

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

WHATFIX INC.,
Petitioner,

v.

WALKME LTD.,
Patent Owner.

Case IPR2023 - 01368
Patent No. 10,819,664 B2

EXPERT DECLARATION OF IVAN ZATKOVICH
IN SUPPORT OF PATENT OWNER'S RESPONSE FOR
***INTER PARTES* REVIEW OF**
CLAIMS 1-9, 12-16, 18-23, 25-26, 28-31, 33
OF U.S. PATENT NO. 10,819,664 B2

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EXHIBIT LIST

EXHIBIT NO.	DESCRIPTION
Ex2001	Expert Declaration of Ivan Zatkovich in Support of Patent Owner's Response 1-9, 12-16, 18-23, 25-26, 28-31, 33 of U.S. Patent No. 10,819,664 (" Zatkovich Decl. ")
Ex2002	<i>Curriculum Vitae</i> of Ivan Zatkovich
Ex2003	Deposition Transcript of Homayoon Beigi, taken on June 26, 2024
Ex2004	Deposition Transcript of Homayoon Beigi, taken on June 27, 2024
Ex2005	Public Comments to S. Symons, "When Chatbots meet RPA bots," https://medium.com/roborana/when-chatbots-meet-rpa-bots-c8b22579f49a , Medium (Oct. 19, 2017) (omitted by Petitioner in Ex1004)
Ex2006	Zatkovich's Overview of Ex2009, "Simple chatbot" .html Code, and Ex2010, Video of "Simple chatbot" .html Code
Ex2007	Khoros Staff, "Different types of chatbots: Rule-based vs. NLP", Expert insights, Aug. 29, 2019 (marked as Beigi Ex. 19)
Ex2008	IBM, "What is a chatbot?", https://web.archive.org/web/20221227051852/https://www.ibm.com/topics/chatbots (archived copy of Dec. 27, 2022).
Ex2009	"Simple chatbot" .html Code, Prepared by Mr. Zatkovich for use in IPRs 2023-01368, 2023-01379, 2024-00065.
Ex2010	Video demonstration of the "Simple chatbot" .html Code (Ex2009)
Ex2011	[RESERVED]
Ex2012	U.S. Patent No. 11,258,732 [Ex1001 in IPR2023-01379]
Ex2013	U.S. Patent No. 11,558,317 [Ex1001 in IPR2024-00065]

I, Ivan Zatkovich, declare as follows:

1. The following is my written Declaration detailing the subject matter and my opinions on issues regarding the validity of Claims 1-9, 12-16, 18-23, 25-26, 28-31, 33 of U.S. Patent No. 10,819,664 (“**the ’664 Patent**”, Ex1001) submitted on behalf of Patent Owner Walkme Ltd. (hereinafter “**Patent Owner**”).

I. Summary of My Declaration and Opinions

2. As I explain in this Declaration, it is my opinion that each of the challenged claims (Claims 1-9, 12-16, 18-23, 25-26, 28-31, 33) of the ’664 Patent are not invalid in view of any of the grounds set forth in the Petition (Paper 2), and the supporting declaration of Dr. Beigi (Ex1003).

II. Background Information

A. Summary of My Professional Background and Qualifications

3. My professional background, qualifications, and experience testifying as an expert are set forth in my *curriculum vitae*, which is marked as Ex2002. I also summarize pertinent aspects of my professional experience below.

B. Materials Reviewed

4. In preparing this Declaration, I have reviewed the ’664 Patent (Ex1001), its prosecution history (Ex1002), as well as each of the references and material cited and discussed therein.

5. I have also reviewed Petitioner’s Petition for *Inter Partes* Review of the ’664 Patent (Petition for *Inter Partes* Review, Paper 2, IPR2023 - 01368 hereinafter

“**Petition**”), the supporting Declarations of Dr. Homayoon Beigi (Ex1003), the Mathijs Mekes (Ex1007), Senne Symons (Ex1008), Wouter Baetens (Ex1010), Ira Allen (Ex1012), and Nathaniel Frank-White (Ex1027), as well as each of the other exhibits submitted with the Petition including:

Exhibit Number	Description
1004	S. Symons, "When Chatbots meet RPA bots," https://medium.com/roborana/when-chatbots-meet-rpa-bots-c8b22579f49a , Medium (Oct. 19, 2017)
1005	Screenshots of S. Symons, "RPA meets chatbot: Automatically generate e-mail signature," https://vimeo.com/238927879 , Vimeo (Oct. 19, 2017)
1006	English Translation of Screenshots of S. Symons, "RPA meets chatbot: Automatically generate e-mail signature," Vimeo (Oct. 19, 2017)
1009	W. Baetens, "When Chatbots meet RPA bots," https://chatbotlife.com/when-chatbots-meet-rpa-bots-c5f71e462e6 , Medium (Oct. 20, 2017)
1011	D. Williams et al., "Using artificial intelligence to optimize the value of robotic process automation," https://www.ibm.com/downloads/cas/KDKAAK29 , IBM White paper (2017)
1013	IT World Canada, "Using artificial intelligence to optimize the value of robotic process automation," https://www.itworldcanada.com/assets/using-artificial-intelligence-to-optimize-the-value-of-robotic-process-automation , IT World Canada (2017)
1014	U.S. Patent No. 7,983,997 to Allen et al.
1015	U.S. Patent No. 10,838,699 to Dayanandan
1016	U.S. Patent No. 10,839,798 to Krishnan <i>et al.</i>
1017	U.S. App. No. 62/581,550
1018	U.S. Patent No. 10,503,627 to Radhakrishnan <i>et al.</i>
1019	U.S. Pub. No. 2018/0137178 to Corbett et al.
1020	U.S. Pub. No. 2005/0210061 to Chang <i>et al.</i>

1021	U.S. Pub. No. 2014/0115456 to White <i>et al.</i>
1022	U.S. Pub. No. 2018/0349556 to Owen
1023	U.S. Pub No. 2014/0249830 to Gallopyn <i>et al.</i>
1024	U.S. Pub No. 2003/008369 to Takechi <i>et al.</i>
1025	U.S. Patent No. 9,509,799 to Cronin
1026	C. Melendez, "Chatbots and RPA: Digital Heaven," https://www.wovenware.com/blog/2016/10/chatbots-rpa-digital-heaven/ , Wovenware (Oct. 14, 2016)
1028	P. Ferscht et al., "Robotic Automation Emerges as a Threat to Traditional Low-cost Outsourcing," https://www.horsesforsources.com/wpcontent/uploads/2016/06/RS-1210-Robotic-automation-emerges-as-a-threat-060516.pdf , Horses for Sources (2012)
1029	M. Lacity et al., "What Knowledge Workers Stand to Gain from Automation," https://hbr.org/2015/06/what-knowledge-workers-stand-to-gain-from-automation , Harvard Business Review (June 19, 2015)
1030	P. Bornet, "Intelligent automation is about creating synergies between RPA, cognitive, chatbots and AI," https://www.linkedin.com/pulse/from-robotic-process-automation-rpa-artificial-ai-journey-bornet , LinkedIn (Apr. 22, 2017)
1031	C. Le Clair, "The Forrester Wave™: Robotic Process Automation, Q1 2017," Forrester Wave (Feb. 13, 2017)
1032	M. Arya, "A brief history of Chatbots," https://chatbotslife.com/a-brief-history-of-chatbots-d5a8689cf52f , Medium (Mar. 11, 2019)
1033	S. Symons, "RPA meets chatbot: Automatically generate e-mail signature," https://vimeo.com/238927879 , Vimeo (Oct. 19, 2017)
1034	U.S. Pub. No. 2017/0250930 to Ben-Itzhak

6. I have also reviewed other cited art and information cited by Petitioner with regards to the '664 Patent.

7. I attended the deposition of Dr. Homayoon Beigi on June 25 and 26, 2024, and reviewed the transcripts of both days of that deposition which are marked as Ex2003 and Ex2004.

8. I also reviewed each of the exhibits listed in the Exhibit table to this declaration.

9. I also based this Declaration on my knowledge from over thirty years of direct experience in diverse areas of software and computer programming knowledge, such as eCommerce, natural language processing and chat bot interactions.

C. Scope of the Assignment

10. I have been requested by counsel for Patent Owner to study the '664 Patent, including its claims and prosecution history, including the prior art cited and discussed therein, as well as the other material mentioned herein. I have also been requested by counsel for Patent Owner to provide my expert opinion regarding the validity of Claims 1-9, 12-16, 18-23, 25-26, 28-31, 33 of the '664 Patent. My understanding is that this IPR is not challenging Claims 10-11, 17, 24, 27, 32 of the '664 Patent, and, for purposes of this proceeding, I do not offer an opinion as to the validity of these claims.

11. I anticipate using some of the above-referenced documents and other documents that may be produced during the course of this matter or as a result of my

analysis to support my testimony in this matter. Additionally, I may use representations, charts, graphs, photographs, schematics, simulations, and models based upon these documents, or other demonstrative materials.

D. Compensation

12. I am being compensated at my consulting rate of \$525 per hour for my time spent in connection with this case. I am being separately reimbursed for any out-of-pocket expenses. No part of my compensation is dependent upon the outcome of this proceeding or the nature of the opinions that I express.

E. Prior Testimony

13. I have provided declarations and deposition testimony as an expert witness in several U.S. District Court cases and Patent Trial and Appeal Board proceedings. I have listed relevant cases on my CV marked as Ex2002.

F. Legal Standards

14. To render my analysis, I have been informed about the legal standards for patent invalidity. Specifically, I am informed that in an IPR proceeding:

(a) the Petitioner must prove patent invalidity by a “preponderance of the evidence”;

(b) there is no presumption of validity;

(c) claim terms should generally be given their ordinary and customary meaning as would be understood by a person with ordinary skill

in the art at the time of the invention (“POSITA”) in the context of the specification, the prosecution history, other claims, and even extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises. However, extrinsic evidence is less significant than the intrinsic record; and

(d) that claim terms may be construed differently when a patentee sets out a definition and acts as his or her own lexicographer, and when a patentee disavows the full scope of a claim term either in the specification or during prosecution. If an inventor acts as his or her own lexicographer, the definition must be set forth in the specification with reasonable clarity, deliberateness, and precision.

15. As discussed below, I am informed that a patent claim may be invalid as anticipated, either expressly or inherently, over the disclosure of a prior art reference, or as “obvious” in view of the combination of prior art references.

16. I am informed that in order for a claimed element or feature to be “inherent”, it must necessarily be performed in the prior art disclosure. To the extent that the disclosure is capable of being performed in more than one manner, than none of those manners would be inherent based on such disclosure. If an element or feature is only possible or optional in the prior art disclosure, then it is not inherent.

17. I am informed that in considering the issue of obviousness, I should consider what a POSITA would have known as of November 5, 2017, the earliest claimed priority date of the '664 Patent, as well as what such a person would have reasonably expected to have been able to do in view of that knowledge. My analyses with respect to claim construction and validity based on the art relied upon in the Petition would not be affected if the November 4, 2018 priority date were used instead as the date of the invention.

18. I am informed that in analyzing the issue of obviousness, I should consider and determine:

- (a) the scope and content of the prior art;
- (b) the differences between the prior art and the claims at issue; and
- (c) the level of ordinary skill in the pertinent art.

19. I am informed that in analyzing the issue of obviousness, I also should consider secondary considerations, if they exist, as discussed below in Par. 23.

20. I am further informed that any of the following may provide a reason for combining elements known in the prior art:

- (a) a need or problem known in the field at the time of invention and addressed by the patent;
- (b) a design need or market pressure to solve a problem;

(c) the use of known techniques to improve similar products or methods in the same way;

(d) a simple substitution of one known element for another that would provide predictable results; or

(e) some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

21. I also am informed that claims may be invalid if they are directed to obvious design choices. Specifically, I am informed that a patent claim that simply arranges old elements, with each element performing the same function that it had been known to perform, is not patentable. The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.

22. I am informed that when there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp with a reasonable expectation of success. I am informed that if this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. I am informed that in that instance the fact that

the combination of elements was obvious to try may show that the combination was obvious.

23. I also am informed that certain “secondary considerations” of non-obviousness should be considered, to the extent that they exist. It is my understanding that such secondary considerations include:

- (a) commercial success;
- (b) long felt but unsolved needs;
- (c) failure of others;
- (d) industry skepticism;
- (e) praise by others; and
- (f) copying.

24. I am informed that there must be some connection or nexus between the secondary considerations and the claimed invention.

G. My Professional Experience and Qualifications

25. I am currently Principal Consultant of eComp Consultants, a position I have held for over twenty years.

26. eComp Consultants provides professional consulting services relating to computer and technical issues in a wide range of industries including Business and Finance, Telecommunications, and Internet eCommerce. Such consulting services include working with clients on specific information technology projects, process

improvement, project management, and other technology issues as well as providing professional expert witness services.

27. I am an eBusiness Director and Software System Designer specializing in eCommerce and Financial transaction systems. I have over thirty years of direct experience in a diverse set of areas, including debit card and other financial transaction instrument systems including point of sale systems, payment gateways, Merchant Acquirers, payment processing, and settlement systems.

28. At eComp Consultants, I have been qualified as a technical expert in over fifty matters and, with respect to credit card and debit card systems, in over fifteen matters.

29. I received a bachelor's degree in Computer Science, with a minor in Electrical Engineering Digital Circuit Design, from the University of Pittsburgh in 1980. I completed a master's thesis in Computer Networks, results of which are published in Byte Magazine.

30. From 1980 to 1987, I was a software engineer at Digital Equipment Corporation where I led the development of manufacturing automation and control software. I developed complex device drivers, database storage and retrieval systems, and electronic transaction processing using electronic data interchange (EDI) standards.

31. From 1987 to 1996, I was an Architect and Manager for GTE/Verizon Telecom where I integrated call centers for billing and customer service including a third-party call assistance service. I also developed billing applications and systems for reconciliation of inter-exchange carrier transactions, including implementing CDC file security and data verification methods.

32. From 1996 to 1999, I was Director of Networks and Customer Support at Utility Partners Inc., where I designed and managed a system to automatically create and distribute service orders for mobile field units for various utility companies. I also provided live client support for various applications.

33. From 1999 to 2002, I was an eBusiness Manager at Tanning Technology & IMR Global. There, I implemented a system to cross-utilize call center agents and initiated an Interactive Voice Response chat room and Email response for GEICO. I also developed various financial applications for companies such as ETrade, Smith Barney, and Citicorp.

