Mitel, Siemens, Alcatel (now Nokia), Newbridge, Marconi and Cisco), the United States government and other Fortune 500 companies. I was a badged-contractor for Cisco systems on their Wi-Fi products and the integration of VoIP over wireless technologies.

26. I have authored approximately 20 books, published numerous articles and papers in magazines, and taught courses and seminars in telecommunications and computers in over a dozen countries globally. I have been a technical editor for IPTV Magazine since 2016. I am a Senior member of the IEEE. I have also been a keynote speaker at conferences, events and meetings, including Comdex, the International Communications Association, BICSI, RBOC and annual meetings for Ameritech and PacBell. I have also been the keynote speaker at Disaster Recovery Journal Annual seminars regarding DR Planning for Telecommunication Networks.

27. Additional information regarding my background, qualifications, publications, and presentations is included as part of my curriculum vitae (“CV”), which is included in EX2009.

28. I have served as an expert witness in several IPR proceedings, district court patent infringement cases, and International Trade Commission (“ITC”) investigations in the field of telecommunications, as shown in my CV.

29. Based on my experiences described above, and as indicated in my CV, I am qualified to provide the following opinions regarding the ’705 Patent.

III. MATERIALS CONSIDERED

30. I have considered information from various sources in forming my opinions herein, including:

- the ’705 Patent and its prosecution history (EX1004);
- the Petition, as well as the references cited therein (EX1005-EX1013);
- the declaration of Dr. Zygmunt Haas (EX1002) and Dr. Haas’ CV (EX1003);
- the other exhibits to the Petition; and
- all documents and other materials cited herein.

31. I have reviewed Patent Owner’s Preliminary Response to the Petition (Paper 6), to which this Declaration is being submitted as EX2008, and I agree

with both its analysis and conclusions. I have also reviewed and considered each of the other exhibits to the Preliminary Response in forming my opinions (EX2001-EX2007).

IV. MY UNDERSTANDING OF CERTAIN LEGAL STANDARDS

32. I am not a legal expert and offer no opinions on the law. However, I have been informed by counsel of the various legal standards that apply, some of which I have set forth my understanding below, and I have applied these standards in arriving at my conclusions.

33. I understand that for a claim to be found unpatentable in this proceeding, Ericsson must prove that the claim is unpatentable by a preponderance of the evidence. Put another way, Ericsson must show the claim is more likely than not anticipated or obvious in light of prior art.

A. Claim Construction

34. My opinions in this Declaration are based on an understanding of a person of ordinary skill in the art, which I understand is sometimes referred to by the acronym “POSITA,” as of the time of the invention.

35. I understand that claims, including the challenged claims, are generally interpreted according to their ordinary and customary meaning taking into consideration the so-called “intrinsic evidence” of the patent consisting of (1)

the claim language; (2) the specification and drawings; and (3) the prosecution history. I understand that the Board has discretion to take into consideration so-called “extrinsic evidence” including references (prior art and non-prior art) as well as definitions from dictionaries and treatises.

36. I understand that claim terms may be explicitly defined in the patent specification or they may be implicitly defined through consistent usage in the specification. I also understand that the scope of claim terms may be limited by statements in the specification or prosecution history where the application clearly disavows or disclaims subject matter in a clear and unmistakable manner.

37. I understand that for purposes of this IPR, the standards for claim construction are the same as the standards used in the federal district courts.

B. Anticipation (35 U.S.C. § 102)

38. I understand that a claim is unpatentable as anticipated if all limitations of that claim are (1) present in a single prior art device, system, or method or (2) described in a single prior art reference.

39. To anticipate the claim, the prior art does not have to use the same words as the claim, but all of the limitations of the claim must have been present or described, either expressly or inherently, as arranged in the claim.

40. I understand that for prior art to inherently have or disclose a limitation of the claim, the prior art must necessarily include the claim limitation that is not expressly present or disclosed. I understand that inherency may not be established by probabilities or possibilities.

C. Obviousness (35 U.S.C. § 103)

41. I understand that a claim is unpatentable as obvious if the claimed subject matter as a whole would have been obvious to a POSITA at the time the invention was made in light of the teachings of a single prior art device, system, method, or reference, or in light of a combination of prior art.

42. I understand that obviousness is a question of law based on underlying factual issues including the level of ordinary skill in the art at the time of the patent’s alleged invention, the scope and content of the prior art, any differences between the prior art and the claimed invention, and any objective indicia of non-obviousness (if available), also known as “secondary considerations.”

43. I understand that the scope and content of prior art for deciding whether the invention was obvious includes at least prior art in the same field as the claimed invention. The prior art can also come from different fields that a POSITA would have considered when trying to solve the problem that is addressed by the invention.

44. I understand that the existence of each and every limitation of the claimed invention in the prior art does not necessarily prove obviousness. Most, if not all, inventions rely on building blocks of prior art. But, in considering whether a claimed invention is obvious, I understand that one may find obviousness if, at the time of the patent's alleged invention, there was a reason that would have prompted a POSITA to combine the known elements in a way the claimed invention does, taking into account such factors as (1) whether the claimed invention was merely the predictable result of using prior art elements according to their known function(s); (2) whether the claimed invention provides an obvious solution to a known problem in the relevant field; (3) whether the prior art teaches or suggests the desirability of combining elements claimed in the invention; (4) whether the prior art teaches away from combining elements in the claimed invention; (5) whether it would have been obvious to try the combinations of elements, such as when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions; and (6) whether the change resulted more from design incentives or other market forces.

45. I understand that in order for a claim to be rendered obvious by a combination or modification of prior art, it must be shown that a POSITA would have had a motivation to combine or modify the prior art with a reasonable

expectation of success that the combination of prior art would result in the claimed invention.

46. I understand that inherency may be used in an obviousness analysis. I understand that for prior art to inherently have or disclose a limitation of the claim, the prior art must necessarily include the claim limitation that is not expressly present or disclosed. I understand that inherency may not be established by probabilities or possibilities.

47. In assessing obviousness, I have been instructed to consider both the ordinary creativity and common sense of a POSITA. However, I also understand that it is impermissible to find obviousness based on hindsight reasoning, i.e., combining prior art using the claimed invention as a template, without establishing that, as of the date of the invention, there exists a motivation to combine or apparent reason to combine and/or modify the prior art.

48. I understand secondary considerations include commercial success of a product due to the merits of the claimed invention, unexpected results from the claimed invention, a long-felt need that the claimed invention satisfies, failure of others to achieve the claimed invention, skepticism for the claimed invention, and copying of the claimed invention. I understand that secondary considerations evidence is given substantial weight when it has a nexus to, i.e., results from, the

merits of the claimed invention. I understand that secondary considerations evidence must be reasonably commensurate with the scope of the claims and generally secondary considerations evidence is reasonably commensurate when it relates to an embodiment within the scope of the claims and there is adequate basis to support the conclusion that other embodiments falling within the claim will behave in the similar manner.

D. Ordinary Skill in the Art

49. I understand that the ’705 Patent issued August 15, 2006, from the ’538 Application, filed on July 3, 2002. EX1001, code 21, 22. The ’538 Application also claims priority to U.S. Provisional Application No. 60/303,933, filed on July 9, 2001, and to European Application No. 01203820.4 (“the EP820.4 Application”), filed on October 9, 2001. *Id.*, code 60, 30.

50. I am treating July 9, 2001, as the priority date (and date of invention) for the purpose of this Declaration only. Dr. Haas also treated July 9, 2001, as the date of invention. EX1002, ¶27.

51. I understand that a POSITA is a hypothetical person who is presumed to be aware of the relevant information that is considered prior art at the time of invention. By “relevant,” I mean relevant to the issued claims of the ’705 Patent.

52. I understand that, in assessing the level of skill of a person of ordinary skill in the art, one should consider the type of problems encountered in the art, the solutions to those problems, the pace of innovation in the field, the sophistication of the technology, the level of education of active workers in the field, and my own experience working with those of skill in the art at the time of the invention.

53. In this case, Dr. Haas asserts that a POSITA at the time of the ’705 Patent “would have had at least a bachelor’s degree or an equivalent degree, in electrical engineering or a related field, and two years of experience working with wireless networks, and related technologies” and “[m]ore relevant experience could compensate for less education, and vice versa.” EX1002, ¶60. I have employed Dr. Haas’ definition for purposes of my opinions in this Declaration.

54. I was at the time of the invention, and am, one of more than ordinary skill in the art through my background and experience. As of the time of the ’705 Patent discussed above, I was very familiar with the types of problems encountered in session management and network communications, the types of prior art solutions described in the prior art references raised in this IPR (IPR2023-0583), and the pace at which innovations were made.

V. THE '705 PATENT

55. I have reviewed the '705 Patent, which is titled “System and Method For Checking Parameter Settings Of Radio Networks.” The application that led to the '705 Patent, U.S. Application 10/188,538 (“the '538 Application”), has an asserted priority date over 21 years ago, in July 2001. EX1001, code (60).

56. To accommodate changes in use of a cellular radio network, a network operator may configure and reconfigure the network. *Id.* 2:6-10. For example, the network operator may temporarily split a cell to deal with an expected increase in traffic. *Id.* 2:13-14. As another example, the network operator may permanently integrate new components into the network. *Id.* 2:15-16.

57. Configuration and reconfiguration of a network may involve the network operator changing parameter settings of one or more components of the network. *Id.* 2:6-10. Example components of the network include Base Transceiver Stations (BTSs) and Base Station Controllers (BSCs), *id.* 1:39-41, 2:18-19, and example parameter settings that the operator may change include cell type, cell designation, cell direction, signal strength, and signal to noise ratio. *Id.* 2:20-23.