34. My full work experience, education, and prior testimony history is included in Ex2002.

III. Grounds

35. I have been asked to consider the following grounds raised in this IPR proceeding:

Challenged Claims	35 U.S.C. § (Post AIA)	Basis/Reference
1-8, 12, 13, 16, 19-23, 26, 29, 31	103	Symons Blog (Ex1004) ¹ , Symons Video (Ex1005, Ex1006, Ex1007, Ex1033), Williams (Ex1011)
1-8, 12-16, 18-23, 25, 26, 28-31, 33	103	Allen (Ex1014)
9	103	Allen (Ex1014), Dayanandan (Ex1015)
1-8, 12-14, 16, 18-23, 26, 28, 29, 31, 33	103	Krishnan (Ex1016, Ex1017), Radhakrishnan (Ex1018)

(Paper 12, Institution Decision, at 9-10)

36. I note that Petitioner is not challenging Claims 10-11, 17, 24, 27 and 32. I understand that a separate proceeding was filed with respect to Claims 10 and 24, which was not instituted on discretionary grounds. I understand that those claims are not part of this proceeding, and thus, I am not addressing them in this Declaration.

IV. Person Of Ordinary Skill In The Art (POSITA)

37. I have been advised that in evaluating obviousness of the claims of the '664 Patent, I should consider the level of ordinary skill a Person of Ordinary Skill in the Art ("POSITA") had as of the earliest claimed priority date of the Patent. Thus,

¹ While I understand that Petitioner and Dr. Beigi refer to this blog as the "Symons" article, in my opinion, a POSITA as of November 5, 2017 would have considered this short-form and self-referential post more similar to a blog than an article, so I refer to it as the "Symons Blog". I similarly refer to Baetens' post on Medium (Ex1009) as the "Baetens Blog".

in my analysis, I have considered the level of skill of the POSITA as of November 5, 2017.

38. I am informed that a POSITA is a hypothetical person who is presumed to have known the relevant art at the relevant time. I understand, like Dr. Beigi, factors that may be considered in determining the level of ordinary skill in the art may include: (1) the education level of the inventors; (2) the type of problems encountered in the art; (3) prior art solutions to those problems; (4) the rapidity with which innovations are made; (5) sophistication of the technology; and (6) educational level of active workers in the field. (Ex1003, ¶ 50). I further am informed in a given case, every factor may not be present, and one or more factors may predominate.

39. In this regard, I understand that Petitioner and Dr. Beigi have asserted that a POSITA would have a bachelor's degree in engineering or computer science and two years of experience working on NLP or automation processes, or, alternatively, have five to six years of experience working on NLP or automation processes. (Paper 2, Petition, at 5-6; Ex1003, ¶ 51).

40. I understand that in the Institution Decision the PTAB adopted “Petitioner’s proposal” as “consistent with the level of ordinary skill in the art reflected by the prior art of record” (Paper 12, at p. 12). I do not agree with this assessment, which is inconsistent with at least factors (4) the rapidity with which

innovations are made, (5) sophistication of the technology, and (6) educational level of active workers in the field.

41. First, the claimed invention relates to the use of, and claims aspects of, both chatbots and RPAs. Indeed, the '664 Patent is aimed at both “provid[ing] for a user-friendly manner of defining functionality of chat bots” and “enable[ing] defining automation processes in a manner that enable them to be implemented even if changes are performed to the underlying platform.” (Ex1001, 7:62-64; 8:51-54). I understand that Dr. Beigi does not dispute this assessment. (Ex2004, 342:3-343:22). It is also consistent with the Board’s assessment in the Institution Decision. (Paper 12, at 3). Thus, the '664 Patent claims relate to a conversation used to invoke an automation process.

42. Dr. Beigi improperly elevates the level of experience in the field while ignoring the evolving nature of the technology. Symons characterizes “Robotics Process Automation (RPA)” and “Chatbots” as “newer technologies” (Ex1004, at 1). This idea was no more than “a few months” old. (Ex1009, 2). As Dr. Beigi noted during his deposition, Symons appeared to consider the combination of the two to be “something of interest” in the field in October 2017 (a few weeks before the priority date of the invention). (Ex2003, 151:17-152:13). In my opinion, the message of Symons and Baetens in their respective writings is that their combination was so new and purportedly innovative they were only providing a “showcase”/“demo”

with no details which had to be kept secret at the time. (Ex1004, 2; Ex1009, 2). Thus, the level of sophistication for combining chatbots with other functions as of November 5, 2017 was relatively low. Indeed, when others that were active in the field asked for details, none were provided. (Ex2005). As Symons and Baetens illustrate, in November 2017, at the time of the invention, combining RPA processes with chatbots was at least noteworthy, the field was not well developed, and was evolving rapidly. This is consistent with my own experience and understanding of the field at the time. Accordingly, in my opinion, while a POSITA may have had experience in a computer field, a POSITA would have had limited experience working with both technologies.

43. As a key prior art that Dr. Beigi relies upon, he should have considered “Symons” in his analysis. (*see* Ex1003, ¶¶ 63-149). As Mr. Symons, the author of the Medium blog being relied upon (Ex1004), and creator of the video being relied upon (Ex1033), indicates, he had merely received his bachelor’s degree in applied informatics in 2017, and started working as a robotic process automation developer and business analysis at RoboRana, in October 2017, i.e., no earlier than 19 days before the blog in question was published. (Ex1008, ¶¶ 2-4). Both Dr. Beigi and I agree that Mr. Symons is an active worker in the field that is relevant to the patent in suit. (*See* Ex2003, 112:21-24).

44. Accordingly, in my opinion, a POSITA would have had some education either formal or informal in computer science and some work experience (e.g., 1-2 years) with chatbots using NLP or automation processes. (Paper 2, Petition, at 5-6; Ex1003, ¶ 51).

45. To the extent that the Board adopts a different level of skill, I note that it does not affect the conclusions of the analysis expressed herein regarding whether the prior art cited by Dr. Beigi discloses or renders obvious the claims of the '664 Patent.

V. Overview of U.S. Patent No. 10,819,664 B2

A. Disclosure of the '664 Patent

46. U.S. Patent No. 10,819,664 B2 (Ex1001, “the '664 Patent”), entitled “Chat-based application interface for automation”, was filed as U.S. Serial No. 16/358,467 (“the '467 Application”) on March 19, 2019, and claims priority from U.S. Provisional Application 62/581,714, filed on November 5, 2017, via PCT/IL2018/051168, filed on November 4, 2018.

47. For purposes of this proceeding, Petitioner and Dr. Beigi have agreed to use the November 5, 2017 priority date of the provisional application as the date of the invention. (Paper 2, Petition, at 5; Ex1003, ¶ 22). My analyses with respect to claim construction and validity based on the art relied upon in the Petition would not

be affected if the November 4, 2018 priority date were used instead as the date of the invention.

B. Challenged Claims

48. The '664 Patent contains 33 claims, of which Claims 1, 19 and 29 are in independent form. (Ex1001).

49. Claim 1, which is representative of Claims 19 and 29, reads as follows:

1. A method comprising:

[a] using **a natural language interface**, receiving input from a user as part of **a natural language conversation** between the natural language interface and the user, [b] wherein the natural language conversation comprises **a first natural language input** from the user, **a natural language feedback** on the first natural language input from the natural language interface, and **a second natural language input** from the user in response to the natural language feedback:

[c] **determining**, based on the first and second natural language inputs from the user, **an automation process** configured to **perform an automation of a sequence of interactions with a displayed user interface of a computer program** and to **simulate user interactions with the displayed user interface of the computer program**, [d] wherein the user interface of the computer program is configured to be displayed on a screen, [e] wherein each interaction of the sequence of interactions comprises an action selected from a group consisting of inputting data to the displayed user interface and executing a functionality of the displayed user interface; and

[f] **executing the automation process**, wherein said executing comprises **utilizing the displayed user interface of the computer program** to perform the sequence of interactions.

(Ex1001, Claim 1, 25:14-39 (bracketed and bold element lettering has been supplied to conform with the Institution Decision, Paper 12, at 7-8, but the claim's original tabulation has been maintained); *see also* Claim 19, 27:5-32; Claim 29, 17-43).

50. The '664 Patent also includes Dependent Claims 2-18, 20-28, and 30-33. It is my understanding that Claims 10-11, 17, 24, 27 and 32 are not being challenged by Dr. Beigi or the petitioner. (Institution Decision, Paper 12, at 2).

51. Dependent Claim 2 (dependent on Claim 1) (Ex1001, 25:40-42) provides:

... wherein the natural language interface is a chat bot service operable to converse with the user in natural language.

52. Dependent Claim 3 (dependent on Claim 2) (*Id.*, 25:43-47), which is representative of Dependent Claim 20 (dependent on Claim 19) (*Id.*, 27:33-38), provides:

... wherein the automation process is a parameterized automation process having a parameter, wherein the chat bot service is configured to prompt the user to provide a value for the parameter, wherein said executing comprises utilizing the value of the parameter.

53. Dependent Claim 4 (dependent on Claim 1) (*Id.*, 25: 48-52), which is representative of Claim 21 (dependent on Claim 19) (*Id.*, 27:39-44), provides:

... wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more input fields, wherein said utilizing the displayed user interface comprises inputting data received by the natural language interface to the one or more input fields.

54. Dependent Claim 5 (dependent on Claim 1) (*Id.*, 25:53-57), which is representative of Dependent Claim 22 (dependent on Claim 19) (*Id.*, 27:45-50), provides:

... wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more interactable GUI elements, wherein said utilizing the displayed user interface comprises performing interface interaction with the one or more interactable GUI elements.

55. Dependent Claim 6 (dependent on Claim 1) (*Id.*, 25:58-60), which is representative of Dependent Claim 23 (dependent on Claim 19) (*Id.*, 27:51-54), provides:

... wherein said executing is performed without utilizing an Application Programming Interface (API) of the computer program.

56. Dependent Claim 7 (dependent on Claim 1) (*Id.*, 25:61-26:5) provides:

... wherein the sequence of interactions comprises a sequence of steps, wherein each step is selected from a group consisting of:

a page redirect step;
a click element step;
a hovering over element step;
a set focus to element step;
a select value from list step;
a fill input field with value step;
a prompt user step;
a time-wait step; and
a condition-wait step.

57. Dependent Claim 8 (dependent on Claim 1) (*Id.*, 26:6-12) provides:

... wherein said determining comprises selecting the automation process from a database retaining a plurality of user-defined automation processes; wherein the database is updatable by one or more users via a Graphical User Interface (GUI) capable of defining new automation processes and updating existing automation processes retained therein.

58. Dependent Claim 9 (dependent on Claim 1) (*Id.*, 26:13-26) provides:

... wherein the automation process defines an operation to be performed with respect to an element in the displayed user interface, wherein the automation process identifies the element based on a plurality of parameters of the element;

wherein said executing the automation process comprises identifying the element in the displayed user interface, wherein said identifying the

element comprises computing a similarity score for each element in the displayed user interface using the plurality of parameters of the element, and selecting a selected element having a highest similarity score, wherein the highest similarity score is at least above a predetermined threshold.

59. Dependent Claim 12 (dependent on Claim 1) (*Id.*, 26:43-44) provides:

... wherein said executing is performed on a client device of the user.

60. Dependent Claim 13 (dependent on Claim 10) (*Id.*, 26:45-48) provides:

... wherein the natural language interface is a voice-based service, wherein the voice-based service is configured to receive vocal commands from a human user.

61. Dependent Claim 14 (dependent on Claim 1) (*Id.*, 26:49-55) provides:

... wherein said determining the automation process comprises:

selecting the sequence of interactions from a plurality of sequences based on the first natural language input; and

determining a parameter to be used in an interaction of the sequence of interactions based on the second natural language input.

62. Dependent Claim 15 (dependent on Claim 1) (*Id.*, 26:56-59), which is representative of Dependent Claim 25 (dependent on Claim 19) and Dependent Claim 30 (dependent on Claim 29), provides:

... wherein the displayed user interface of the computer program is displayed prior to the natural language conversation between the natural language interface and the user.

63. Dependent Claim 16 (dependent on Claim 1) (*Id.*, 26:60-61), which is representative of Dependent Claim 26 (dependent on Claim 19) (*Id.*, 28:4-6) and Dependent Claim 31 (dependent on Claim 29) (*Id.*, 28:48-49), provides:

... wherein the displayed user interface of the computer program is presented to the user.

64. Dependent Claim 18 (dependent on Claim 1) (*Id.*, 26:65-27:4), which is representative of Dependent Claim 28 (dependent on Claim 19) (*Id.*, 28:10-16) and Dependent Claim 33 (dependent on Claim 29) (*Id.*, 28:53-59) provides:

... wherein the displayed user interface of the computer program is a user interface of a web browser, wherein said executing the automation process comprises activating the web browser to cause the displayed user interface to be displayed, wherein the sequence of interactions is performed with respect to the user interface of the web browser.

C. Technical Problem/Solution

65. The '664 Patent identifies several technical problems that it seeks to address, including “provid[ing] for a user-friendly manner of defining functionality of chat bots” (Ex1001, 7:62-64). In this regard, the '664 Patent seeks “to enable defining the chat bots without the need of using dedicated APIs, programming

languages, or the like”, and in embodiments so that “non-programmers may be able to define the automation that are invoked by the chat bots.” (*Id.*, 8:32-36).

66. The ’664 Patent also seeks to overcome difficulties in “[i]ntegration of a new system into an organization”, which present challenges associating with “migrating large amounts of employees to new platforms” and “train[ing]” uses on such new platforms (*Id.*, 8:37:44).

67. The ’664 Patent also recognizes as “[a]nother technical problem” challenges to “enable defining automation processes in a manner that enable them to be implemented even if changes are performed to the underlying platform.” (*Id.*, 8:51-55). This later technical challenge can arise, for example, when there are “layout modifications of the front-end of the program or website” which can result in difficulty in identifying the correct elements of such programs or website to be populated. (*Id.*, 8:55-64).

68. Although the ’664 Patent also notes “[a]dditional technical problem, solution, and effects may be apparent to a person of ordinary skill in the art in view of the present disclosure” (*Id.*, 11:40-42), neither the Petition, Dr. Beigi nor the Board in its Institution Decision identified any other problem relevant for this proceeding. (*See* Petition, 3-4; Ex1003, ¶¶ 23-24; Ex2003, 343:9-22; Paper 12, 3-7).

69. The '664 Patent identifies that “[o]ne technical solution provided by the disclosed subject matter may be to use a natural language interface to receive input from the user, and based thereon, select an automation process to be executed” “in a manner that manipulates the GUI [graphical user interface] of the target system, in a similar manner to the manner in which the user operates.” (Ex1001, 8:65-9:4).