58. According to the ’705 Patent, a network operator needs to be able to configure and reconfigure a network within a limited amount of time and with a high degree of accuracy. *Id.* 2:6-10. But as the complexity of networks increases, configuration and reconfiguration of a network becomes more difficult because parameter settings of the different components of the network affect each other. *Id.* 1:52-56.

59. For at least these reasons, network operators need methods and systems to (i) administer parameter settings of components of the network, (ii) change the parameter settings, and (iii) check the consistency of the proposed changes before they are implemented in the network. *Id.* 2:16-25.

A. The ’705 Patent’s Discussion of the Prior Art

60. The ’705 Patent discusses Madebrink, which is assigned on its face to an entity related to Petitioner.

61. The ’705 Patent states that Madebrink “describes a reconfiguration method and apparatus.” EX1001, 1:56-57. According to the ’705 Patent, in Madebrink, “cell parameters of particular mobile switching centres in a network are copied to a database,” “[a] set of proposed changes to the stored parameters is prepared and the consistency of the proposed changes is verified,” and “the verified set of proposed changes is implemented in the network.” *Id.* 1:58-67.

62. But according to the ’705 Patent, in Madebrink’s method, the consistency check of the proposed changes to the parameters uses “rules” that “originate solely from technical requirements derived from cellular network technology.” *Id.* 2:38-40. Thus, Madebrink’s method does “not apply rules derived from operational practice,” and these rules cannot “deviate from technically sufficient parameter setting requirements if operational practice experience reveals a more preferable technical parameter setting.” *Id.* 2:40-45. I agree with these statements about Madebrink in the ’705 Patent. These limitations of Madebrink’s rules impact the reliability and efficiency of the network. EX1004, at 59, 137.

63. Further, according to the ’705 Patent, in Madebrink’s method, the consistency check of the proposed changes to the parameters only uses pre-programmed rules, which decreases the flexibility of the system. EX1001, 2:46-50. And in Madebrink’s method, only a limited part of the network hierarchy is checked, which results in a less reliable and efficient control of the network. *Id.* 2:30-34. I agree with these statements about Madebrink in the ’705 Patent.

B. The ’705 Patent’s Advantages Over the Prior Art

64. In order to overcome at least these shortcomings, the ’705 Patent discloses embodiments for checking modified parameters of components of a

network based on rules deduced from operational use of the network. *Id.* at Abstract. In this regard, the ’705 Patent discloses rules to check parameter settings that have two distinct components: (i) a technically sufficient parameter setting and (ii) a deviation from that value where the extent of the deviation is deduced from actual network operation. *Id.* 6:4-7; EX1004, at 58-59. The ’705 Patent refers to the disclosed rules as “business rules.” EX1001, 3:11-13 (“These business rules comprise rules related to technically preferable requirements as well as rules derived from operational practice.”).

65. Figure 3 of the ’705 Patent, reproduced below, shows an example process flow for management and control of parameters. *Id.* 3:30-31, 4:27-28.

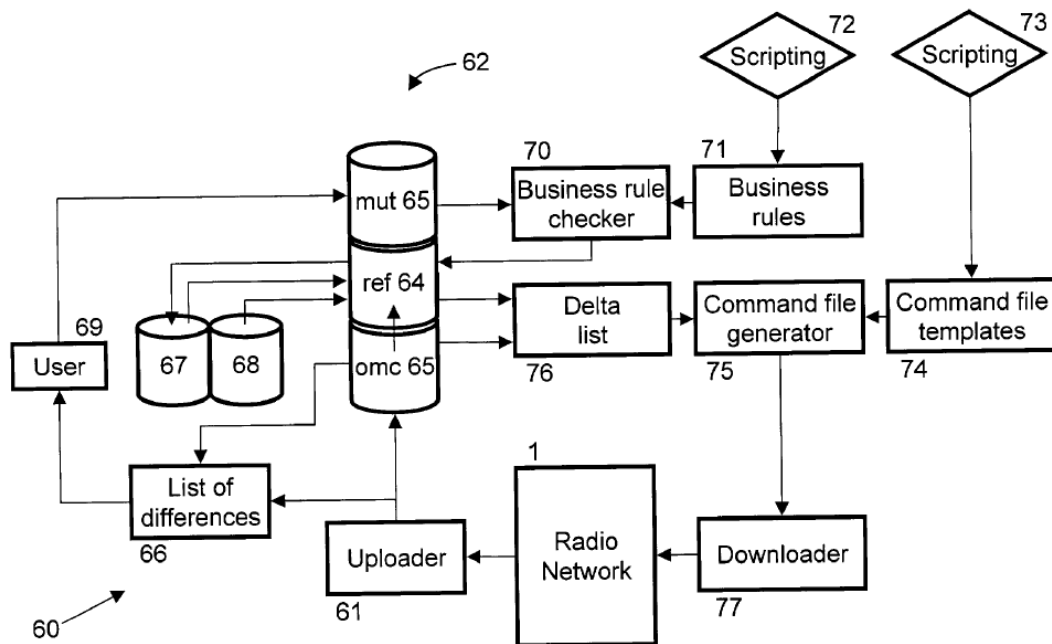


FIG. 3

66. In Figure 3, parameters from a radio network 1 may be uploaded to a database 62. *Id.* 4:28-31. The database 62 has three parts, an omc 63, a ref 64, and a mut 65. *Id.* 4:34-36. The omc 63 includes operational parameters and values set for the network 1, the ref 64 includes new or changed parameters and values to be implemented in the network 1, and the mut 65 includes parameters and values that are subject to a change proposal from a user 69. *Id.* 4:36-41. The parameter values from the database 62 are implemented in the network 1 by a command file generator 75 and a downloader 77. *Id.* 4:55-57.

67. In embodiments of the '705 Patent, changes to parameter values are made into the mut 65. *Id.* 4:48-49. The mutated parameters are checked by a

business rule checker 70 and put in the ref 74 if the changed parameters obey the business rules applied to them. *Id.* 4:49-53, 6:31-34, 6:48-52, Fig. 4A, 4B. But if the changed parameters do not obey the business rules, they appear on a generated error list to the user 69. *Id.* 6:34-36, Fig. 4A. In this manner, the business rule checker 70 performs a control function before parameter values are implemented in the network 1. *Id.* 5:54-55.

68. With respect to the rules used by the business rule checker 70, the '705 Patent describes an example for channel distance:

[I]t is preferable that the bare technically sufficient requirements can be altered according to rules obtained from daily operational use of the radio network. It can, e.g., be technically sufficient to have a channel distance of 20 Hz between different cells. . . . However, in practice it may be that a channel difference of 50 Hz between the cells guarantees more reliable operation. In that case, according to the invention, it is possible to use the preferred channel difference of 50 Hz as obtained from operational practice as a business rule instead of technically sufficient channel distance.

Id. 6:4-15.

69. The channel distance example of the '705 Patent illustrates that a technical requirement that is theoretically sufficient does not guarantee reliable operation of the network. *See id.*; EX1004, at 133.

70. Using the rules disclosed in the ’705 Patent to check changes to parameter settings before they are implemented in the network improves the reliability and efficiency of the network. EX1004, at 59. The ’705 Patent’s rules—which include both (i) a technically sufficient parameter setting and (ii) a deviation from that value where the extent of the deviation is deduced from actual network operation—increase the likelihood that the changed parameter settings lead to successful operation of the network. *Id.* This results in fewer changes to the parameter settings. *See id.*

71. Further, in embodiments of the ’705 Patent, the rules used to check parameter settings are programmable by the network operator, which improves the flexibility of the system. EX1001, 6:19-22, 3:18-22. And in embodiments of the ’705 Patent, changes to parameter settings are checked at all hierarchical levels of the network, which improves control and reliability of the network. EX1001, 5:17-21, 6:26-28, 7:21-32, 2:64-3:4.

C. Prosecution History

72. The examiner used the Petition’s primary references, Madebrink and Djoko, to initially reject claims in the ’538 Application, which Patent Owner overcame, leading to issuance of the ’705 Patent. EX1004, 11-14, 54-67, 87-89,

134-138, 149. In my opinion, the examiner’s treatment of Madebrink and Djoko was correct.

73. Further, a European Patent Office (“EPO”) examiner also used the disclosure of Madebrink and Djoko to initially reject the claims in the EP820.4 Application, which is in the same family as the ’705 Patent. EX2001, 127-128. Patent Owner also overcame the rejection, and European Patent 1236458 (EX2002) (“the EP’458 Patent”) issued from the EP820.4 Application. EX2001 17, 55-57, 96-98.

1. Prosecution History of the ’538 Application

74. The examination of the ’538 Application involved two office actions. In the first, the examiner rejected most of the pending claims as anticipated by Madebrink. EX1004, at 149. In response, Patent Owner amended the claims and argued that Madebrink did not disclose the “business rule comprising . . . deviating from at least one technically sufficient parameter setting requirement,” as recited, for example, in amended Claim 1. EX1004, at 123 (amendments), 134-138 (argument).

75. In the second, the examiner agreed with Patent Owner and found that “Madebrink fails to teach that the business rule comprising deviating from at least one technically sufficient parameter setting requirement.” *Id.* at 88. Nevertheless,

the examiner rejected most of the pending claims as obvious over Madebrink and Djoko. *Id.* at 88-89.