70. The '664 Patent also identifies as part of one of its technical solutions, “[d]efining the automation process based on performing actions in the GUI [to] enable[] the automation process to perform any functionality that the user can perform, without relying on dedicated APIs and without requiring any line of code.” (*Id.*, 9:6-10).

71. The '664 Patent also identifies as part of one its technical solutions, “the chat bot may be implemented on a different system than the target system itself, such as a third-party messaging service. As a result, it may be desired to enable the third-party messaging service to invoke the automation process in a simple manner and without relying on coding or on dedicated APIs.” (*Id.*, 9:29-34). An example of such implementation included using a link where “the target system may be opened and the automation process may be executed.” (*Id.*, 9:42-43). When “the chat bot ... collect information to be used as part of the automation process, such as value to be inputted in input fields, selections to be made in the

GUI of the target system, or the like.” (*Id.*, 9:44-47). Further, “some steps may be associated with performing an action on a GUI element” (*Id.*, 10:12-14).

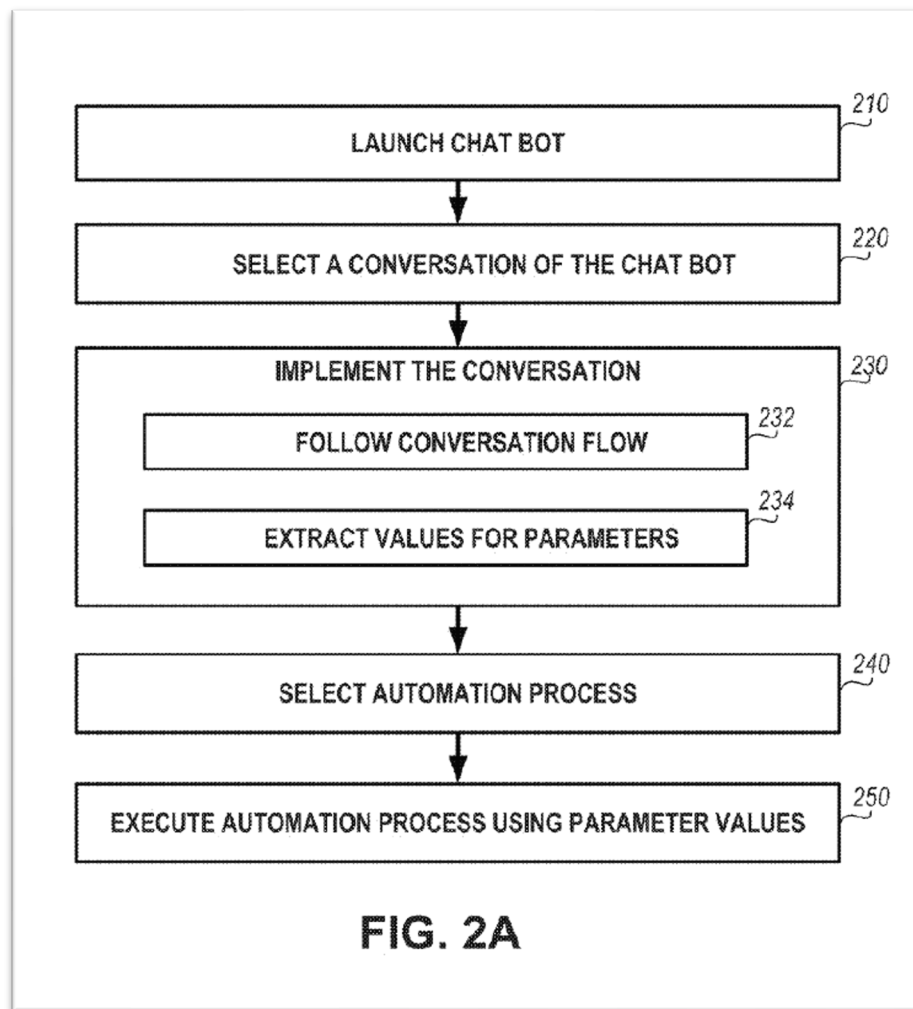
72. Thus, the claims of the ’664 Patent are generally broken down into three separate processes:

- **[a] & [b]:** “using a natural language interface” to “receiv[e] input from a user as part of a natural language conversation” including “a first natural language input from the user”, “a natural language feedback on the first natural language input”, and “a second natural language input from the user in response to the natural language feedback” (“**the Receiving Input Process**”: Claim 1, 25:15-23; Claim 19, 27:8-16; Claim 29, 28:20-28; Step 230);
- **[c], [d] & [e]:** “**determining**”, based on the natural language inputs from the user, “an **automation process** to perform” which is “configured to perform an automation of a **sequence of interactions with a displayed user interface of a computer program** and to **simulate user interactions with the displayed user interface** of the computer program” whose “user interface is **displayed on a screen**” (“**the Determining Process**”: Claim 1, 25:24-35; Claim 19, 27:17-28; Claim 29, 28:29-40; Step 240); and
- **[f]** “**executing** the [determined] automation process” “comprising **utilizing the displayed user interface of the computer program** to the sequence of

interactions” (“**the Executing Process**”: Claim 1, 25:36-39; Claim 19, 27:29-32; Claim 29, 28:40-44; Step 250).

73. These three separate processes (further illustrated in FIG. 2A, Steps 230, 240 and 250) also require a variety of separate components that are required to interact in a specific way to address the stated technical problems, including

- “**a natural language interface**” to receive input from the user;
- “**a computer program**” corresponding to the “**target system**” discussed above (Ex1001, 8:9-13 (“The target system, generally referred to as the computer program ...”), with its own “**user interface**” that is “displayed on a screen”; and
- a “**determin[ed]**” “**automation process**” which “simulate user interactions with the displayed user interface of the computer program” which is “utilized” during the “executing” process.



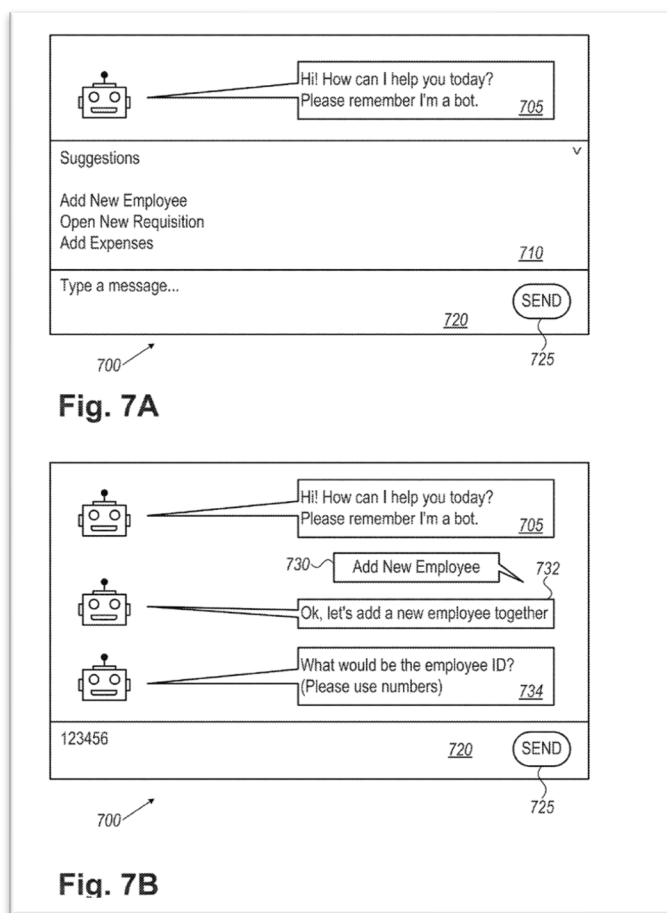
(Ex1001, FIG. 2A).

74. The '664 Patent describes how in some embodiments, a natural language interface may be implemented as a chatbot on a target system, while in other embodiments, it may be implemented through a chat bot service, such as FACEBOOK MESSENGER™, SLACK™ and TELEGRAM™, or other similar third party messaging services. (Ex1001, 7:62-8:3, 8:24-27, 13:24-32).

D. The “Receiving Input” Process (Elements [a] & [b])

75. The “receiving input” process from “a user” receiving such input through a **“natural language interface”** which converses with the user **“as part of a natural language conversation”**. The claimed **“natural language conversation”** includes “a first natural language input from the user”, continues with “a natural language feedback on the first natural language input from the user” and then includes “a second natural language input from the user in response to the natural language feedback”. (Ex1001, Claim 1, 25:15-23; Claim 19, 27:8-16; Claim 29:20-28).

76. “FIGS. 7A-7B show schematic illustrations of the user interfaces, in accordance with the disclosed subject matter.” (*Id.*, 7:57-58; *see* also 22:29-31 (FIG. 7A); 22:51-52 (FIG. 7B)):



(Ex1001, '664 Patent, FIGS. 7A & 7B).

77. In this exemplary illustration, “Screen 700 shows a user interface of the user with a chat bot”, where “[t]he user may converse with the chat bot using a chat-like interface.” (*Id.*, 22:32-33, 39-40). The '664 Patent provides as examples of a “chat-like” interface, “a message in free text” and using “speech-to-text” to “analyze speech of the user and generate a text string based thereon”. (*Id.*, 22:40-41, 42-44; *see* Claim 13).

78. The '664 Patent explains with respect to Step 210 in which “a chat bot is launched”, “[i]n some exemplary embodiments”, a “third-party communication service, such as WHATSAPP™, TELEGRAM™, SLACK™, or the like” could be used “to converse with a non-human user, representing a chat bot”. (*Id.*, 13:24-32).

79. In this example, “a greeting message” 705 (e.g., “Hi! How can I help you today? Please remember I’m a bot” is shown to prompt the user to “select a conversation” (Ex1001, 22:47-48, 51-54), which includes “**a first natural language input from a user**” 730 (e.g., “Add New Employee”), as required by the claims. In my opinion, a POSITA as of November 5, 2017 would understand that while the claimed invention can be employed with “a greeting message” it is not required to practice the claimed invention. (*Id.*, 22:35-36).

80. In this example, the “natural language interface” provides as “a natural language feedback on the first natural language input from the natural language interface” (as required in the claims), two messages, Message 732 (“Ok let’s add a new employee together”) acknowledges the selected process (“Add New Employee”), and then provides Message 734 (“What would be the employee ID? (Please use numbers)”. The '664 Patent explains with respect to FIG. 7B and “the flow shown in FIG. 5B”, how “[a] Message 734 is shown at the outcome of Step 550a, then the chat bot follows Step 550b and attempts to obtain from the user an employee id (Message 732 [sic: 734]).” (*Id.*, 22:54-58). In my opinion, a POSITA

as of November 5, 2017 would understand from this illustration, that the claimed “natural language feedback” can include one or more messages.

81. In response to the chat bot’s “attempts to obtain from the user an employee id”, “[t]he user may reply using Text Field 720 and indicate an identifier (123456).” (*Id.*, 22:47-59). In this example, the response (123456) to Messages 723 and 734, would correspond to “**a second natural language input** from the user in response to the natural language feedback” as set forth in the claims. In this example, the chat bot “converse[s] with the user in natural language” (*see* Claim 2), and is configured to obtain from the second natural language input a parameter (here an identifier (123456)), which is utilized in the later execution steps (*see* Claim 3).

E. The “Determining” Process (Elements [c], [d] & [e])

82. “[B]ased on the first and second natural language inputs of user” from the “natural language interface” discussed in the Receiving Process, “**an automation process**” is “determin[ed]” to be “execut[ed]” in the Execution Process discussed below. The automation process comprises “an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions with the displayed user interface of the computer program”. (Ex1001, Claim 1, 25:24-35; Claim 19, 27:17-28; Claim 29, 28:29-40).

83. In the context of FIGS. 7A and 7B, the user entered in message 730 “Add New Employee” (*see* FIG. 7B), from a plurality of “Suggestions”, “Add New

Employee”, “Open New Requisition” and “Add Expenses” (*see* Message 710, in FIG. 7A). “[T]he user may select a conversation from suggested conversations of bot (710)” “by stating in the Text Field 720 the name of the conversation”. (*Id.*, 22:47-50). FIG. 7B illustrates the “implement[ation of] the conversation flow of the selected conversation”. (*Id.*, 22:53-54).

84. As discussed with respect to Step 230, the selected conversation is not the “determination” that is being made with respect to the ’664 Patent claims. Rather, it is a determination of the “automation process” in Step 240. Rather, Step 230 reflects the “conversation” that is performed by the “natural language user interface” as shown in FIGs. 7A and 7B. The “flow may define questions configured to extract information from the human user (234)” (*Id.*, 13:58-60) that is used to identify the “automation process” and “parameters” “utilized for setting values of parameters in a parameterized automation process” (*Id.*, 13:48-60, 64-66).

85. “On Step 240, an automation process may be selected”. (Ex1001, 14:4). With respect to this selection process, corresponding to the “determining” process in the claims, the ’664 Patent explains with respect to Step 240, “[t]he automation process may be selected . . . based on the flow of the conversation”. (*Id.*, 14:4-6). The selection is “based on the user’s interaction with the chat bot” and may be “selected upon reaching the end of the flow the conversation”. (*Id.*, 14:4-12). Among the optional embodiments disclosed is one where “the natural language

interface is configured to selectively invoke either the automation process or the second automation process based on interaction with the user.” (*Id.*, 3:20-23; 5:11-14; 7:3-7). Similarly, it also discloses an optional embodiment, where “said determining comprises selecting the automation process from a database retaining a plurality of user-defined automation processes.” (*Id.*, 2:16-18; 4:9-13; 6:1-3). In my opinion, a POSITA as of November 5, 2017 would understand that the claimed determination (or selection) requires that a choice be made from more than one “automation process”, consistent with these exemplary embodiments. Without more than one automation process to choose from, there would be no “determination” made.

86. In addition to requiring that a “determination” be made from among more than one “automation process[es]”, the Determining Process, defines the **“automation process to perform”** to be “configured” “to perform an automation of **a sequence of interactions with a displayed user interface of a computer program** and to **simulate user interactions with the displayed user interface** of the computer program” whose “user interface is **displayed on a screen**”.

87. As noted, one of the technical solutions provided by the ’664 Patent is tying the “automation process to be executed” to “manipulat[ing] the [graphical use interface] of the target system [computer program in the claim], in a similar manner in which the user operates.” (*Id.*, 8:65-9:4). Thus, the invention includes “[d]efining

the automation process based on performing actions in the GUI [to] enable[] the automation process to perform any functionality that the user can perform, without relying on dedicated APIs and without requiring any line of code.” (*Id.*, 9:6-10).

88. Thus, the claims require not just an “automation process”, but that the “automation process” is configured “to perform an automation of a sequence of interactions with a displayed user interface of a computer program” as well as “simulate user interactions with the displayed user interface”. (Claims 1, 19, 29). The displayed user interface may be either on the client device of the user (Claim 12), or “on a screen of a remote server” (Claim 17). In either case, it must be performed utilizing “the user interface of the computer program” (i.e., “target system”) which is configured to be “displayed on a screen”. (Claims 1, 19, 29). In the execution step (below), the execution of the automation process comprises “utilizing the displayed user interface of the computer program to perform the sequence of interactions”.

F. The “Execution” Process (Element [f])

89. The final step in the claimed process is “executing the automation process”, which “comprises utilizing the displayed user interface of the computer program to perform the sequence of interactions”. (Claims 1, 19, 29). The automation process is the same automation process discussed in 82-88, *supra*.

90. Executing the “sequence of interactions” which forms part of the automation process includes using the displayed user interface (Claims 1, 19, 29). As the ’664 Patent explains, this can be done via “a desktop application” or a computer program such as an “agent ... installed on [a] user device” which is able to “access other applications, including their UI elements, manipulate such elements and create new elements.” (Ex1001, 13:11-17; *see also id.*, 14:18-28 (describing the use of a “computer program product on her client device, such as a desktop agent, a browser extension, and the like” *and id.*, 4:43-44 (“said executing is performed on a client device of a user”))). The displayed “user interface of the computer program” can be a “Graphical User Interface (GUI)”, and the sequence of interactions can include “inputting data received by the natural language interface to” “one or more input fields” of the GUI, as well as “performing interface interaction with the one or more interactable GUI elements” of the computer program. (*Id.*, 1:53-54; 1:63-2:5). In part because a displayed user interface is used, the sequence of tasks is capable of being executed “without utilizing an Application Programming Interface (API) of the computer program” to call functions of another program. (*Id.*, 2:6-8).

VI. Claim Construction

91. I have been informed that claim terms should generally be given their ordinary and customary meaning as would be understood by a person with ordinary skill in the art at the time of the invention (“POSITA”) in the context of the

specification, the prosecution history, other claims, and even extrinsic evidence including expert and inventor testimony, dictionaries, and learned treatises. I have also been informed that claim terms may be construed differently when a patentee sets out a definition and acts as his or her own lexicographer, and when a patentee disavows the full scope of a claim term either in the specification or during prosecution.

92. I note that Dr. Beigi claims to have adopted the “ordinary and customary meaning of the terms” in his analysis, and did not expressly construe any of the claim terms. (Ex1003, ¶¶48-49). Similarly, the Petition (Paper 2, at 6) and the Board’s Institution Decision (Paper 12, at 12) did not expressly construe any term.

93. In general, with respect to the claim terms in the ’664 Patent, I agree that the “ordinary and customary meanings of terms” as understood by a POSITA as of November 5, 2017 should apply with one notable exception.

94. In particular, the claims of the ’664 Patent use the phrase “a displayed user interface of a computer program”. In my opinion, a POSITA as of November 5, 2017 would understand that the ’664 Patent adopted a special meaning of “computer program” in the context of this phrase to refer to a “target system” which is where the functionality is invoked through its displayed user interface. Specifically, the ’664 Patent explains:

The target system, generally referred to as the computer program, may be a website, a web-based system, a native mobile application (e.g., executed in a protected sandbox, a desktop application (e.g., executed in a process of a non-sandbox based operating system), or the like. The target system may have a user interface, such as a Graphical User Interface (GUI), that the user may utilize in order to activate the functionalities of the target system.

(Ex1001, 8:9-16).

95. From this express teaching, in my opinion, a POSITA as of November 5, 2017 would understand that the use of a “computer program” in the context of the claims of the ’664 Patent refers to a target system whose functionality is invoked through by the automation process using its displayed user interface, such as a graphical user interface. The “displayed user interface of the computer program” means the user interface of the target system that user may utilize to activate the functionalities of the target system.

VII. Patent Owner’s Challenged Grounds

A. GROUND 1: Symons Blog (Ex1004), Symons Video (Ex1005-Ex1007, Ex1033) and Williams (Ex1011) Do Not Render Obvious Claims 1-8, 12-13, 16,19-23, 26, 29, 31 of U.S. Patent 10,819,664

96. In support of Ground 1 of the Petition, Dr. Beigi asserts that Symons (discussed below) and Williams (Ex1011) render obvious Claims 1-8, 12-13, 16, 19-23, 26, 29, and 31 of the ’664 Patent. For the reasons set forth herein, I disagree.

1. Summary of Symons

97. In support of the Petition, Dr. Beigi has identified multiple references related to the “Symons” prior art (Ex1003, ¶¶ 56-57) including the:

- **“Symons Blog”**, S. Symons, “When Chatbots meet RPA bots,” Medium (purportedly published Oct. 19, 2017), included as Ex1004; and
- **“Symons Video”**, S. Symons, “RPA meets chatbot: Automatically generates e-mail signature,” Vimeo (purportedly published Oct. 19, 2017), screen shots of original German language version included as Ex1005, Ex1033, English language translation and certification at Ex1006 and 1007).

98. As corroboration of the public availability, Dr. Beigi also relies (Ex1003, ¶ 66) upon a blog by Wouter Baetens, published in Chatbots Life, purportedly on October 20, 2017, that also provides a link to the Symons Blog. (**“Baetens Blog”**, Ex1009).

99. Dr. Beigi also relies (Ex1003, ¶ 66) upon supporting declarations of:

- **Senne Symons** (Ex1008, including Exhibits A (Symons Blog) & B (Symons Video, in original German), but omitting Exhibit C); and
- **Wouter Baetens** (Ex1010, including Exhibit A (Baetens Blog from medium), B (Baetens Blog from Chatbots Life), C (Symons Blog) & D (Symons Video Screenshots in original German))

100. For purposes of this declaration, I do not have an opinion whether or not the Symons Blog, Symons Video and Baetens Blogs were publicly available, but instead assume solely for purposes of this proceeding they are prior art in the forms submitted as Exhibits for purposes of my analysis.

101. In the Symons Blog, Senne Symons describes the chatbot in the video thereof as follows:

The goal of the showcase is to automate the process of creating an email signature. First, the chatbot collects all the necessary information in a friendly, interactive manner. This information gets passed on to the RPA robot, which will then automatically generate the signature, save it, and email it back to the requester. The whole process is completed within a minute. Easy and smooth integration proves a great future for both technologies [chat bots and RPA robots].

(Ex1004, 2-3).

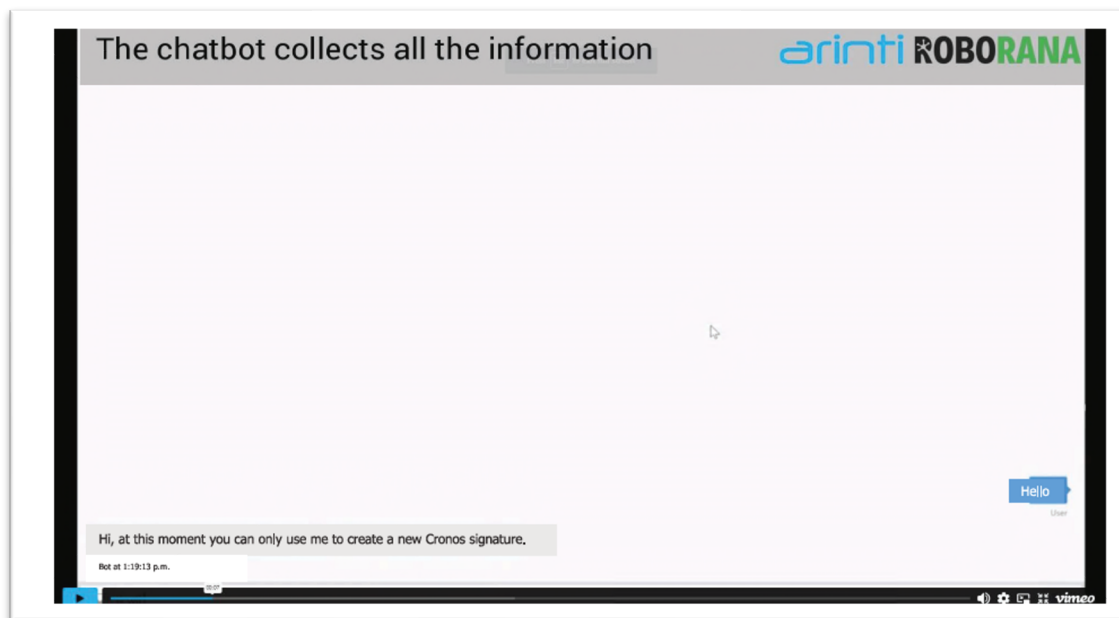
102. Wouter Baetens, in the Baetens Blog purportedly written around the same time, describes the chatbot in the video in a similar way, providing no additional detail. (Ex1009, 2). To the contrary, he confirmed “we can’t share much about the results of our joint efforts (yet)” (*Id.*).

103. Dr. Beigi also relies extensively in his declaration on the English language translation of the Symons Video itself provided at Ex1006/Ex1007). (*See, e.g.,* Ex1003, ¶¶ 63, 65-68, 81-82, 84, 92-93, 101, 105-106, 108, 114-116, 123-125,

140). For purposes of my analysis for this proceeding, I am not offering any opinion as to the accuracy of the translation and assuming the translation is accurate.

104. The Symons Video (Ex1006-Ex1007) likewise provides little, if any, details on how the underlying chatbot and RPA bot are programmed to operate. As Dr. Beigi explains (Ex1003, ¶68), the Symons Video only shows a video that allegedly “[a]utomatically ... generate[s an] e-mail signature”. (Ex1006, 1). At his deposition, Dr. Beigi confirmed that he does not know how “the internals” of Symons works, and that he never discussed with Symons how it works. (Ex2003, 213:18-214:9). In Dr. Beigi’s words, “we only see the video, the actual interaction”, not “the internals of it.” (*Id.*). I agree that neither the Symons Blog, the Symons Video, nor the Baetens Blog provide any information on what Dr. Beigi calls the “internals”, which, as I note above, Baetens confirmed was intentional. (Ex1009, 2).

105. In particular, the video shows text of a ‘User’ saying “Hello” and then being told, by “Bot”, **“Hi, at this moment, you can only use me to create a new Cronos signature”**:

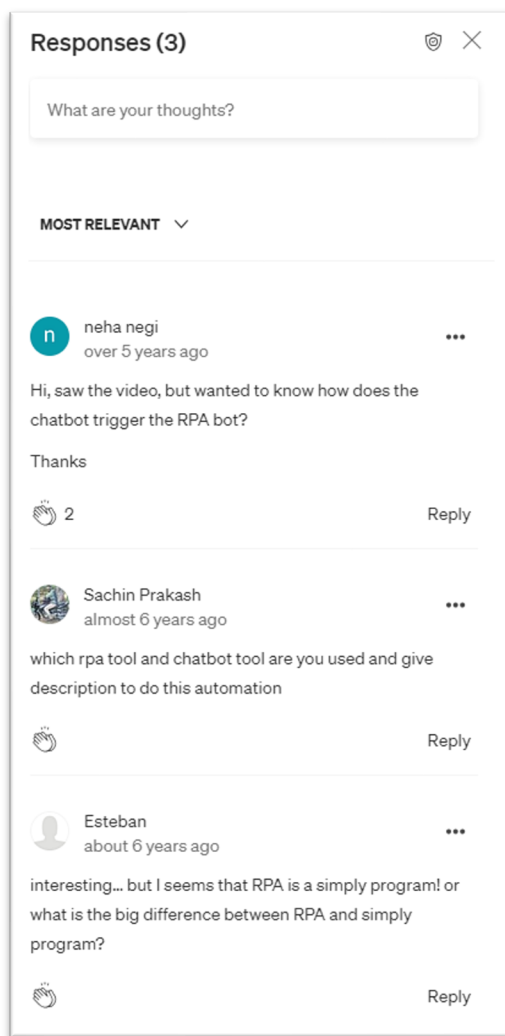


(Ex1006, 2).

106. Thus, consistent with the stated goal, in my opinion, a POSITA as of November 5, 2017 would understand there is simply one hardwired conversation which can only invoke a single automation process. Thus, in my opinion, a POSITA would understand the Symons video does not disclose **a plurality of conversations, nor a plurality of automation of process to be selectively invoked from one or more conversations.**

107. As Dr. Beigi points out (Ex1003, ¶ 67), the video then shows several messages where a user's name, job role, email address, and mobile phone number are given. (Ex1006, 3-6). **No other information is given about the "chatbot", how it was programmed, or why these messages are displayed.** For example, Symons does not explain how the chatbot knows what questions to ask or what

information to collect. As illustrated in comments to the Symons Blog, details about how the chatbot functioned were sparse:



Ex2005). These comments were posted contemporaneously with the Symons Blog, as I confirmed, when I reviewed the actual posting as it is available presently. I understand although Dr. Beigi asserts he reviewed the actual posting, he did not notice or consider these comments in formulating his opinions. (Ex2003, 220:11-18, 222:5-16).

108. As displayed in Symons, next, “the chatbot triggers the RPA bot”, (Ex1006, 10) although, again, **the details of how the RPA bot is triggered, or under what conditions, are completely absent.** Even in the Symons Blog, all that is said is that “[t]his information gets passed on to the RPA robot.” (Ex1004, at 2). The “RPA bot [then] automatically opens [the] browser and enters details”, ostensibly those provided by the user to the chatbot. (Ex1006, 11-12). The video appears to show an RPA bot copying the generated signature to the clipboard (Ex1006, 13-14), opening a word document (Ex1006, 15), pasting the clipboard contents into the opened word document (Ex1006, 15), and then emailing the word document to the user of the chatbot (Ex1006, 16-22). Thus, the RPA bot utilizes a browser, copying functions, Word and Email applications (i.e., **3 or 4 different computer programs**).

109. While there is no explicit disclosure in the video of what computer system was used for the chatbot and one computer system was used to generate the email signature, it is a reasonable conclusion to a POSITA at that time, that the ChatBot shown up to page 9 in Ex1005 (original) and Ex1006 (English translation), to gather information from Vincent Die Bie appears to be his computer as the user, the RPA was triggered on and run on Mr. Symons computer as illustrated with the “rock climbing” desktop screen on pages 10 and 16 in Ex1005 (original) and Ex1006 (English translation), and then the email with the Word document attached is

received by Mr. Vincent Die Bie at his computer still showing the same chatbot conversation on pages 17, and until the page 22. In my opinion, a POSITA as of November 5, 2017 would understand that this video was intended to showcase the use of a chat bot on a user's computer, which would send the collected information to remove computer to run an RPA which would interact with Cronos email signature generator, Internet Explorer, Word and an email client on that remote computer, and return the signature in a Word document via email to the user of the user's computer running the chatbot.