76. In response, Patent Owner added new claims corresponding to the previously presented claims and argued that Madebrink and Djoko did not teach or suggest most of the limitations recited in Claim 34 (issued Claim 1):

- “verifying a modified parameter obtained from changing an operational parameter of a component of a radio network”;
- “before the modified parameter is implemented in the network, checking the modified parameter on the basis of a rule so as to yield a result, said rule comprising both a technically sufficient parameter setting requirement and a deviation from the setting requirement based on an operational requirement deduced from use of the radio network”; and
- “if the result indicates that the rule has been obeyed, storing the modified parameter in the network such that subsequent network operation will respond to the modified parameter”

Id. at 40-41 (amendments), 50-51 (claim chart), 54-67 (argument). The examiner then allowed the ’538 Application. *Id.* at 11-14.

77. In my opinion, Patent Owner’s statements about Madebrink and Djoko during examination were correct then and are correct now. EX1004, at 54-65, 134-138.

78. Dr. Haas asserts that the examiner “made a mistake by overlooking” disclosures in Djoko. EX1002, ¶54. I disagree with that assertion.

79. In my opinion, the examiner’s findings on Madebrink and Djoko are correct. The Petition and Dr. Haas merely disagree with the examiner’s findings regarding Madebrink and Djoko.

2. Prosecution History of the EP820.4 Application

80. The examination of the EP820.4 Application, which occurred before the examination of the ’538 Application, supports my opinion that the examiner’s findings on Madebrink and Djoko are correct.

81. The EPO examiner rejected the pending claims for lack of inventive step over WO 92/21182 (“WO’182,” EX2003), the published PCT application in the same family as Madebrink, and Djoko. EX2001, 69-71, 127-128.

82. In response, Patent Owner amended claim 1 to recite the “business rule comprising . . . deviating from technically sufficient parameter setting requirements” and argued that neither WO’182 nor Djoko discloses “a method or system for checking modified parameters or parameter values on the basis of business rules comprising at least one operational requirement deviating from technically sufficient parameter setting requirements.” EX2001, 55-57, 96-98. The EPO examiner then allowed the EP820.4 Application. *Id.* at 17.

83. Limitations [1pre] and [1a] of the ’705 Patent recite similar subject matter as Claim 1 of the EP’458 Patent:

’705 Patent	EP’458 Patent
[1pre] A method for verifying a modified parameter obtained from changing an operational parameter of a component of a radio network, the method comprising the steps of	Method for checking at least one modified parameter (BS_TX_PWR_MAX) and/or value obtained from changing at least one operational parameter and/or value
[1a] before the modified parameter is implemented in the network, checking the modified parameter on the basis of a rule so as to yield a result, said rule comprising both a technically sufficient parameter setting requirement and a deviation from the setting requirement based on an operational requirement deduced from use of the radio network	of an at least one component of a radio network, characterized in that said checking is performed on the basis of at least one business rule comprising at least one operational requirement deduced from operational use of the radio network and deviating from technically sufficient parameter setting requirements

EX1001, 8:39-49; EX2002, at 6 (emphasis in original).

84. Patent Owner’s arguments in the EPO regarding Madebrink and Djoko, including “neither [WO’182] nor [Djoko] discloses a method or system for checking modified parameters or parameter values on the basis of business rules comprising at

least one operational requirement deviating from technically sufficient parameter setting requires,” are similar to Patent Owner’s arguments in the USPTO regarding Madebrink and Djoko. *Compare* EX2001, at 56-57, *with* EX1004, at 54-67, 134-138.

D. The Challenged Claims

85. Claims 1, 22, 26, 28, and 31 are independent and Claims 2-7, 23-25, 29, and 32 are dependent. Claim 1 recites:

[1pre] A method for verifying a modified parameter obtained from changing an operational parameter of a component of a radio network, the method comprising the steps of:

[1a] before the modified parameter is implemented in the network, checking the modified parameter on the basis of a rule so as to yield a result, said rule comprising both a technically sufficient parameter setting requirement and a deviation from the setting requirement based on an operational requirement deduced from use of the radio network; and

[1b] if the result indicates that the rule has been obeyed, storing the modified parameter in the network such that subsequent network operation will respond to the modified parameter.

EX1001, 8:39-52 (the Petition’s bracket notation of limitations added). EX1004, at 133 (“‘preferred technical requirement’ is contrasted with ‘technical sufficient requirements’” (citing EX1001, 6:4-15)).

86. Claims 22, 26, 28, and 31 recite similar limitations as Claim 1, and Dr. Haas does not distinguish between Claims 1 and Claims 22, 26, 28, and 31. EX1002, ¶¶114, 119, 120, 122, 124, 148, 149, 150, 151 (referring to arguments against Claim 1).¹

VI. THE ALLEGED PRIOR ART

87. Dr. Haas presents four proposed grounds of unpatentability against the Challenged Claims. EX1002, ¶29. Ground 1 alleges obviousness of the Challenged Claims over Madebrink and Feuerstein; Ground 2 alleges obviousness of the Challenged Claims over Madebrink, Feuerstein, and Shipman; and Ground 4 alleges obviousness of dependent Claims 2-6, 23-25, 29, and 32 over Djoko and Sheridan. *Id.*

88. Dr. Haas describes Ground 3 against independent Claims 1, 22, 26, 28 and 31 as anticipation by Djoko. *Id.* However, the Petition describes Ground 3 against two different ways. In the “Precise Relief Requested And Grounds Raised,” the Petition describes Ground 3 as obviousness over Djoko, but in “Detailed Explanation of Grounds,” the Petition describes Ground 3 as anticipation by Djoko. *Compare* Pet., 13, *with id.* at 43-51.

¹ ¶1 of Dr. Haas’ declaration omits Claim 29 from the list of claims. EX1002, ¶1.

89. In my opinion, the Petition’s conflicting description of Ground 3 as both obviousness and anticipation illustrates that Petitioner is uncertain how Djoko allegedly renders Claims 1, 22, 26, 28, and 31 unpatentable.

A. The Petition’s Primary References

1. Madebrink

90. Madebrink discloses a method and apparatus for reconfiguration of a cellular network. EX1005, Abstract. Figure 4A of Madebrink, reproduced below, illustrates a method of reconfiguring the network. Id. 7:7-8, 10:49-54.

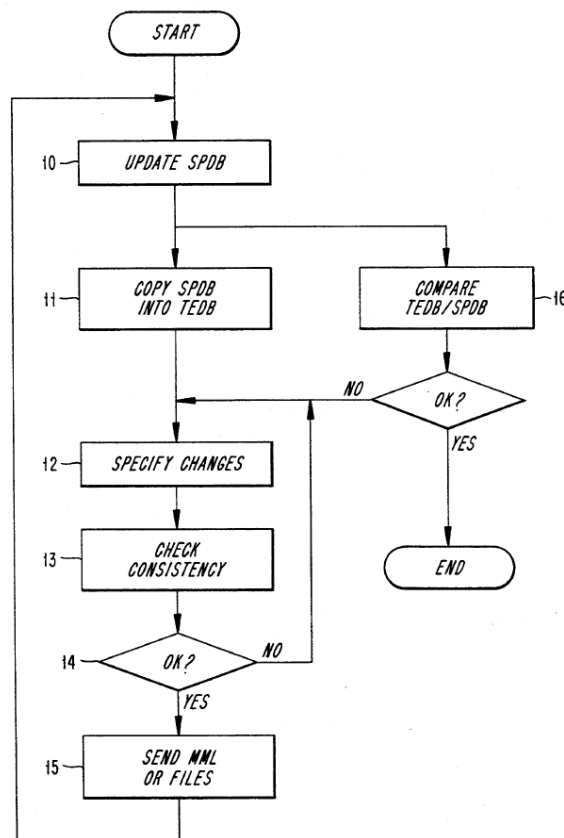
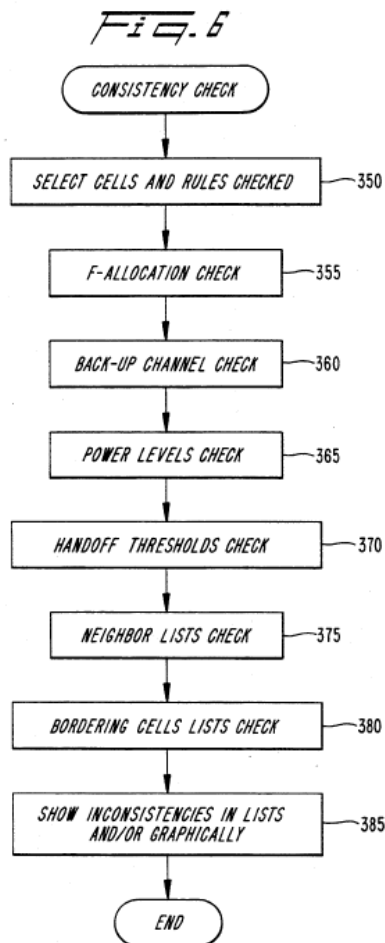


FIG. 4A

91. At block 12, proposed changes to parameters are specified, and at block 13, a consistency check is performed on the entered changes before they are introduced into the network. *Id.* 11:1-2, 15-18, 64-65.

92. Figure 6 of Madebrink, reproduced below, illustrates the consistency check routine. *Id.* 7:12-13, 13:16-17.



93. In Figure 6, step 355 checks frequency allocations, step 360 determines if the cells have backup channel devices, step 365 determines the cells’ power level (e.g., base station power level must correspond to the size of the cell), step 370 checks the hand-off and locating thresholds, step 375 checks the relationship between the neighboring cell and adjacent cells, and step 380 checks the inter-exchange handoff relationships. *Id.* 13:31-59.

94. Further, Madebrink discloses that after the updated parameters are activated in the network, the network operator may optimize the newly changed parameters. *Id.* 11:64-67. Madebrink discloses that “live traffic measurements may be taken which may be used to optimize the cell parameters and if necessary, further changes may be implemented responsive to the optimization.” *Id.* 12:1-4.