110. The following timeline I prepared from the original video submitted as Ex1033 illustrates how I believe a POSITA at the time (and even now) would understand the purported video showcase to be generated:

Mr. Vincent Die Bie Computer	Mr. Sennes Symons Computer
Video Part 1: 1st Computer - Chatbot conversation occurs on the user's computer (i.e. Vincent De Bie's computer)	
0m5sec: First view of Vincent De Bie's computer screen. The start of De Bie providing information for a signature block.  (Ex1033; between pp. 1 and 2 of Ex1005, Ex1006)	

0m31sec: Final view of Vincent De Bie's computer screen during entry of the signature block information.

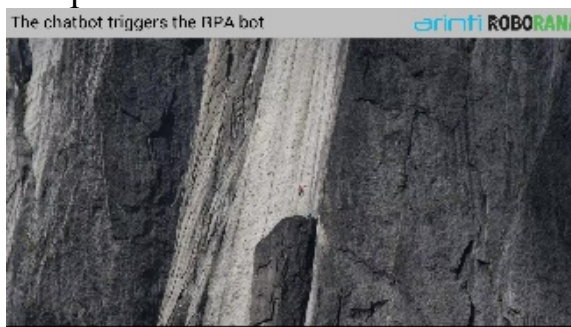


(Ex1033, between pp. 9 and 10 of Ex1005, Ex1006)

Note: The displayed language appears to be Flemish.

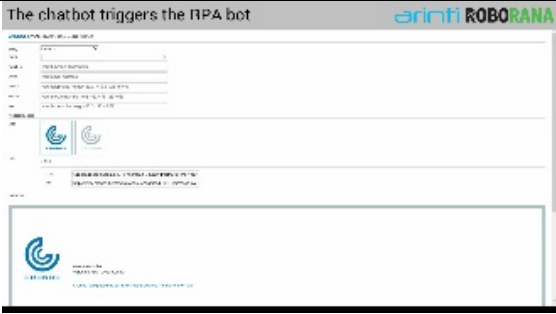
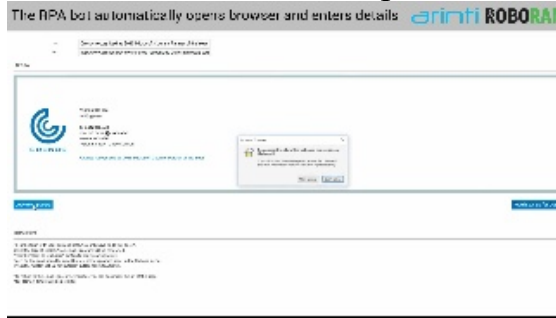
Video Part 2: Switch to 2nd computer - to generate signature block (on Senne Symon's computer)

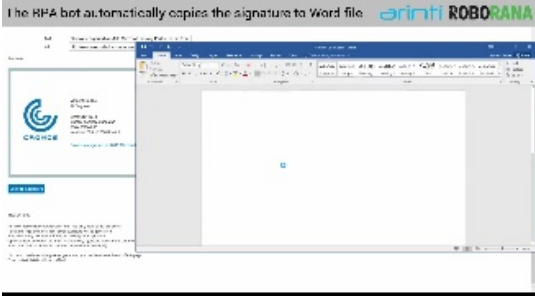
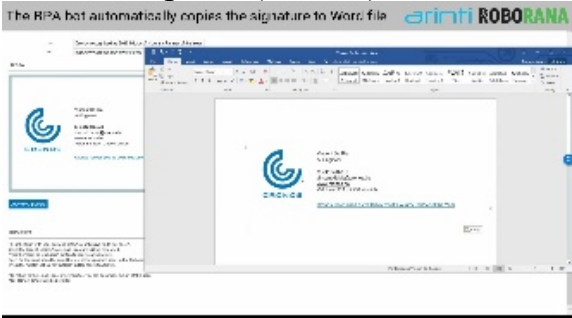
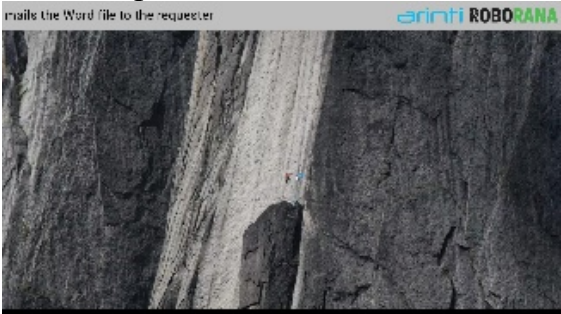
0m32 sec: Video cuts to the desktop screen showing a rock climber of a 2nd computer.



(Ex1033, shortly before p. 10 of Ex1005, Ex1006)

0m36 sec: Second Computer displays cronos signature generator application

	The chatbot triggers the RPA bot  (Ex1033, shortly before p. 11 of Ex1005, Ex1006). Note: The information on the 2nd computer system is in English. In addition, 2nd computer screen is displayed in a higher resolution than the 1st computer (indicated by size and clarity of text).
	0m40sec: 2nd computer is performing a “Copy to Clipboard” of the signature block information that was entered. Note the pop-up dialog box asking to “Allow Access” to the clipboard.  (Ex1033, shortly before p. 13 of Ex1005, Ex1006).
	0m44sec: 2nd computer opens the MS Word application. Note the user logged-in into Word is Symon, which is displayed in the Word application in the upper right-hand corner.

	The RPA bot automatically copies the signature to Word file  (Ex1033, shortly before p. 15 of Ex1005, Ex1006).
	0m44sec: 2nd computer shows the signature block pasted into the Word document to be emailed to the user of the 1st computer (De Bie).  (Ex1033, displayed at p. 15 of Ex1005, Ex1006)
	0m45sec: 2nd computer: signature block operation has completed and desk top screen with rock climber is shown with label “emails the Word file to the requester”  (Ex1033, displayed at p. 16 of Ex1005, Ex1006)
Switch back to 1st computer - to receive signature block emailed from 2nd computer.	

0m49sec: 1st computer screen shows the same chatbot sessions as in Part 1.



(Ex1033, shortly before p. 17 of Ex1005, Ex1006)

0m49sec: 1st computer shows an addition, pop-up appears from MS Outlook 2016 indicating that an email has been received from Senne Symon's computer.



(Ex1033, displayed at p. 17 of Ex1005, Ex1006)

0m53-54sec: 1st computer shows user opening the new email. The email contains the Word document emailed from Symon's computer with a copy of the Cronos signature block. The sender is "Symons Senne" and the recipient is "Vincent De Bie".

 (Ex1033, displayed at p. 19 of Ex1005, Ex1006) Note: the user of this computer (De Bie) is logged into the email application.	
 (Ex1033, Displayed at p. 21 of Ex1005, Ex1006)	
 (Ex1033, shortly before p. 22 of Ex1005, Ex1006)	

Note: The setting information in the lower right and corner of view and percent magnification is different from that indicated on the Symon's Word application.	
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111. Consistent with this timeline, a POSITA as of November 5, 2017 would also understand that since the RPA process involves sending an email, rather than simply saving the Word document, it would have ordinarily involved other systems. In my opinion, a POSITA as of November 5, 2017 would only have sent an email if the user of the chatbot did not have access to the output of the Cronos signature generator. It would not have made sense to save the signature as a Word document on Vincent De Bie's machine, only to go on to send the word document to Vincent De Bie's machine, so that it can be opened there. Vincent De Bie could just open the signature word file on his machine. Alternatively, a POSITA implementing the RPA process could have had the RPA process simply follow the "Instructions" shown in the Cronos signature generator to simply "Open Outlook and open the email Preferences/ signature panel in the Outlook menu". (Ex1006, at 14).

112. In this regard, I note that during his deposition, Dr. Beigi stated that he did not know if the video displays one or two computers being used, and that it could have been either. (*See*, e.g., Ex2003, 217-220). Essentially, Dr. Beigi admitted it was "a conjecture" how the system operated, offering different options. (*Id.*, 219:24-220:9).

113. Mr. Symons also gave a declaration authenticating aspects of Symons. In it he describes the chatbot as conducting the following process:

In Exhibits A and B, the developed Chatbot-RPA automatically created an email signature using information collected by the chatbot. The chatbot interacted with the user to collect all the necessary information. Once the information was collected, the RPA bot was triggered. The RPA bot automatically generated the email signature, saved it, and emailed it back to the user.

(Ex1008, ¶ 9).

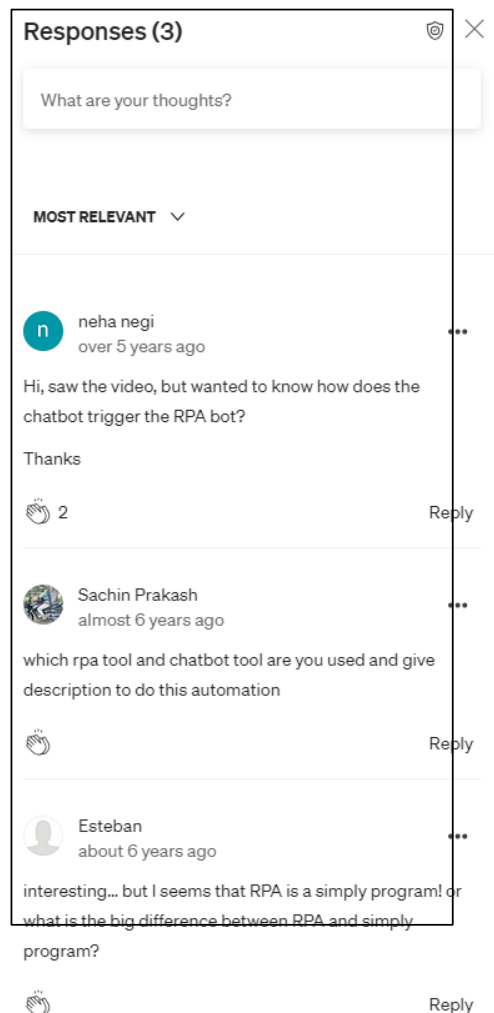
114. Mr. Baetens provided a declaration to a similar effect. (*See* Ex1010, ¶ 8).

115. I understand that these Declarations can be used to authenticate the Symons Blog, Symons Video and Baetens Blog, they would not be printed publications like the Symons Blog, Symons Video and Baetens Blog. In any event, this description as set forth in these Declarations does not fill any of the gaps I note above.

116. While Dr. Beigi quotes language from the blog about some of the benefits of chatbots and RPA (Ex1003, ¶ 69), as discussed above, the language in the blog provides no additional information regarding the actual operation of the chatbot or the RPA it allegedly implements. Further, there is no explanation in the Symons Blog, Symons Video, Baetens Blog, the Symons Declaration nor the Baetens

Declaration whether the “chatbot” was in fact a “natural language interface” relying upon NLP technology to generate a “natural language conversation”.

117. As illustrated in comments to the Symons Blog, various independent third parties at the time confirmed that neither they (and in my opinion, a POSITA as of November 5, 2017) would not have known “how . . . the chatbot trigger[s] the RPA bot”, how the automation process was defined or described, or whether an RPA module was used (as opposed to another type of program):



(Ex2005).

118. In my opinion, a POSITA as of November 5, 2017 would understand from the Symons Blog, Symons Video and Baetens Blog that:

- the evidence does not clearly establish whether the Chatbot-RPA discussed in Symons Blog and Baetens Blog, and purportedly demonstrated in Symons Video, was actually built at the time, rather than simply prepared as what Baetens called a “small demo ... [to] demonstrate[] the value in combining these technologies”;
- the disclosed Chatbot-RPA was a single purpose demo “to automate the process of creating an email signature”;
- while it purports to use a “chatbot” to “collect all the necessary information in a friendly, interactive manner” (Ex1004, 2; Ex1009, 2), it is not clear that the “chatbot” was in fact a “natural language interface” relying upon NLP technology to generate a “natural language conversation”;
- the “chatbot” was only programmed to implement a single RPA, a single conversation thread, and did not offer the user to select from a plurality of RPAs or “automation processes” as discussed in the ’664 Patent (Ex1001, 8:65-9:4, 14:4-12), let alone choose between “automation processes” based on the elements of a natural language conversation in the chatbot;

- the RPA was software that was executed on a different device than the user device on which the chatbot was implemented; and
- the RPA was software that did not interact with a single target software, like WAZE™ (as discussed in the '664 Patent, Ex1001, 9:34-41), but instead implemented a process invoking at least 3 or 4 different pieces of software and multiple respective user interfaces.

2. Summary of Williams

119. In support of the Petition, Dr. Beigi also relies on an IBM White Paper he refers to as “**Williams**”:

- D. **Williams** et al., “Using artificial intelligence to optimize the value of robotic process automation,” IBM White paper (2017), from September 2017 (Ex1011).

120. Dr. Beigi in his analysis (Ex1003, ¶ 69) relies upon Williams describing at a high level the use of chatbots by IBM as follows:

These chatbots can engage in natural language dialog with the caller and discern, through a series of interactions, the nature of the call and then capture information required to further handle the request. The chatbot will then trigger a robot, passing the required information to the robot to complete the request.

Today, IBM is using chatbots for vendor inquiry helpdesk where it replaces a human agent to interface with suppliers who want to

understand the status of their payments. Using chatbots, we have replaced the call center agent and now use a virtual agent to interact directly with the supplier. Through **several scripted questions**, the virtual agent can surmise that the supplier is asking for status on their payment and, thus, trigger an RPA robot to **access the appropriate enterprise resource planning (ERP) backend system**, validate the caller's details, retrieve necessary information, and provide status back in real-time to the supplier. The chatbot then closes the call and updates the ticket management system used to track call center activities.

(Ex1011, 3) (emphasis added).

121. Dr. Beigi also relies (Ex1003, ¶ 72) upon the discussion in Williams which describes, at a high level, different forms of RPA and the way that AI technologies can be used to improve RPA, by reference to an “Intelligent automation continuum” in Figure 1, ranging from “Robotic process automation (RPA)” to “Intelligent process automation (IPA)”. (Ex1011, 3-4).

122. Per Williams, with RPA, a robot “is taught to drive applications like a human does through the graphic user interface (GUI), following predetermined pathways” and “accesses and assembles structured data performing prescribed actions”. (Ex1011, 4). In IPA, a robot “has autonomous decision and self-remediating capabilities,” “uses AI to redesign and restructure process to optimize operations,” “reasons and remembers information, and learns to identify new

insights through data discovery,” “interacts with humans through a combination of advanced algorithms, natural language processing, machine learning, and other forms of AI”, and “[r]ecords every action, transaction, interaction and decision tree, which makes it auditable and accountable”. (Ex1011, 4).

123. Dr. Beigi also relies upon supporting declarations of:

- **Ira Allen**, a co-author of Williams (Ex1012), authenticating Williams and its publication on IBM’s website (Ex1011) and ITC World Canada (Ex1012).

124. Significantly, Mr. Allen offers no insights as to the scope or details of the disclosure of Williams other than it was publicly available.

125. For purposes of this declaration, I do not have an opinion whether or not the Williams Articles were publicly available, but instead assume they are prior art in the forms submitted as Exhibits for purposes of my analysis.

126. Like Symons, Williams is devoid of significant detail aside from broad generalizations about how chatbots and RPA bots might work. In my opinion, a POSITA as of November 5, 2017 would have merely understood based on Williams that:

- The discussion on chatbots does not provide any information as to how conversation flows actually invoke automation process; and
- The disclosed “Intelligent automation continuum,” simply provided a taxonomical definition of RPAs and IPAs, nothing more.

3. Independent Claims

127. As Ground 1, Dr. Beigi contends that Claims 1, 19 and 29 are obvious in view of Symons and Willaims. (Ex1003, ¶¶ 78-103; 126-132; 139-138). The institution decision does offer any analysis on this ground. (Paper 12, at pp. 10-22).

a. Elements [a] and [b]: [a] “using a natural language interface, receiving input from a user as part of a natural language conversation between the natural language interface and the user, [b] wherein the natural language conversation comprises a first natural language input from the user, a natural language feedback on the first natural language input from the natural language interface, and a second natural language input from the user in response to the natural language feedback”

128. Claim elements 1[a] & [b], 19[a] & [b] and 29[a] & [b] each require “using a natural language interface, receiving input from a user as part of the natural language conversation between the natural language interface and the user”, and further confirm that “the natural language conversation comprises” two “natural language input[s]”, and “a natural language feedback on the first natural language input from the natural language interface”. (Ex1001, Claim 1, 25:15-23; Claim 19, 27:8-16; Claim 29, 28:20-27).

129. Dr. Beigi and I both seem to agree that a POSITA as of November 5, 2017 would understand that the claimed “natural language interface” would use

“natural language processing” as that would have been understood by a POSITA and implement “a natural language conversation”.

130. Indeed, in explaining how “the prior art characterized and discussed during prosecution differs from the prior art discussed in this Declaration,” Dr. Beigi contrasts “Corbett”, which he asserts “disclosed a method that receives a single command-like input and performs data processing ... in accordance with the command” and “Owens”, which he asserts “discloses creating and filling out a medical document, where the user provides the input data via speech” with a method which “**involves a natural language conversation** or execution of an automation process that simulates user interactions” (Ex1003, ¶ 40). In other words, Dr. Beigi recognizes that using a “single command-like input” and receiving “input data via speech” does not satisfy the claimed conversation. I agree with this assessment.

131. Additionally, in his deposition, although he was not consistent, Dr. Beigi seems to acknowledge that “natural language interface” and “natural language processing” require the interface to “mimic[] human language and understand[] it” and act accordingly (Ex2003, at 208:2-7 (discussing his understanding of “chat bots”)). *See also* Ex2003, 187:23-188:5 (“the natural language processing unit is trying to assess the information that the person who is uttering it is trying to convey. And that information that is being conveyed, it’s trying to extract that.”).

132. Dr. Beigi explained that when he spoke to colleagues at his company, Recognition Technologies, and to other people he is working with on natural language processing, his understanding requires communication in “natural language” that is processed and which results in responses based on that input:

Q. ... So when you talk to other people about natural language processing, what is it that you understand it to mean, in your own words, not the expert reports?

I just want to know how would you understand that as someone that is a technical person at Recognition Technology talking to other people who you're working on with on natural language processing?

A. Exactly what you just did. You spoke with me and **I processed that language**, which is a natural language, and **I responded to it** using again natural language.

What natural language processing in the computer science sense is **to mimic that kind of processing** using machinery or a software.

Q. And what would be a natural language interface to the same group of people?

A. I'm not defining this. I'm just explaining what a natural language interface to -- to us means. A natural language interface is an interface that will allow you to do natural language communication with the software.

(Ex2003, 63:15-64:17 (emphasis added)).

133. To the extent Dr. Beigi is confirming that natural language processing requires not merely the use of human language, but for the computer to understand and process the human language to develop a response, I agree. Element **[b]** of Claims 1, 19, and 29 reinforce this concept by requiring the conversation not only to have a “first natural language input” and a “second natural language input”, but also “a natural language feedback on the first natural language input from the natural language interface”. It is that “feedback” which requires the “natural language interface” using “natural language processing” to understand the “first natural language input”, process it, and conclude an appropriate feedback to return to the user based on that first input. In my opinion, and based on my experience, a POSITA as of November 5, 2017 would understand that an interface, even when presenting questions in what would otherwise be “natural language” would not be a “natural language interface” as understood by those of skill in the art in the context of the ’664 Patent unless the interface can also understand the input, process it and generate a response based on the input.

134. In his deposition, while discussing his understanding of a “natural language interface”, Dr. Beigi admitted that merely providing “a form where you fill in name, address, telephone number, would [not] be a human natural language”. (*See* Ex2003, 60:24-61:3; *see also id.*, pp. 59-60). In this regard, I agree with that conclusion, and in my opinion, a POSITA as of November 5, 2017 would also agree

that merely filing in a form would not be a “natural language conversation” in the context of the ’664 Patent claims. In my opinion, a POSITA as of November 5, 2017 would understand this would be true even if one of the inputs to the form is given in a free text field.

135. During his deposition, Dr. Beigi took the position that since Symons Blog, Symons Video and Baetens Blog referred to a “chatbot” as gathering the information, that a POSITA would necessarily understand that because Symons “us[es] the phrases ‘chatbot’, “chatbot” shown would “do natural language processing”. (Ex2003, 139:3-140:10). I disagree that the use of the term “chat bot” in October or November 2017 by these authors in this context would include such an implication to a POSITA. In my opinion, the chatbot conversation that was shown in the Symons Video is not inherently a “natural language conversation” presented in a “natural language interface” as required by elements [a] and [b]. In fact, the Symons chatbot would have no need for a “natural language interface” since it only requires the user to enter four fixed data fields (name, role, phone, email), which is the equivalent of a data entry form. No conversation or interpretation of the user’s input is demonstrated here, nor is it needed. Further, the question “what is your role” shown in the conversation that Dr. Beigi identifies as “natural language feedback”, was not necessarily based on the Aranti chatbot understanding Mr. de Bei’s statement “I want to a new signature”. (Ex1003, ¶¶ 86-87). In my opinion, and based on my

experience at the time, and that this was merely a “showcase”/“demo” that information could be gathered by a chatbot and then used by an RPA, there is no reason why such a showcase needs to demonstrate the use of natural language processing, merely that information could be collected and “passed on” to the RPA.

136. At his deposition, Dr. Beigi confirmed his understanding that Symons and Baeten’s use of the term “chat bot” meant to him (and presumably a POSITA reading those blogs and viewing the video) was based on a discussion he found in Melendez (Ex1026; Ex2003, 45:6-12) and a definition of chatbot as provided by the ’664 Patent (Ex1001) itself. (Ex2003, 141:10-13). I disagree with his conclusion and these two sources do not support his conclusion. These two sources do not support Dr. Beigi’s conclusion as to how Mr. Symons and Mr. Baeten’s used the term “chatbot” in October 2017, or how a POSITA as of November 5, 2017 would have understood them to be using that term in October 2017.

137. Putting aside that the Petition does not rely upon Melendez as prior art (Ex2003, 52:10-54:13; Ex1003, ¶¶ 55-62), Melendez does not state that chatbot necessarily must be using natural language processing.

138. I note that other contemporaneous articles reflect a different understanding than Dr. Beigi of the term “chatbot”.

139. For example, an article (Ex2007) from Expert Insights on August 29, 2019, “Different Types of Chatbots: Rule-based vs. NLP”, marked as Exhibit 19

during Dr. Beigi's deposition (Ex2003, 191:19-190:4), reflects an understanding that Chatbots can be either Rule-based Chatbots or NLP Chatbots, as late as 2019. (*Cf.* Ex2003, 202:18-203:4) (acknowledge that that it "is saying there is a rule-based chatbot and the NLP chatbot"). While Dr. Beigi noted during his deposition that this is later than the priority date, that misses the point. (Ex2004, 338:18-24). In my experience, Rule-based Chatbots existed long prior to NLP Chatbots, and even as late as 2019 were still actively being used.

140. Similarly, even IBM, Dr. Beigi's former employer, and Mr. William's employer, as recently as December 2022, offered a different view of "What is a chatbot?" than Dr. Beigi. For example, on its webpage, as obtained by the WayBack machine, IBM posted its explanation of "What is a chatbot?" (Ex2008). IBM explains that chatbots have developed in complexity over time but can include simple chatbots that chatbots that function "more like an interactive FAQ":

Historically, chatbots were text-based, and programmed to reply to a limited set of simple queries with answers that had been pre-written by the chatbot's developers. They operated like an interactive FAQ, and while they worked well for those specific questions and answers on which they had been trained, they failed when presented with a complex question or one that hadn't been predicted by the developers.

Over time, chatbots have integrated more rules and natural language processing, so end users can experience them in a conversational way. In fact, the latest types of chatbots are contextually aware and able to

learn as they're exposed to more and more human language.

Today's AI chatbots use natural language understanding (NLU) to discern the user's need. Then they use advanced AI tools to determine what the user is trying to accomplish. These technologies rely on machine learning and deep learning—elements of AI, with some nuanced differences—to develop an increasingly granular knowledge base of questions and responses that are based on user interactions. This improves their ability to predict user needs accurately and respond correctly over time.

(Ex2008, at 3).

141. The point is (like Dr. Beigi's understanding of AI ("And I am not a POSITA. I know more about AIs and chatbots") (Ex2003, 194:4-13)), Dr. Beigi's opinion is not that of a POSITA, and his understanding does not indicate what those using the internet understood. This is particularly true given that, back in 2017, chatbots that use natural language understanding were less prevalent than today.

142. In my opinion, and consistent with my experience in the field, a POSITA in 2017 would have understood that the term "chatbot" in referenced in the Symons Blog (Ex1004) and the Baetens Blog (Ex1009) did not necessarily mean that it was what Expert Insights (Ex2007) called an NLP Chatbot. In other words, it did not necessarily have a "natural language interface" that utilized "natural language processing" and implemented a "natural language conversation".

143. Indeed, in my opinion, review of the Symons video (Ex1033) used to “showcase” this Chatbot-RPA demo would suggest to a POSITA as of November 5, 2017, that the “chatbot” actually used was probably not an NLP Chatbot.

144. My opinion that a POSITA as of November 5, 2017, would conclude that the chatbot shown in this October 2017 showcase did not necessarily use NLP logic is further reinforced by the evidence in the record indicating that:

- this video was put together very quickly (less than 17 days after Mr. Symons began working at Roborana as a “showcase”), it would be very reasonable for a POSITA to conclude that no NLP was included, and was instead a simple hardcoded data entry (non-NLP) chatbot;
- the Arinti chat bot that was identified as being used, was not publicly available at the time,
- neither Dr. Beigi nor I have been able to locate the Arinti chatbot, and
- when those active in the field asked about it, no answer was provided.

145. By way of illustration, after Dr. Beigi’s deposition, I have prepared my own video (Ex2010) showcase of a Chatbot I prepared after Dr. Beigi’s deposition to simulate a non-NLP conversation that matches the Symons Video (Ex1033). My html code for this conversation is included as Ex2009.

146. As I explain in Ex2006 to my declaration, it gathered the same information in the same manner, and was capable of passing that information to

another system such as an RPA bot. This showcases a Chatbot that does not use NLP and would not meet the limitations in the '664 Patent claims either in terms of utilizing a natural language interface, nor in terms of determining an automation process based on first and second natural language inputs (none of which is disclosed in Symons as well).

147. I understand that Dr. Beigi is also relying upon the Background Section of the '664 Patent to support his view that when Symons and Baetens used the term “chatbot” they meant an NLP chatbot like the '664 Patent discussed. In particular, I understand he is relying on the following passage:

A Chat bot is a computer program implementing natural language interface to conduct a conversation via auditory or textual methods with the user. Chat bots are typically used in dialog systems for various practical purposes including customer service or information acquisition. Some chatterbots use sophisticated natural language processing systems, but many simpler systems scan for keywords within the input, then pull a reply with the most matching keywords, or the most similar wording pattern, from a database.

(Ex1001, 1:21-29).

148. In my opinion, as of November 5, 2017, a POSITA would not have thought that Symons and Baeten's used the term “chatbot” in the same manner as the '664 Patent, based on that description, since it would not have existed or been

available to them. The priority document was filed in November 2017. It is doubtful that either Symons or Baeten would have looked to the '664 Patent to inform their understanding of “chatbots”. Even Dr. Beigi confirmed in his deposition, he looks at articles, not patents, in his normal experience. (Ex2003, 56:4-5) (“I usually tend to look for articles, rather than patents, in my experience”). In my opinion, the '664 Patent’s definition of what it means by “chatbot” created after these articles were written is not the type of evidence a POSITA on November 5, 2017 would use to interpret what Symons and Baeten meant by the term.. Specifically, it was well known in the industry in 2017 that not all chatbots possessed the capability natural language processing, nor required that capability. Many chatbots at that time could be used for simple data entry (equivalent to a data entry form), or be “rules based” that would only understand a limited number of user requests or interactions.

149. The '644 Patent’s purpose in defining its own meaning of the term “Chat bot” as “a computer program implementing natural language interface to conduct a conversation” is to distinguish this type of sophisticated chatbot from “many simpler systems”. In other words, the '644 Patent’s intention is to use a the “natural language interface” within “natural language processing systems” for the purpose of interacting with automation processes. In my opinion, a POSITA as of November 5, 2017 would not understand that the chatbot shown in the Symons video as part of its

showcase necessarily used “natural language processing” or was a “natural language interface”, whether “sophisticated” or “simple[]”.