2. Djoko

95. Djoko discloses a self engineering system for use with a communication system. EX1007, Abstract. Figure 1 of Djoko, reproduced below, illustrates the self engineering system 100 interfaced with the communication system 102. *Id.* 5:6-9, 5:41-43.

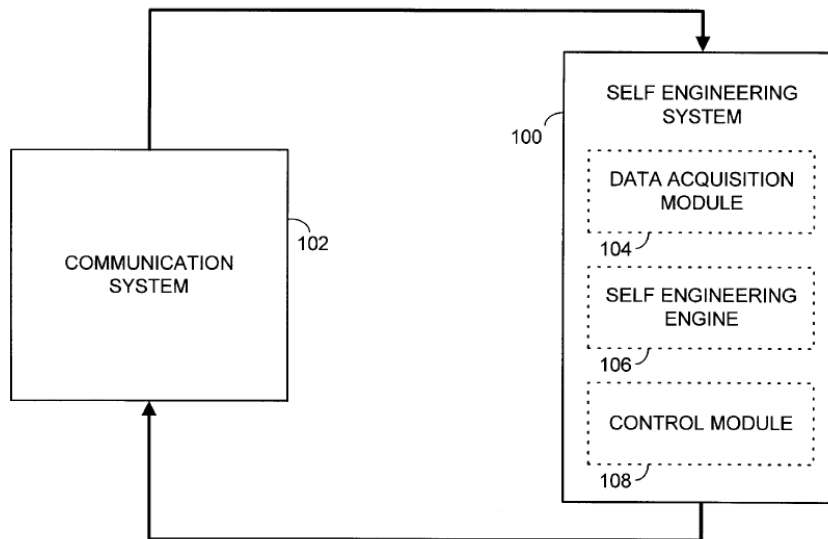


FIG. 1

96. Djoko discloses that “[t]he self engineering system 100 comprises a data acquisition module 104, a self engineering engine 106, and a control module 108,” and that “[b]ased upon the current operating data and current operating parameters of the communication system 102, the self engineering engine 106 determines new operating parameters of the communication system to improve and enhance operation of the communication system 102.” *Id.* 5:44-46, 6:5-10.

97. Further, Figure 4 of Djoko, reproduced below, “illustrates a particular construction of the self engineering engine previously described as reference numeral 106 in FIG. 1” and shows that “[t]he self engineering engine comprises an expert system 402.” *Id.* 5:16-18, 10:9-13 (green annotation added).

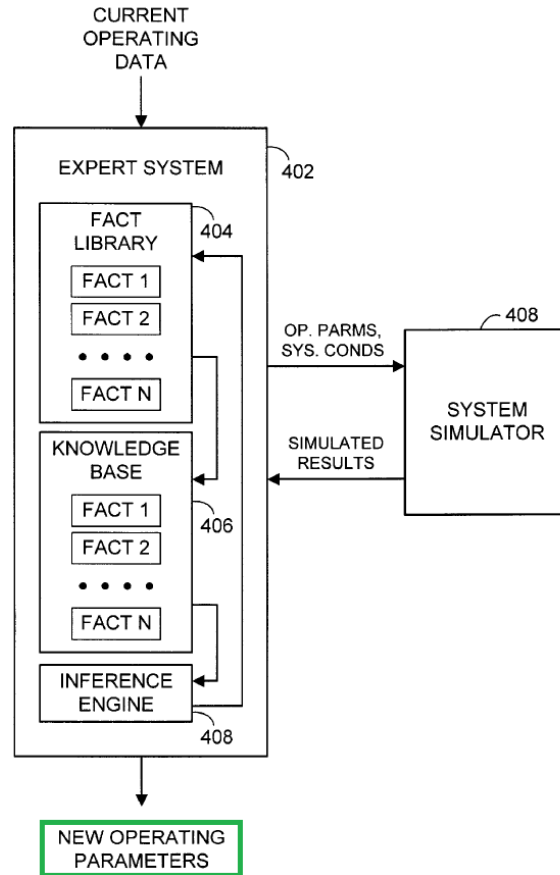


FIG. 4

98. In Figure 4, the expert system 402 produces “NEW OPERATING PARAMETERS.” In connection with Figure 5, Djoko discloses “new operating parameters are selected by the inference engine 408 at step 514” and “at step 516, the control module implements the new operating parameters in the communication system.” *Id.* 11:28-31.

99. Further, Figure 6 of Djoko, illustrates operation of the self engineering system having a communication system simulator. *Id.* 5:22-26, 11:32-34 (green annotations added).

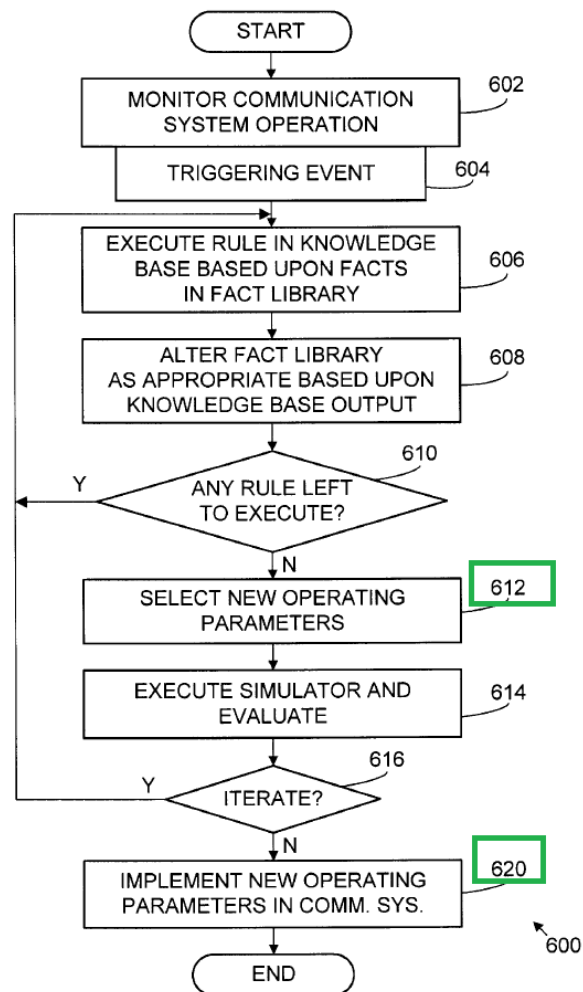


FIG. 6

100. In Figure 6, at step 612, “new operating procedures are selected,” and, at step 620, “the control module implements the new operating parameters in the communication system.” *Id.* 11:44-45, 11:49-52. In this regard, Djoko discloses that: “[i]f there is any rule left to be executed at step 610, operation proceeds to step 606. Otherwise, operation proceeds to step 612 where new operating parameters are selected. Then, the communication system simulator 408 is

executed to evaluate the proposed operation parameters at 614.” *Id.* 11:41-46.

Further, in connection with Figure 4 (reproduced above), Djoko discloses that “[s]hould the system simulator 408 be present, the proposed operating parameters may be evaluated by the system simulator 408 prior to their being deemed the new operating parameters.” *Id.* 10:63-66.

B. The Petition’s Secondary References

1. Feuerstein

101. Feuerstein discloses systems and methods for providing network parameters to network elements. EX1006, Abstract. For Ground 1, Dr. Haas proposes to modify Madebrink with simulation of parameters in Feuerstein. EX1002, ¶96.

102. Figure 2 of Feuerstein, reproduced below, illustrates Feuerstein’s system. EX1006, 7:20-21.

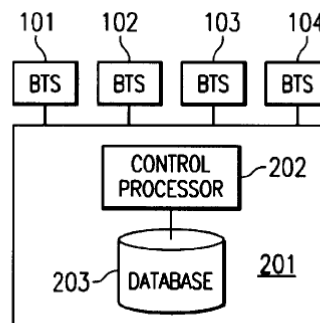


FIG. 2

103. In Figure 2, a network control system 201 includes a control processor 202 and a database 203. *Id.* 7:45-46. Feuerstein discloses that the database 203 stores network parameters and “[e]ach such set of network parameters is optimized so as to result in desired system behavior when particular communication conditions are determined to exist.” *Id.* 7:57-60. Thus, database 203 stores pre-optimized parameters that may later be selected for use.

104. Feuerstein discloses “where network parameters are not available which are optimized for particular communication conditions, or where it is otherwise determined advantageous, parameters may be generated, i.e., calculated, which are optimized based on network theory or equations representing network operation.” *Id.* 7:64-8:2. In this regard, Feuerstein discloses that the control processor 202 includes “network simulation software in order to provide network modeling.” *Id.* 12:27-29. The software is “a modeling tool,” which uses “real-time optimization paradigms.” *Id.* 12:29, 33. Feuerstein discloses “network operation simulation is desirable for use in calculating the optimum network parameters.” *Id.* 12:37-38.

105. Further, Feuerstein discloses, “in a preferred embodiment of the present invention, optimization of network parameters is accomplished in real-time or near real-time” and “updates to database 203 may be based on real-time

measurements of the traffic load or the interference levels on the network.” *Id.*

11:63-67, 9:43-46 (“[T]he present invention may operate to optimize the network parameter sets in real-time.”).

106. For Ground 1, Dr. Haas replaces Djoko with Feuerstein, but in my opinion Feuerstein teaches the same thing as Djoko regarding using simulation to optimize pre-determined parameters. In this regard, Dr. Haas cited Feuerstein’s simulation software, which generates new parameters, similar to the examiner’s citation of Djoko’s generation of new parameters. EX1002, ¶89 (citing EX1006, 12:29-39); EX1004, at 88-89. With respect to the Challenged Claims, Feuerstein’s simulation software teaches no more than what a reasonable examiner would consider to be taught by Djoko’s generation of new parameters.

107. For at least these reasons, Feuerstein is cumulative of Djoko regarding using simulation to optimize pre-determined parameters.

2. Shipman

108. Shipman discloses an apparatus and method for designing a network. EX1010, at 4. For Ground 2, Dr. Haas proposes to combine Shipman’s “network design rules” with Madebrink and Feuerstein. EX1010, at 6; EX1002, ¶131.

109. Shipman discloses that a network design modifier 205 applies the design rules to add or delete access nodes. EX1010, at 16. Further, Shipman

discloses a rule generator 203 that “generates rules that are used in the planning of network growth,” which “take account of the demand at a site and the proximity of other nodes.” *Id.* at 14.

110. Shipman’s example rule, R1, is reproduced below:

If (Demand > X) AND (Distance to Nearest Node > Y)
THEN (ADD an access node) (R1)

Id.

3. Sheridan

111. Sheridan discloses a cell network management system. EX1008, Abstract. For Ground 4, Dr. Haas proposes to combine Sheridan’s teachings of a data reception and storage system 602, which receives configuration data from a cell site complex 108, with Djoko. EX1002, ¶154.

VII. CLAIM CONSTRUCTION

112. In my opinion, the terms recited in the Challenged Claims can each be given its plain and ordinary meaning, and no express constructions of these terms are needed.

**VIII. GROUND 1: MADEBRINK AND FEUERSTEIN DO NOT RENDER
OBVIOUS THE CHALLENGED CLAIMS**

113. Claim 1 recites limitations not taught or suggested by the combination of Madebrink and Feuerstein, and therefore the Petition has failed to establish that Claim 1 is unpatentable over Madebrink and Feuerstein.

114. In my opinion, Madebrink does not teach or suggest limitation [1a], Feuerstein does not teach or suggest limitation [1a], Madebrink and Feuerstein do not teach or suggest limitation [1b], and Dr. Haas’ proposed modification of Madebrink would change a principle of operation of Madebrink.

115. For at least these reasons, the Challenged Claims are patentable over Madebrink and Feuerstein, and Petitioner has not proven that any of the Challenged Claims are unpatentable over Madebrink and Feuerstein.

A. Madebrink Does Not Teach Or Suggest [1a]

116. Madebrink’s consistency check does not use any “rule comprising both a technically sufficient parameter setting requirement and a deviation from the setting requirement based on an operational requirement deduced from use of the radio network” recited in [1a]. EX1005, 13:16-59, Fig. 6. Instead, Madebrink uses rules that are solely technical in nature, and not the two-part rule recited in [1a]. EX1004, at 135 (“The consistency check [of Madebrink] involves checking whether technical requirements for the parameters mentioned are fulfilled.”).

117. Madebrink’s consistency check does not teach or suggest “checking the modified parameter on the basis of a rule . . . based on an operational requirement deduced from use of the radio network” recited in [1a] at all, much less the “rule comprising . . . a deviation from the setting requirement based on an operational requirement.” Dr. Haas does not disagree. In fact, Dr. Haas admits that “*Madebrink* does not expressly disclose deviating from the technically sufficient parameter setting requirements *before* the parameter is deployed for optimization purposes.” EX1002, ¶87.²

118. Instead, Dr. Haas asserts that “*Madebrink* teaches that optimization can occur after the modified parameter is deployed,” and cites Madebrink’s disclosure “live traffic measurements may be taken which may be used to optimize the cell parameters.” *Id.* (citing EX1005, 11:64-68). I disagree with Dr. Haas’ reliance on optimization in Madebrink in connection with [1a].

119. First, Dr. Haas equates optimizing a parameter in Madebrink, as well as in other references cited in the Petition, with “a deviation from the setting requirement based on an operational requirement deduced from use of the radio

² Unless otherwise noted, emphasis of a reference name is from Dr. Haas’ declaration.

network” recited in [1a]. For example, in addition to the citation above to EX1002, ¶87, Dr. Haas states “*Madebrink* does deviate from a setting based on actual field conditions—the optimization, however . . .” *Id.* ¶50; *see also id.* ¶77 (“The deviation (optimization) from that requirement . . .”). Referring to Feuerstein, Dr. Haas states “*Feuerstein* teaches that to check the optimized parameter that deviates from a baseline setting where the optimization and checking are the result of simulating the modified parameter using real network data, i.e., the deviation is deduced from the use of the radio network where the network data is collected.” *Id.* ¶78; *see also id.* ¶90.

120. But Dr. Haas presents no explanation or rationale for equating optimizing with a deviation. Rather, he refers to optimization in *Madebrink* and the other cited references as if an equality of the two terms is a given, requiring no explanation or justification. I disagree: the “rule” recited in [1a] may reject verification of a modified network parameter even if it has been optimized for the measured network attributes and fulfils some optimality criterion. Even assuming, *arguendo*, equality between optimizing with a deviation, Dr. Haas’ assertions that rely on the equality are unsupported.

121. Second, *Madebrink* teaches optimizing after the parameter is made active, and not “before the modified parameter is implemented in the network”

recited in [1a]. EX1005, 11:64-68. Dr. Haas has conceded that the timing of Madebrink’s optimization is different from the timing of “checking the modified parameter” recited in [1a]. EX1002, ¶87 (“*Madebrink* does not expressly disclose deviating from the technically sufficient parameter setting requirements *before* it is deployed for optimization purposes.”).

122. Third, Madebrink teaches optimization based on live traffic, and not a “rule” that “compris[es] ... a deviation from the setting requirement based on an operational requirement deduced from use of the radio network,” as recited in [1a]. The two are different and the ’705 Patent’s example of 50 Hz channel distance being such a “rule” proves the point: Madebrink’s optimization based on live traffic can yield an optimal channel distance (e.g., 51 Hz) that violates the 50 Hz rule. EX1001, 6:4-15. Dr. Haas describes the ’705 Patent’s example as a “parameter optimization technique,” EX1002, ¶46, but that is incorrect. Again, optimizing and the “rule comprising ... a deviation from the setting requirement based on an operational requirement deduced from use of the radio network” recited in [1a] are different.

123. Dr. Haas’ assertion that a POSITA would have done Madebrink’s optimization “before” deploying the parameter (EX1002, ¶80) makes no sense. Madebrink’s optimization requires deployment of the parameter to happen first.

EX1005, 11:64-68. And checking against live traffic precludes the optimization to be part of a “rule” established prior to deployment, as recited in [1a].

B. Feuerstein Does Not Teach Or Suggest [1a]

124. In an attempt to cure the deficiencies with Madebrink, the Petition alleges that “*Feuerstein* teaches optimizing the parameter *before* deploying it into the network by simulating the modified parameter against ‘then existing monitored conditions,’ e.g., real-time traffic information.” EX1002, ¶89 (citing EX1006, 12:17-39) (emphases in original). As with Madebrink, Dr. Haas assumes without justification an equality between simulation taught by Feuerstein and “a deviation from the setting requirement based on an operational requirement deduced from use of the radio network” recited in [1a]. But even putting this unsupported assumption aside, Dr. Haas’ reliance on the simulation in Feuerstein is misplaced.

125. First, Feuerstein’s simulation does not teach or suggest “checking the modified parameter on the basis of a rule” recited in [1a]. To the contrary, Feuerstein teaches “parameters may be generated, i.e., calculated . . . based on network theory or equations representing network operation.” EX1006, 7:67-8:2. Feuerstein’s “network simulation software,” cited by the Petition, “calculat[es] optimum network parameters” from scratch, and does not “check[] the modified parameter on the basis of rule” recited in [1a]. EX1006, 12:27-39.

126. Second, Feuerstein’s simulation software does not use a “rule comprising both a technically sufficient parameter setting requirement and a deviation from the setting requirement based on an operational requirement deduced from use of the radio network” recited in [1a]. To the contrary, as quoted above, Feuerstein teaches that the simulation is “based on network theory or equations representing network operation,” and the simulation software is “a modeling tool,” which uses “real-time optimization paradigms.” EX1006, 8:1-2, 12:33.

127. The simulation software of Feuerstein generates ready-to-go (i.e., preconfigured and stored ahead of time) optimized parameters from permutations of current operating conditions using network theory, equations representing network operation, and real-time optimization paradigms—and not using a “rule comprising both a technically sufficient parameter setting requirement and a deviation from the setting requirement based on an operational requirement deduced from use of the radio network” recited in [1a].

128. Petitioner’s equation of using simulation to produce optimized parameters in Feuerstein with “a deviation from the setting requirement based on an operational requirement deduced from use of the radio network” that is part of

the “rule” recited in [1a] is wrong for similar reasons discussed above with respect Madebrink. *Supra* ¶¶119-120.

129. Again, optimization and the “rule” recited in [1a] are different, and the ’705 Patent’s example of 50 Hz channel distance being such a “rule” once again proves the point: Feuerstein’s simulation software can yield an optimal channel distance (e.g., 51 Hz) that violates the 50 Hz rule. EX1001, 6:4-15.

130. Feuerstein teaches that simulation is used “where network parameters are not available which are optimized for particular communication conditions, or where it is otherwise determined advantageous.” EX1006, 7:64-67. But in citing simulation in Feuerstein, however, Dr. Haas improperly cites portions of Feuerstein that relate to different embodiments. EX1002, ¶¶90-95. As one example, Feuerstein discloses “optimization of network parameters is accomplished in real-time or near real-time” and “updates to database 203 may be based on real-time measurements of the traffic load or the interference levels of the network.” EX1006, 11:63-67, 9:44-45 (“[T]he present invention may operate to optimize the network parameter sets in real-time.”). Feuerstein’s real-time optimization is no different than Madebrink’s optimization based on live traffic, and both fail to teach or suggest [1a].