150. Thus, in my opinion, a POSITA as of November 5, 2017 would not understand that the chatbot shown in the showcase presented by Mr. Symons in the Symons Video, and described in the Symons Blog and the Baetens Blog necessarily used a “natural language conversation” in a “natural language interface”, nor that the Bot’s response “What is your role” was “natural language feedback” based on Mr. De Bie’s input “I want a new signature”. Instead, it would have been closer to a simple chatbot, which Dr. Beigi refers to as a “form”. (Ex2003, 199:11-16). Since Dr. Beigi has not presented any argument other than the conversation itself evidences the claimed “natural language conversation”, “natural language input” and “natural language feedback”, he has failed to meet his burden of establishing that Symons discloses elements [a] and [b].

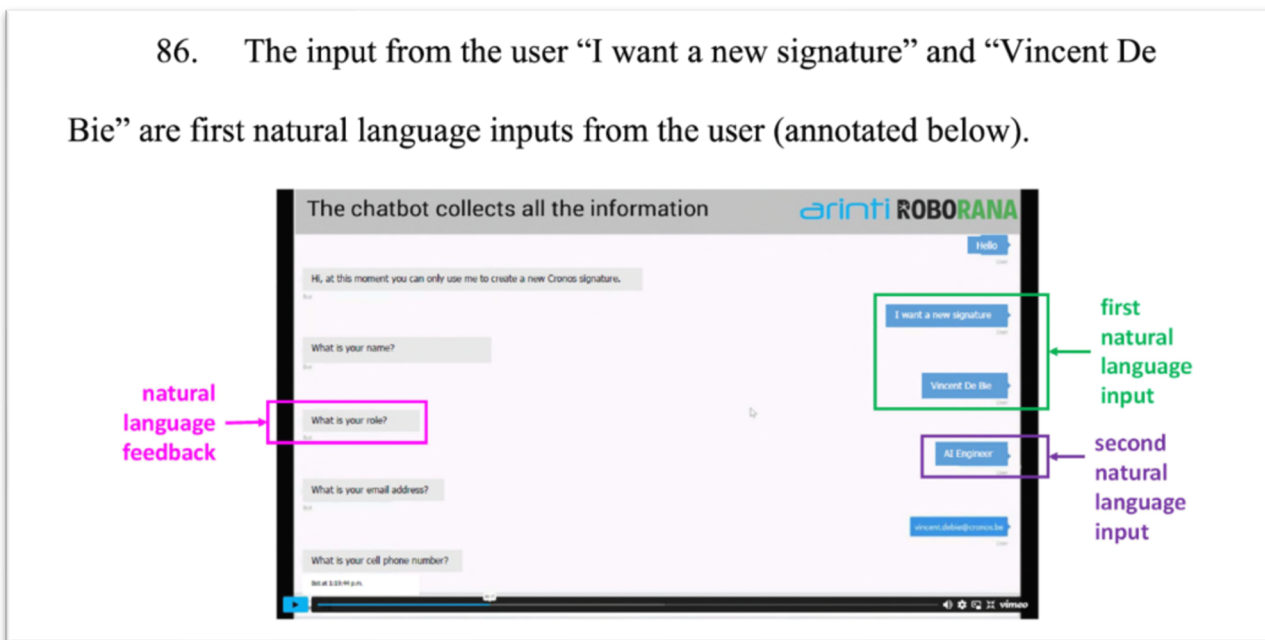
b. Element [c] – “determining, based on the first and second natural language inputs from the user, an automation process ...”

151. Claim elements 1[c], 19[c] and 29[c] each require a determination to be made “based on the first and second natural language inputs from the user, an automation process configured to perform an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate

user interactions with the displayed user interface of the computer program.”

(Ex1001, Claim 1, 25:24-29; Claim 19, 27:17-22; Claim 29, 28:28-33).

152. Dr. Beigi identifies the first natural language input as “I want a new signature” and “Vincent De Bie”, the natural language feedback as “What is your role” and the second natural language input as “AI Engineer” in the chat shown by Symons.



(Ex1003, ¶¶ 86, 89).

153. Setting aside the question of whether “I want a new signature” and “Vincent De Bie” can be considered “first natural language input” (as opposed to merely textual inputs), Dr. Beigi fails to show that a determination of the automation process is made as a result of either one of, or both of, these inputs.

154. Instead, Dr. Beigi simply states that “Based on the user’s welcome-message response, name, and job role (first and natural language inputs from the user), Symons determines the automation process.” (Ex1003, ¶ 90).

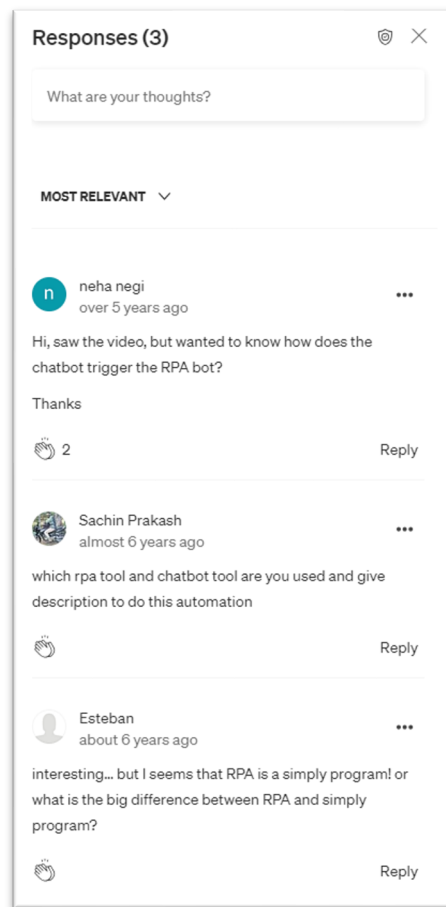
155. But Dr. Beigi provides no support for the proposition that Symons makes any “determination” at all regarding the automation process, let alone that such a determination is made based on the statement by the user “I want a new signature” and “Vincent De Bie” or “AI Engineer”. To the contrary, Symons is meant to perform a single purpose, i.e., “automate the process of creating an email signature” (Ex1004, 2). The conversation shown above explicitly states “you can only use me to create a new Cronos signature.” (Ex1006, at 5). The Symons Video does not demonstrate, and the Symons Blog does not disclose, any “determination” being made whether or not to “trigger the RPA Bot” or whether or not to “pass on” the collected information to the RPA Bot, beyond indicating it occurs as the step next after the information is collected.

156. As discussed at Par. 105, at his deposition, Dr. Beigi confirmed that he does not know how “the internals” of Symons works, and that he never discussed with Symons how it works. (Ex2003, 213:18-214:9). In Dr. Beigi’s words, “we only see the video, the actual interaction”, not “the internals of it.” (Id.). I agree that neither the Symons Blog, the Symons Video, nor the Baetens Blog provide any

information on what Dr. Beigi calls the “internals”, which as I note above, Baetens confirmed was intentional. (Ex1009, 2).

157. In my opinion, a POSITA as of November 5, 2017 would understand that Symons as shown and described could easily have been implemented as merely hardwiring a conversation into its specialized chatbot, and then having the information collected during the conversation “passed on” to the RPA Bot to “trigger” the RPA Bot as described. No “determination” necessarily need be made. This process is consistent with the conversation shown by Dr. Beigi at Par. 71, which starts with the user typing “Hello”, and the system responding with “Hi, at the moment, you can only use me to create new Cronos signature.” It is only after receiving the message that the user responds with “I want a new signature.”. (*See* Ex1003, ¶ 81, illustrated above).

158. There is no explanation anywhere in Ex1004 – Ex1010 or Ex1033 of any of the details of Symons software, implementation, or how the chatbot purports to “trigger” or implement the RPA Bot. The commentary at the time on the Symons Blog illustrates this point:



(Ex2005).

159. Dr. Beigi confirmed at his deposition that he did not know the answers to any of these questions. (Ex2003, 221:15-18). Additionally, as Dr. Beigi confirmed during his deposition, all that is shown is a video, which leaves one to conjecture to the actual method of implementation and underlying code in Symons. (Ex2003, 213:24-214:9).

160. As Dr. Baeten's explained, "we can't share much about the results of our joint efforts (yet)." (Ex1009, 2).

161. Similarly, while the Symons video shows in the header that “the chatbot triggers the RPA bot”, (Ex1006, 10), Mr. Symons explains that what is really happening is the collected information is merely “passed on to the RPA robot” (Ex1004, 2). In my opinion, a POSITA as of November 5, 2017, would not understand the process of passing on collected information as the next step in the process as making a determination (e.g., selection, as discussed in the ’664 Patent, Ex1001,13:33-43). Similarly, even if the software instead “triggers the RPA bot” as a natural next step in the process, in my opinion, a POSITA as of November 5, 2017, would still not understand that Symons necessarily teaches making a determination based on the language in the Symons Blog and the Symons Video.

162. As previously noted, Baetens confirms that the disclosures were intentionally limited at the time, and the contemporaneous commentators note the lack of details in such disclosures. In my opinion, a POSITA as of November 5, 2017 would have understood that a logical way in which Symons Video was implemented consistent with the Symons Blog, the Symons Video, the Baetens Blog and the Declarations by Symons and Baetens was by hard-wiring the conversation questions into the special chatbot editor provided, and then at the end of the conversation passing on the collected information to the RPA Bot (like my Chatbot in Ex2009/Ex2010 as discussed in par. 145 and Ex1006), as explained by the Symons Blog. In such a situation Symons need only collect data and no “determination”

(whether by selection or other decision making process) is made with respect to what automation process to implement. There was merely one process, and it would naturally flow as the next step in the programming.

163. While Dr. Beigi asserts that, “if the user does not provide a welcome-message response, it would have been obvious to a POSITA at the time of the ’664 priority date for Symons’ chatbot-RPA system to wait for the user to respond”, this does not indicate that the system determines “an automation process” as the claims require, only that the system waits for a user input before printing the next question to the screen. In my opinion, a POSITA as of November 5, 2017 would understand that determining whether to ask the next question in a series of pre-programmed questions is not the same as determining the ultimate automation process to be invoked based on the responses to those questions. Again, it bears repeating, that the “showcase” in Symons is only intended to invoke a single response.

164. Dr. Beigi also asserts that, “[i]f, for some reason, Symons does not determine to implement an automation process, it would have been obvious to a POSITA at the time of the ’664 priority date” in view of Williams. (Ex1003, ¶ 95). Dr. Beigi states that, “[a]s discussed above and throughout Williams, RPA robots are designed to handle multiple requests, executing multiple different types of automation processes.” (Id., ¶ 98). Per Dr. Beigi, “[c]ombining Symons and Williams would expand the capabilities, making use of the advantages of RPA”

which would “result[] in a chatbot-RPA bot system capable of handling more than a user request for automated generation of an email signature”, e.g., “automated generation of an electronic letterhead, automated generation of an electronic invoice, automated generation of an electronic flyer, automated generation of electronic business cards, etc.”. (*Id.*). I disagree with this rationale.

165. Significantly, with respect to Dr. Beigi’s contention that according to Williams, “a chatbot-RPA system may be expanded to handle multiple requests with a reasonable expectation of success”, this is not recited or suggested by Williams. Neither Symons nor Williams suggest using a single chatbot-RPA to handle multiple requests at once in the same conversation thread. Instead, Williams is directed at most to using chatbots “in a variety of other processes and across industries” (Ex1011, 3), without relating to a single chatbot-RPA handling multiple requests at once. Moreover, Symons describes a chatbot for the generation of the email signature (and nothing else), while Williams describes a chatbot for providing suppliers a status of their payments.

166. More fundamentally, Dr. Beigi fails to explain why the single purpose “showcase”/“demo” of Symons would need to be modified to include a determination of an automation process. In my opinion, a POSITA as of November 5, 2017, would understand that, given the single purpose nature of the Symons chat-RPA bot, there would be no need to determine the automation process to be

performed based on the user input. Instead, all that would need to be done would be invoking the signature generator after obtaining the user information.

c. Element [c] – “... configured to perform an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions with the displayed user interface of the computer program,”

Element [e] – “wherein each interaction of the sequence of interactions comprises an action selected from a group consisting of inputting data to the displayed user interface and executing a functionality of the displayed user interface; and”

Element [f] – “executing the automation process, wherein said executing comprises utilizing the displayed user interface of the computer program to perform the sequence of interactions.”

167. Element [c] provides not only determining an automation process, but determining an automation process which is “configured to perform an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions with the displayed user interface of the computer program” (Ex1001, Claim 1, 25:24-20; Claim 19, 27:17-22; Claim 29, 28:28-33). Elements [e] and [f] further provide that “[e] each interaction of the sequence of interactions comprises an action selected from a group consisting of inputting data to the displayed user interface and executing a functionality of the displayed user interface; and [f] executing the automation process ... comprises utilizing the displayed user interface of the computer program to perform the sequence of

interactions.” (Ex1001, Claim 1, 25:31-39; Claim 19, 27:24-32; Claim 29, 28:35-43). In other words, the automation process must comprise a “sequence of interactions” with a “displayed user interface” of “the computer program.” Grammatically, given “the displayed user interface” and “the computer program” relate, under antecedent basis, to “a displayed user interface” and “a computer program” previously used in the Claims. In my opinion, a POSITA as of November 5, 2017 would understand that the sequence of interactions must be with respect to the same “displayed user interface” of the same “computer program”.

168. However, Dr. Beigi fails to show that each interaction in the sequence of interactions of the automation process is with the displayed user interface of the computer program. Instead, as Dr. Beigi describes in his analysis with respect to element [c], the determined automation process is performed with respect to several displayed user interfaces of several computer programs: the “automatic email signature generation ... information gets passed on to the RPA robot, which will then automatically generate the signature, save it, and email it back to the requester” (Ex1003, ¶ 92). As Dr. Beigi further explains, “Symons interfaces with multiple platforms: email signature platform [Cronos], Microsoft Word, and Microsoft Outlook.” (Ex1003, ¶ 113). In my opinion, a POSITA as of November 5, 2017 would understand these platforms to be different computer programs, with different displayed user interfaces.

169. With respect to element [e] and [f], Dr. Beigi also explains that “the executed automated [sic] process of the RPA bot involves inputting data in data fields and clicking on GUI buttons, which utilizes the displayed UI of the computer program to perform the sequence of interactions (annotated below)”:



(Ex1003, ¶ 103).

170. During his deposition, Dr. Beigi explains:

The RPA is running – basically a browser is opened, and then the RPA is launched. And then the RPA generates the signature, and the signature is now being copied into this Word document.

(Ex2003, 218:9-13). He also confirmed that the process involved “attach[ing] the Word document with the email signature” to an email and sending it. (Ex2003, 217:16-218:2).