C. The Petition and Dr. Haas Are Inconsistent About What “Deviation” Applies To In [1a]

131. The Petition and Dr. Haas appear confused—or inconsistent—about what it is in [1a] that the “deviation” applies to. At page 6, the Petition states:

As detailed herein, however, checking an adjusted parameter based on a technically sufficient rule and a *deviation from that rule* is not innovative and was well known in the art when the application that issued as the ’705 Patent was filed.

Pet., 6 (emphasis added). But [1a] recites “*a deviation from the setting requirement* based on an operational requirement deduced from use of the radio network” (emphasis added). So, here, the Petition misreads [1a].

132. By contrast, Dr. Haas states “a deviation from the setting requirement was known.” EX1002, ¶40. He also equates optimizing with deviation from a setting requirement. *Id.* ¶¶79, 87; *see also* Pet., 17, 19, 25 (similar).

133. But then, in connection with Shipman (discussed *infra* section IX), Dr. Haas states “[t]he variable parameter within a rule uses weighting parameters to generate ‘subtle variations,’ i.e., *deviations, to a rule.*” EX1002, ¶129 (emphasis added). At ¶130, he again refers to “deviations of those rules.”

134. But in discussing Djoko (discussed *infra* sections X-XI), Dr. Haas states:

While the parameters are initially optimized using rules from human experts, i.e., technically sufficient rules, as “the conditions in the field change, the system will automatically change the relevant parameter values based on the field data, and iteratively evaluate their merits using the simulator.” Ex. 1007, 13:23-32. This is a “*deviation*” from the *technically sufficient rule*.

EX1002, ¶139 (emphasis added).

135. The result of the Petition and Dr. Haas bouncing back and forth as to its interpretation of “deviation” in [1a] further undermines their arguments regarding all the claims that recite this limitation.

D. Madebrink And Feuerstein Do Not Teach Or Suggest [1b]

136. Dr. Haas asserts “*Madebrink* as modified by *Feuerstein* and the knowledge of a POSITA teaches and renders obvious” [1b]. EX1002, ¶99. That is incorrect.

137. Limitation [1b] includes the “rule” recited in [1a], namely, “if the result indicates that the rule has been obeyed” Because neither Madebrink nor Feuerstein teach or suggest the “rule” recited in [1a] for the reasons discussed above in section VIII.A-C, the combination of Madebrink and Feuerstein do not teach or suggest “if the result indicates that the rule has been obeyed” recited in [1b].

E. Dr. Haas’ Proposed Modification Of Madebrink With Feuerstein Would Change A Principle Of Operation Of Madebrink

138. Dr. Haas asserts “a POSITA would have found it straightforward and obvious to modify *Madebrink* in view of *Feuerstein*’s disclosure of using a simulator to check the optimized parameter before implementing the modified parameter into the system,” and “a POSITA would have been motivated to look to *Feuerstein*’s network parameter optimization and simulation techniques to complement *Madebrink*’s network parameter verification techniques.” EX1002, ¶¶96, 98. I disagree with these assertions because *Madebrink* and *Feuerstein*’s simulation do not complement each other—they are different and alternative approaches to parameter management.

139. Modifying *Madebrink* with the simulation in *Feuerstein*, as proposed by Dr. Haas, would change a basic principle of operation of *Madebrink*. In *Madebrink*, changes to parameters are specified, a consistency check on the entered changes is performed before they are introduced into the network, and after the updated parameters are activated in the network, the newly changed parameters may be optimized based on live traffic measurements. *Supra* ¶¶ 91-94, 121-122. By contrast, in *Feuerstein*, simulation generates optimized parameters. *Supra* ¶¶104, 125. *Madebrink*’s pre-deployment consistency check of proposed changes to

parameters and post-deployment optimization of the parameters based on live traffic—and Feuerstein’s use of simulation to produce optimized parameters—are different and alternative approaches to parameter management.

140. Dr. Haas does not explain how Madebrink’s process flow in Figure 4A would be modified with Feuerstein’s simulation. Pet., 19-26. Instead, in connection with [1b], the Petition simply refers to “the CONSISTENCY CHECK/simulation” twice. EX1002, ¶¶99; *see also id.* ¶¶98 (“programming the ‘CONSISTENCY CHECK,’ which may have additional checks like *Feuerstein*’s optimization simulation . . .”). But at best, the Petition’s proposed modification of Madebrink with Feuerstein would result in extra steps to Madebrink’s method of reconfiguration of a network.

F. Other Claims

141. Dr. Haas makes no separate arguments for Claims 22, 26, 28, and 31 that are different from Claim 1. EX1002, ¶¶114, 119, 120, and 122. In my opinion, the Petition has failed to establish Claims 22, 26, 28, and 31 are unpatentable over Madebrink and Feuerstein for at least the same reasons that the Petition failed to establish that Claim 1 is unpatentable.

142. Claims 2-7, 23-25, 29, and 32 depend from Claims 1, 22, 26, 28, and 31, and therefore in my opinion, the Petition has failed to establish Claims 2-7, 23-

25, 29, and 32 are unpatentable over Madebrink and Feuerstein for at least the same reasons that the Petition failed to establish that Claim 1 is unpatentable.

IX. GROUND 2: MADEBRINK, FEUERSTEIN, AND SHIPMAN DO NOT RENDER OBVIOUS THE CHALLENGED CLAIMS

143. Dr. Haas asserts that if Ground 1 fails because “*Madebrink* in view of *Feuerstein* does not render obvious a rule that includes ‘a deviation from the setting requirement based on an operational requirement deduced from use of the radio network,’” “such a feature would have been obvious to a POSITA in view of additional disclosures of *Shipman*.” EX1002, ¶124. I disagree with these assertions.

144. The problems with Ground 1 are not limited to the “rule comprising . . . a deviation from the setting requirement based on an operational requirement deduced from use of the radio network” recited in [1a]. As discussed above, the combination of Madebrink and Feuerstein does not teach or suggest other limitations of [1a], including “before the modified parameter is implemented in the network, checking the modified parameter on the basis of a rule . . . based on an operational requirement deduced from use of the radio network,” and does not teach or suggest “the rule” recited in [1b]. *Supra* section VIII.A-D. And Dr. Haas’ proposed modification of Madebrink with Feuerstein would also change a principle of operation of Madebrink. *Supra* section VIII.E. Dr. Haas cites Shipman only for “a deviation from the setting requirement based on an operational requirement deduced

from use of the radio network”—and not for other limitations of [1a] and [1b] that are lacking in Ground 1. EX1002, ¶¶124-132.

145. In addition, referring to combining Madebrink, Feuerstein, and Shipman, Dr. Haas states “such that the consistency check is performed not only on baseline technically sufficient rules, but also on *deviations of those rules* that during simulations using real traffic data revealed a particularly successful design. EX1002, ¶130 (emphasis added). Thus, even in his reliance on Shipman, Dr. Haas confuses what a “deviation” applies to in [1a], further undermining his contentions regarding any combination of Madebrink, Feuerstein, and Shipman.

146. Accordingly, Claim 1 recites limitations not taught or suggested by Madebrink, Feuerstein, and Shipman for reasons discussed above related to Ground 1, and therefore in my opinion the Petition has failed to establish Claim 1 is unpatentable over Madebrink, Feuerstein, and Shipman for the same reasons that the Petition has failed to establish that Claim 1 is unpatentable over Madebrink and Feuerstein. *Supra* section VIII.

147. Further, the Petition has failed to establish that Claim 1 is unpatentable over Madebrink, Feuerstein, and Shipman for the additional reason that the Petition merely asserts that “a POSITA would have found it straightforward and obvious to further modify *Madebrink* as modified by *Feuerstein* and the knowledge of a

POSITA in view of *Shipman*,” without any explanation of why a POSITA would have done so. EX1002, ¶¶130-131.

148. The Petition’s lack of a reason why a POSITA would have combined *Shipman* with *Madebrink* and *Feuerstein* to arrive at Claim 1 is magnified by the differences between *Shipman* and Claim 1. *Shipman* uses rules to add or delete access nodes to a network. EX1012, ¶¶[0036]-[0037], ¶[0043]. By contrast, Claim 1 recites “verifying a modified parameter obtained from changing an operational parameter of a component of a radio network” in [1pre], “before the modified parameter is implemented in the network, checking the modified parameter on the basis of a rule” in [1a], and “if the result indicates that the rule has been obeyed storing the modified parameter in the network” in [1b]. Nowhere does *Shipman* teach or suggest any “modified parameter” of “a component of a radio network” as recited in [1pre], [1a], and [1b].

149. Further, *Shipman*’s example rule, R1, relates to when a modification to the network should be made, namely, when to add or delete an access node. *Id.* ¶¶[0036]-[0037]. Nowhere does *Shipman* teach or suggest (i) using any rule to “verify[] a modified parameter” recited in [1pre], (ii) “before the modified parameter is implemented in the network, checking the modified parameter” recited in [1a], and (iii) “storing the modified parameter in the network” recited in [1b].

150. Dr. Haas’ Ground 2 is nothing more than an argument that Shipman “could be” combined with Madebrink and Feuerstein, which I understand is not the test for obviousness.

151. For Ground 2, Dr. Haas makes no separate arguments for Claims 22, 26, 28, and 31 different from Claim 1, EX1002, ¶124, and therefore in my opinion the Petition has failed to establish that Claims 22, 26, 28, and 31 are unpatentable over Madebrink, Feuerstein, and Shipman for at least the same reasons that the Petition failed to establish that Claim 1 is unpatentable over Madebrink, Feuerstein, and Shipman.

152. Further, Ground 2 relies on Ground 1 for dependent Claims 2-7, 23-25, 29, and 32, *id.* ¶132, and therefore the Petition has failed to establish that these claims are unpatentable over Madebrink, Feuerstein, and Shipman for at least the reasons the Petition failed to establish that Claim 1 is unpatentable over Madebrink, Feuerstein, and Shipman.

X. GROUND 3: DJOKO DOES NOT ANTICIPATE CLAIMS 1, 22, 26, 28, AND 31

153. Claim 1 recites limitations not disclosed by Djoko, and therefore the Petition has failed to establish that Claim 1 is unpatentable over Djoko.

154. In my opinion, Djoko does not disclose [1pre], Djoko does not disclose [1a], and Djoko does not disclose [1b].

155. For at least these reasons, the Challenged Claims are patentable over Djoko, and Petitioner has not proven that any of the Challenged Claims are unpatentable over Djoko.

A. Djoko Does Not Disclose [1pre]

156. Dr. Haas asserts that Djoko’s disclosure of “alter operating parameters,” “parameter adjustment,” “adjusts operating parameters,” and “adjustment process” in connection with the self-engineering system 100 is [1pre]’s “[a] method for verifying a modified parameter obtained from changing an operational parameter of a component of a radio network.” EX1002, ¶¶134-136 (citing EX1007, 5:50-54, 6:21-23, 6:30-34, 6:41-47). I disagree with that assertion.³

157. As Patent Owner established years ago, Djoko discloses that the self-engineering system 100 “determines new operating parameters”:

Based on current operating data and current operating parameters, as determined by the data acquisition module, the self-engineering module determines new operating parameters which are intended to improve and enhance operation of the system. The control system then receives the new operating parameters from the self-engineering module and implements those parameters within the network. As discussed in col. 6,

³ Dr. Haas assumed [1pre] is limiting, and did not provide any argument that [1pre] is not. EX1002, ¶81.

line 41 et seq, the self-engineering module contains a core unit, which may be an expert system or a neural network, and an optional unit which is simulator. FIG. 4, as discussed in col. 10, line 9 et seq, shows one implementation of the self-engineering engine. Here, the engine contains expert system 402, fact library 404, knowledge base 406 and inference engine 408. The inference engine, given network configuration data and historical operating data both stored in the fact engine, and rules (specifically condition-action pairs) stored in knowledge base 406, produces, inter alia, proposed new operating parameters. Once these proposed new parameters are produced, they are evaluated through simulator 408 prior to their being deemed ‘new operating’ parameters suitable for actual network use. See also, col. 11, lines 41-47. As indicated in col. 13, line 29-34, the rules are used in setting initial values for various parameters. As field conditions change, the system automatically modifies affected new parameter values based on field data, i.e., operating data, and will then iteratively, through the simulator, evaluate merits of those new parameters. Once a stable set of new parameters is achieved, the results are implemented in the wireless system and set in place for re-evaluations by the self-engineering system. The effects of these parameters on field operation are then observed and used to calibrate both the simulator and the rules in the expert system.

As is clearly evident from FIG. 6 particularly blocks 606-614, as discussed in col. 11, lines 37-47, the rules are used, in conjunction with the knowledge base, to produce new operating parameters, but not verifying, checking or simulating any existing parameters. Specifically, block 612 expressly recites the operation of ‘SELECT NEW

OPERATING PARAMETERS.’ This block is performed, as expressly stated in col. 11, lines 41-45:

‘If there is any rule left to be executed at step 610, operation proceeds to step 606. Otherwise, operation proceeds *to step 612 where new operating parameters are selected.*’ [emphasis added].

Once all the new parameters are selected, then their use is evaluated, via block 614, through simulation by simulator 408:

‘Then, the communication system simulator 408 is executed to evaluate the proposed operation parameters at step 614.’

Thereafter, via execution of block 620, these proposed, new and now simulated parameters, are implemented, via control module 108, in the communications system. Hence, simulation is only performed on the new parameters, and seemingly nothing else. Specific simulation functions are discussed in col. 14, line 57 - column 15, line 3.

Given this, it should be quite clear that the rule-based processing and simulation shown in FIG. 6 is not used for any parameters that have already been implemented in the communication system, i.e., existing parameters. However, not only will changed network operating conditions, oftentimes necessitate additional, i.e., new, network parameters, invariably such changes will affect certain existing parameters. These latter parameters too must be changed if the communication system, in light of these changed conditions, is to efficiently and reliably operate. Teaching that rule-based processing is just used to fabricate new parameters, without more, completely ignores the fact that some existing network parameters must also be changed as well. Thus, the approach taught by the Djoko et al patent, while

beneficial, is quite inadequate in practice as is it oblivious to any changes necessary to the existing network parameters already in service.

This glaring omission is a fundamental deficiency inherent in the Djoko et al patent -- a deficiency which the present invention advantageously overcomes.

Thus, it has remained for the Applicants and only the Applicants to teach, through their present invention, a rule-based approach for verifying proposed values for network parameters that are already in use in a communication system.

EX1004, at 61-64 (emphases in original). I agree with Patent Owner’s arguments.

158. Dr. Haas’ reliance on isolated phrases of Djoko to allegedly disclose [1pre] is misplaced. First, by quoting Djoko as stating: “the self-engineering system 100 interacts with the communication system 102 to alter operating parameters of the communication system 102,” EX1007, 5:50-52, Dr. Haas omits other description of the self-engineering system 100 and Figure 1. When read in context, Djoko’s mention of “alter operating parameters” refers to the self-engineering system 100 determining new operating parameters, and not “verifying a modified parameter” recited in [1a].

159. Figure 1, again reproduced below, illustrates the self engineering system 100 interfaced with the communication system 102. *Id.* 5:6-9, 5:41-43.

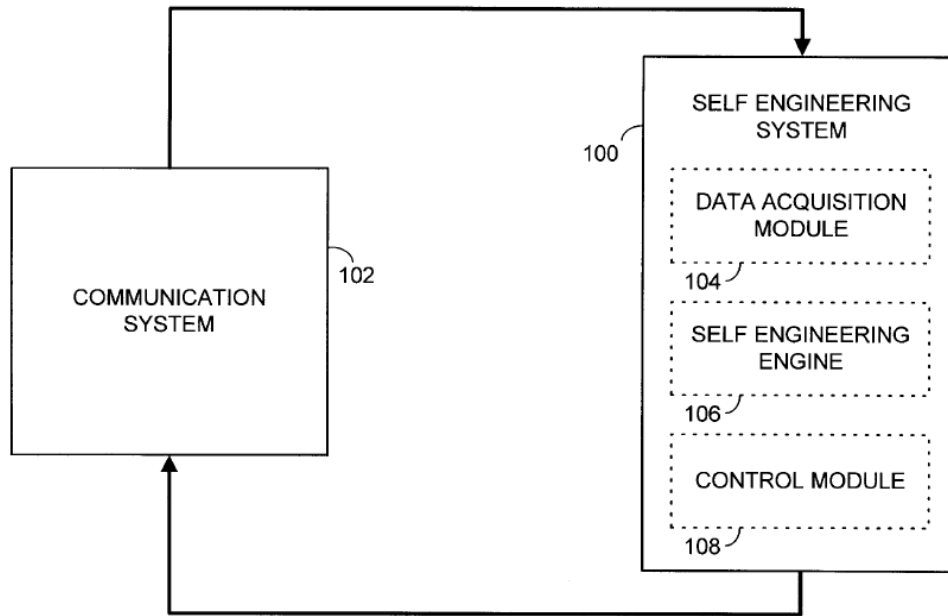


FIG. 1

160. In this regard, Djoko discloses that “[t]he self engineering system 100 comprises a data acquisition module 104, a self engineering engine 106, and a control module 108,” and that “[b]ased upon the current operating data and current operating parameters of the communication system 102, the self engineering engine 106 determines new operating parameters of the communication system to improve and enhance operation of the communication system 102.” *Id.* 5:44-46, 6:5-10. Djoko does not describe the self engineering system 100 “verifying a modified parameter” recited in [1a].

161. Second, Dr. Haas’ quotation of “[f]unctions of the self-engineering system 100 include . . . parameter adjustment,” “[i]n adjusting operating parameters,

the self-engineering system 100 analyzes operational measurements against predefined system performance metrics and adjusts operating parameters to achieve optimal network performance,” and “[a] role of the simulator is to aid fast system parameter adjustment process” fares no better. Again, Dr. Haas omits Djoko’s other description of the self-engineering system 100 and Figure 1 quoted above, and, when read in context, Djoko’s mention of “parameter adjustment,” “adjusting operating parameters,” and “parameter adjustment process” refers to the self-engineering system 100 determining new operating parameters, and not “verifying a modified parameter” recited in [1pre].

162. Citing column 13 of Djoko, Dr. Haas asserts that “the system proposes changes to the existing parameter values based on the field data from the actual usage of the network,” and that “[t]he proposed changes to the existing parameter values are iteratively evaluating using the simulator.” EX1002, ¶136 (citing EX1007, 13:29-32) (emphasis omitted). I disagree with that assertion.

163. Djoko never uses the term “existing”—much less “existing parameter[s] values.” To the contrary, the “change” phrase of Djoko cited by Dr. Haas actually states: “[a]s the conditions in the field change, the system will automatically change the relevant parameter values based on the field data, and iteratively evaluate their merits using the simulator.” EX1007, 13:29-32.

164. The full paragraph in which the “change” phrase is included discloses the expert system 402 and simulator 408:

Handoff parameter optimization is performed by experienced engineers and does not lend itself to easy automation. Thus, the expert system 402, simulator 408 and interface to the wireless operational measurements and logs from the wireless communication system allow handoff to be optimized and simulated by the self engineering system. The expert system 402 has many rules regarding parameter assignments under different handoff types and plausible conditions. The expert system 402 initially obtains the knowledge or rules of parameter optimization from human experts. These rules are utilized to set initial values for different parameters. *As the conditions in the field change, the system will automatically change the relevant parameter values based on the field data, and iteratively evaluate their merits using the simulator.* Once a stable assignment has been achieved the results are implemented in the wireless communication system and set in place for reevaluations by the self engineering system. The effects on the field are observed and used to calibrate both the simulator and the rules in the expert system.

EX1007, 13:18-37 (emphasis added to the “change” phrase cited by Dr. Haas).

165. Similar to Dr. Haas’ reliance on “alter” and “adjustment” in Djoko, his citation of Djoko’s “change” phrase omits other description in Djoko of the expert system 402 and Figure 4. When properly read in context, Djoko’s mention of “change the relevant parameter values” refers to the expert system 402 determining

new operating parameters, and not “[a] method of verifying a modified parameter” recited in [1a].

166. Djoko discloses that “FIG. 4 illustrates a particular construction of the self engineering engine previously described as reference numeral 106 in FIG. 1” and “[t]he self engineering engine comprises an expert system 402.” *Id.* 5:16-17, 10:9-12. Figure 4, again reproduced below, illustrates the expert system 402 (green annotation added).

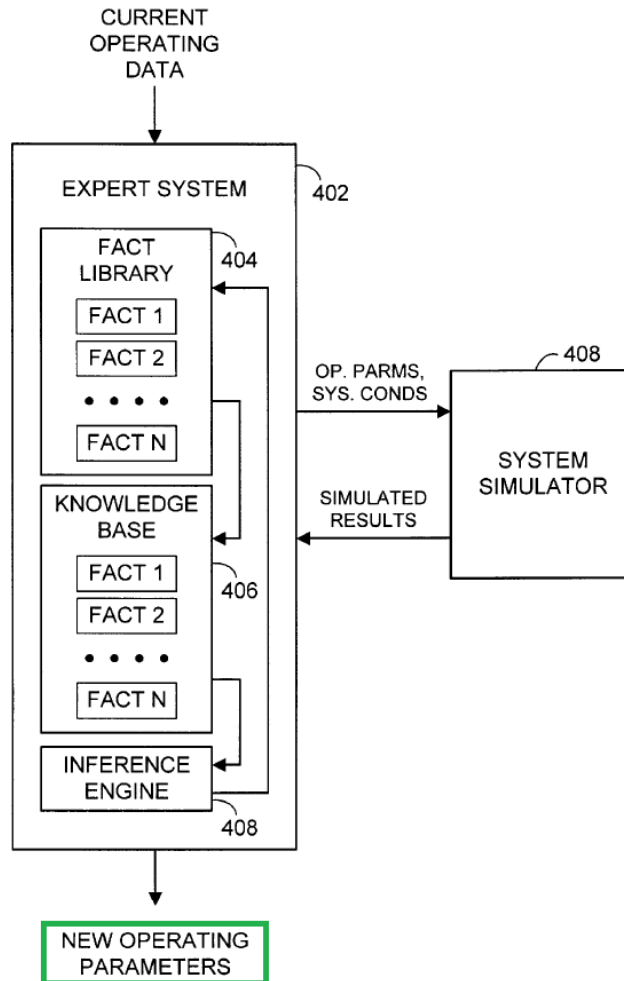


FIG. 4

167. In Figure 4, the expert system 402 produces “NEW OPERATING PARAMETERS.” Accordingly, Djoko’s reference to “change the relevant parameter values” means the expert system 402 determines new operating parameters, and not “verifying a modified parameter” recited in [1pre]. Djoko does not disclose the expert system 402 “verifying a modified parameter” recited in [1pre].

B. Djoko Does Not Disclose [1a]

168. Dr. Haas asserts that “verification by the simulator utilizing current operating data of the communication network is a verification that the altered parameters ‘will improve operation of the communication system,’” and “[t]his verification is performed by considering a multipronged rule, such as the one claimed by the ’705 Patent.” EX1002, ¶142 (quoting EX1007, 3:40-46). I disagree with that assertion. Djoko does not disclose verification by the simulator uses any rules, much less a “rule comprising both a technically sufficient parameter setting requirement and a deviation from the setting requirement based on an operational requirement deduced from use of the radio network” recited in [1a].

169. Simulation is mentioned in Djoko after rules have selected modified parameters. As one example, in connection with Figure 4, Djoko discloses that “[s]hould the system simulator 408 be present, the proposed operating parameters may be evaluated by the system simulator 408 prior to their being deemed the new operating parameters.” EX1007, 10:63-66. As another example, in connection with Figure 6, Djoko discloses that: “[i]f there is any rule left to be executed at step 610, operation proceeds to step 606. Otherwise, operation proceeds to step 612 where new operating parameters are selected. Then, the communication system simulator 408 is executed to evaluate the proposed operation parameters at 614.” *Id.* 11:41-

47. Thus, in Djoko, parameters are modified based on rules, and subsequently the simulator verifies the parameters.

170. Dr. Haas’ mapping of [1a] at EX1002, ¶¶141-146 only mentions the simulator in ¶¶141 and 142: “the system *simulator* verifies (‘checks’) the adjusted parameter before it is implemented into the system,” and “[t]he verification by the *simulator* utilizing current operating data of the communication network is a verification that the altered parameters ‘will improve operation of the communication system.’” Pet., 47 (quoting EX1007, 13:18-37, 3:40-46) (emphases added). In the rest of the mapping of [1a], the Petition never alleges how the simulator does the verification using the “rule” recited in [1a]. EX1002, ¶¶143-146. That is because the simulator does not do so.

C. Djoko Does Not Disclose [1b]

171. Dr. Haas asserts that Djoko discloses [1b]. EX1002, ¶147. I disagree with that assertion.

172. As noted above with respect to Ground 1, limitation [1b] includes the “rule” recited in [1a], namely, “if the result indicates that the rule has been obeyed . . .” *Supra* ¶137. Because Djoko does not disclose the “rule” recited in [1a] for the reasons discussed above in section X.B, in my opinion Djoko does not disclose “if the result indicates that the rule has been obeyed” recited in [1b].

D. Other Claims

173. Dr. Haas makes no separate arguments for Claims 22, 26, 28, and 31 that are different from Claim 1. EX1002, ¶¶148-151. In my opinion, the Petition has failed to establish that Claims 22, 26, 28, and 31 are unpatentable over Djoko for at least the same reasons that the Petition failed to establish that Claim 1 is unpatentable.

XI. GROUND 4: DJOKO AND SHERIDAN DO NOT RENDER OBVIOUS CLAIMS 2-6, 23-25, 29, and 32

174. Dr. Haas admits that “Djoko does not teach to ‘copy’ the operational parameters from the network into its ‘fact library’ (database)” and cites Sheridan to attempt to remedy this deficiency of Djoko. EX1002, ¶¶154. Dr. Haas cites Sheridan only for dependent Claims 2-6, 23-25, 29, and 32, and not for any limitations recited in independent Claims 1, 22, 26, 28, and 31. *See id.* ¶¶152-159.

175. As discussed above, Djoko does not teach or suggest [1pre], [1a], and [1b]. *Supra* section X. But again, Dr. Haas does not cite Sheridan for any of these limitations. EX1002, ¶¶152-159. In my opinion, because Djoko and Sheridan do not teach or suggest all limitations of Claim 1, the Petition has failed to establish that Claims 2-6 are unpatentable over Djoko and Sheridan.

176. Ground 4 relies on its arguments against Claim 1 for Claims 22, 26, 28, and 31. *Supra* ¶173. In my opinion, Djoko and Sheridan do not teach or

suggest all limitations of Claims 22, 26, 28, and 31 for the same reasons that Djoko and Sherdian do not teach or suggest Claim 1. And because Djoko and Sherdian do not teach or suggest all limitations of Claims 22, 26, 28, and 31, in my opinion the Petition has failed to establish that Claims 23-25, 29, and 32 are unpatentable over Djoko and Sheridan.

XII. CONCLUSION

177. For at least the reasons set forth above, Claims 1-7, 22-26, 28, 29, 31, and 32 of the '705 Patent are patentable over Madebrink, Feuerstein, Shipman, Djoko, and Sheridan.

178. For at least the reasons set forth above, Petitioner has not proven that (1) Madebrink and Feuerstein, (2) Madebrink, Feuerstein, and Shipman, (3) Djoko, and (4) Djoko and Sheridan render any of Claims 1-7, 22-26, 28, 29, 31, and 32 unpatentable.

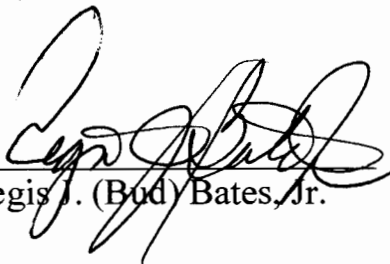
179. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or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

and that such willful false statements may jeopardize the results of these proceedings.

180. I recognize that I may be subject to cross-examination in this proceeding.

181. My opinions are based upon the information that I have considered to date. I reserve the right, however, to supplement my opinions in the future to respond to any arguments raised by Petitioner and to take into account new information that becomes available to me.

Executed on 16 June 2023 in Heber, Arizona



Regis J. (Bud) Bates, Jr.