171. In my opinion, a POSITA as of November 5, 2017 would understand that the above two identified interactions are performed using different displayed user interfaces of different computer programs. The top screen shows text fields of the Cronos signature generator. However, the bottom screen shows a different user interface of a different computer program, namely, a modal window or other form of pop-up associated with Internet Explorer. Accordingly, Symons does not disclose the execution of the automation process “utilizing the displayed user interface of the computer program to perform the sequence of interactions”, since the sequence of interaction are utilizing multiple user interfaces of multiple computer programs – Cronos email signature generator, Internet Explorer, Word and an email client.

4. Claim 2 – “wherein the natural language interface is a chat bot service operable to converse with the user in natural language”

Claim 3, Claim 20 – “wherein the automation process is a parameterized automation process having a parameter, wherein the chat bot service is configured to prompt the user to provide a value for the parameter, wherein said executing comprises utilizing the value of the parameter”

172. In addition to the reasons set forth above with respect to Claim 1 from which Claims 2 and 3 depend, and Claim 19, from which Claim 20 depends, each of

Claims 2, 3 and 20 require that the “natural language interface” is a “chat bot service”. (Ex1001, Claims 2-3, 25:40-47; Claim 20, 27:33-38). As pertinent here, Claim 2 requires that the natural language interface is a chat bot service. As detailed in the ’664 Patent, the chat bot service is a third party service such as FACEBOOK MESSENGERTM, and SLACKTM and TELEGRAMTM, and other similar third party messaging services. (Ex1001, 7:64-8:3; 8:24-27).

173. Dr. Beigi fails to identify any “chat bot service” in his read on these claims. *See* Ex1003, ¶¶ 104-107, 168-172, 210-211. The only chat bot identified is the Arinti chat bot, which he does not assert is a “chat bot service”.

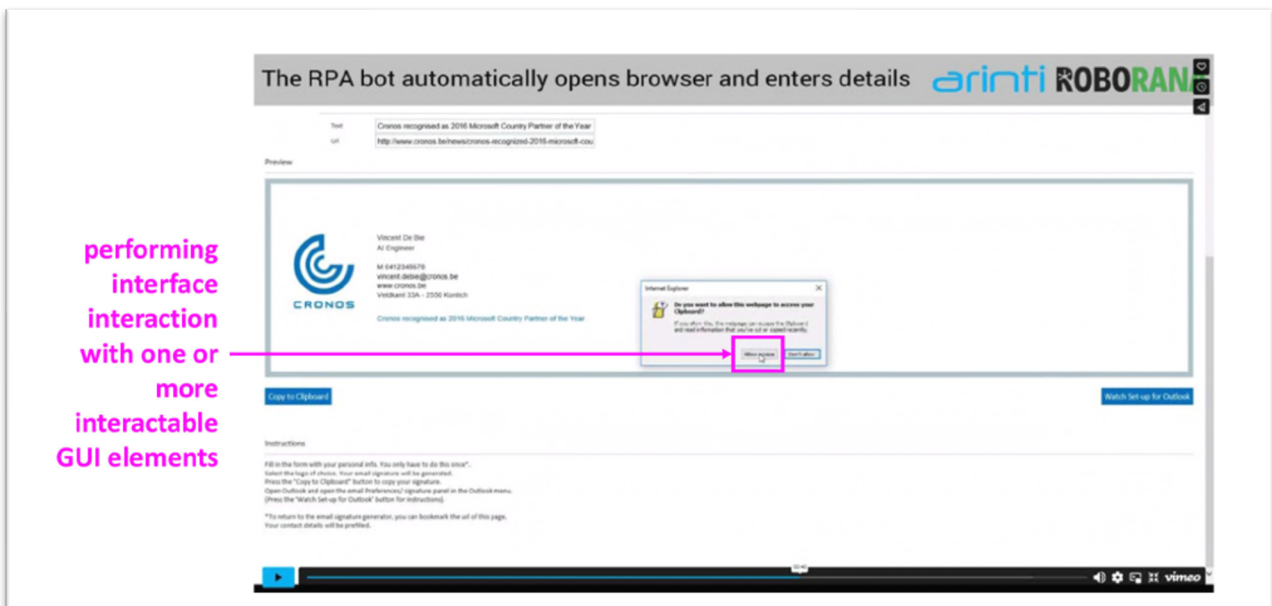
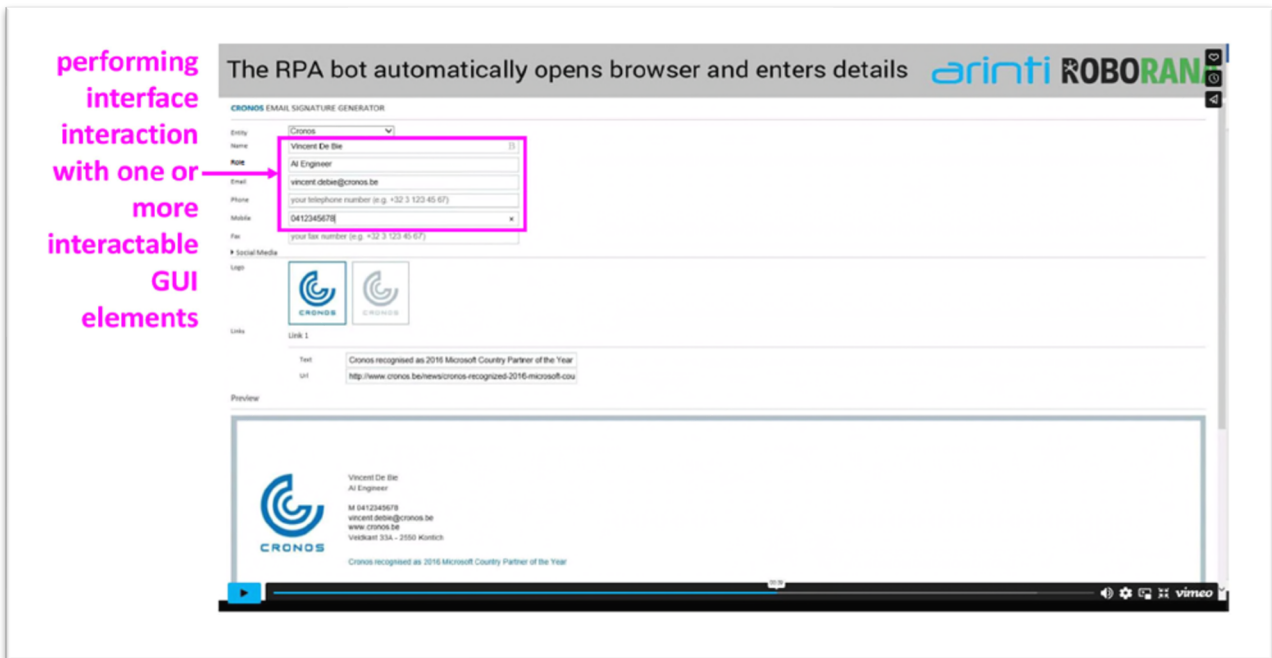
174. For this additional reason, Dr. Beigi has not shown that Claims 2, 3, and 20 are invalid.

5. Claim 5, Claim 22 – “wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more interactable GUI elements, wherein said utilizing the displayed user interface comprises performing interface interaction with the one or more interactable GUI elements”

175. Claims 5 and 22 require that “utilizing the displayed user interface comprises performing interface interaction with the one or more interactable GUI element” of “the displayed user interface”. (Ex1001, Claim 5, 25:53-57; Claim 22, 27:45-50).

176. Consistent with his read on claim 1, Dr. Beigi identifies as the “one or more interactable GUI element[s]” the “input fields” and “GUI buttons” which are

displayed in the Symons video. (Ex1003, ¶ 109). He provides examples including filling in parts of the Cronos Email Signature Generator form and clicking on the “Allow access” button, as shown below:



(Ex1003, ¶ 109).

177. As discussed previously, however, the “Allow access” button is not part of the same displayed user interface of the same computer program as the input fields of the Cronos email signature generator. Accordingly, a POSITA as of November 5, 2017 would understand that utilizing the displayed user interface does not comprise interacting with the “one or more interactable GUI elements”, since they are of different displayed user interfaces. Dr. Beigi thus does not show that Claims 6 and 22 are met.

6. Claim 8 – “[a] wherein said determining comprises selecting the automation process from a database retaining a plurality of user-defined automation processes; [b] wherein the database is updatable by one or more users via a Graphical User Interface (GUI) capable of defining new automation processes and updating existing automation processes retained therein.”

178. Claim 8 requires that “determining” an automation process comprises “selecting the automation process from a database” which is “updatable by one or more users via a Graphical User Interface (GUI) capable of defining new automation processes and updating existing automation processes” and which “retain[s] a plurality of user-defined automation processes”. (Ex1001, 26:6-12).

179. Dr. Beigi does not assert that Symons teaches Claims 8, but instead suggests that “Symons is silent on whether it selects the automation process from a database.” (Ex1003, ¶ 117). I agree with Dr. Beigi that Symons does not teach the elements of Claim 8.

180. Dr. Beigi nevertheless argues that Claim 8 would be obvious in view of Williams, pointing to Williams’ “Watson Policy Management Library” that provides “rules and policy changes outside of the RPA product using normal conversation text. The robot then interacts with WPML to look up and apply rules related to the automated process”. (Ex1003, ¶ 118, citing Ex1011, at 4). The WPML does not meet the elements of Claim 8.

181. First, the “Watson Policy Management Library” is not “a database retaining a plurality of user-defined automation processes”, but instead a database which stores “rules and policy changes outside of the RPA product”. (Ex1011, at 4). Instead, during automation, “[t]he robot [e.g., the RPA product] then interacts with WPML to look up and apply rules related to the automated process”. (Ex1011, at 4). Importantly, even if there are plurality of “rules and policy changes” in the WPML employed by an RPA bot during automation, this does not necessarily mean there are a plurality of automation processes or RPA bots selected from by a conversation.

182. Second, Dr. Beigi has not shown that WPML is “updatable by one or more users via a Graphical User Interface (GUI)” nor that the GUI is “capable of defining new automation processes and updating existing automation processes retained therein” as element [b] requires. While, Dr. Beigi asserts that the “robot” is taught to drive application like a human does through the graphical user interface (GUI), and thus “the database is updatable by one or more uses via a GUI”, this

analysis confusing defining and updating an automation process with updating rules and processes stored in WPML. The rules and processes stored in WPML are explicitly described as being updated “using normal conversation text” (e.g., via a terminal window), not using a graphical user interface (such as a click-and-point editor) as the claims require. (Ex1011, at 4). By the same token, WPML describes updating “rules and policie[s]” used by automated processes, and storing these in the database, not storing the actual automated processes themselves.

183. Accordingly, Dr. Beigi fails to show that the WPML in Williams stores a plurality of automation processes that are selected from during a conversation (as opposed to merely rules and processes used by an automation process), nor that the WPML is updatable via a GUI (as opposed to text, as Williams describes). Thus, in my opinion, a POSITA as of November 5, 2017 would understand that, even if Symons was modified to use the WPML as database, this would not enable selection of different processes in a conversation, but would merely allow Symons’ pre-set process to access a rules and policy database during execution, and thus does not meet the elements of Claim 8.

184. Dr. Beigi also points to the same motivation to modify Symons as he does in claim 1, to be able to “handle multiple user requests”. This reasoning fails as I discuss in connection with element [c]. (*See* pars. 163-165, *supra*). In my opinion, a POSITA as of November 5, 2017 would not have been motivated to modify

Symons to select from RPA processes in a database since, unlike the conversations in the claimed invention, Symons invariably leads to but one automation process: the automation of the Cronos email signature generator.

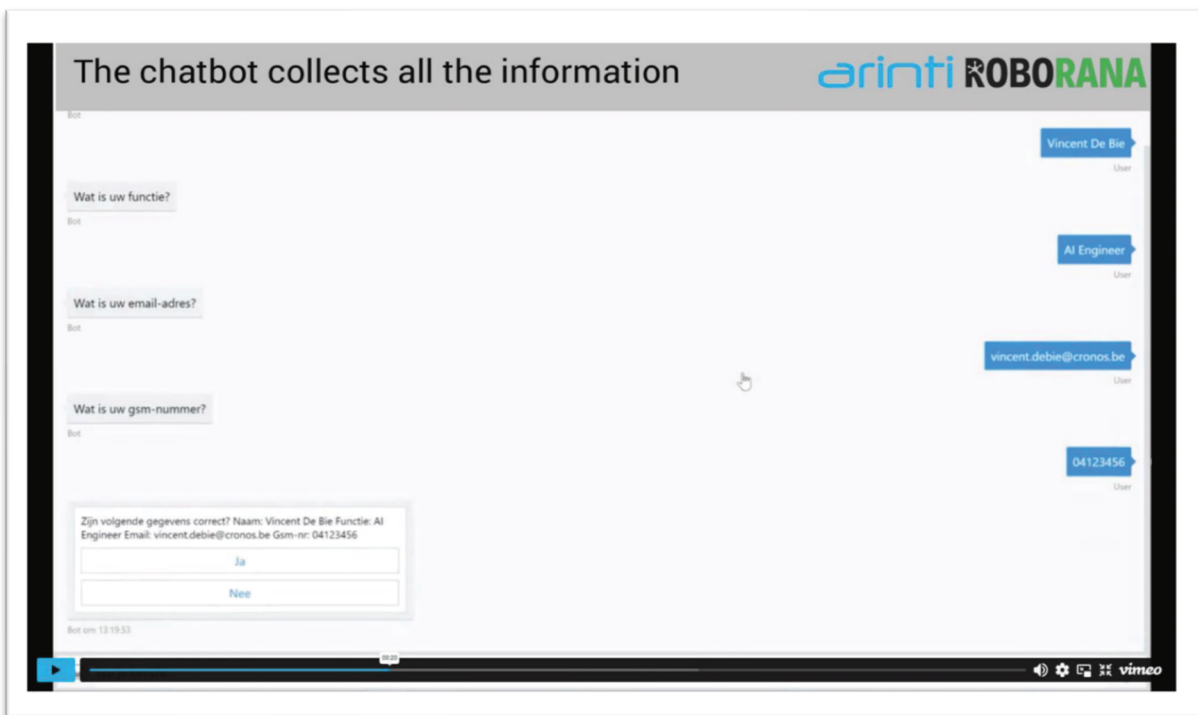
7. Claim 12 – “wherein said executing is performed on a client device of the user.”

185. Claim 12 requires that the “executing [of the automation process] is performed on a client device of the user”. (Ex1001, Claim 12, 26:43-44).

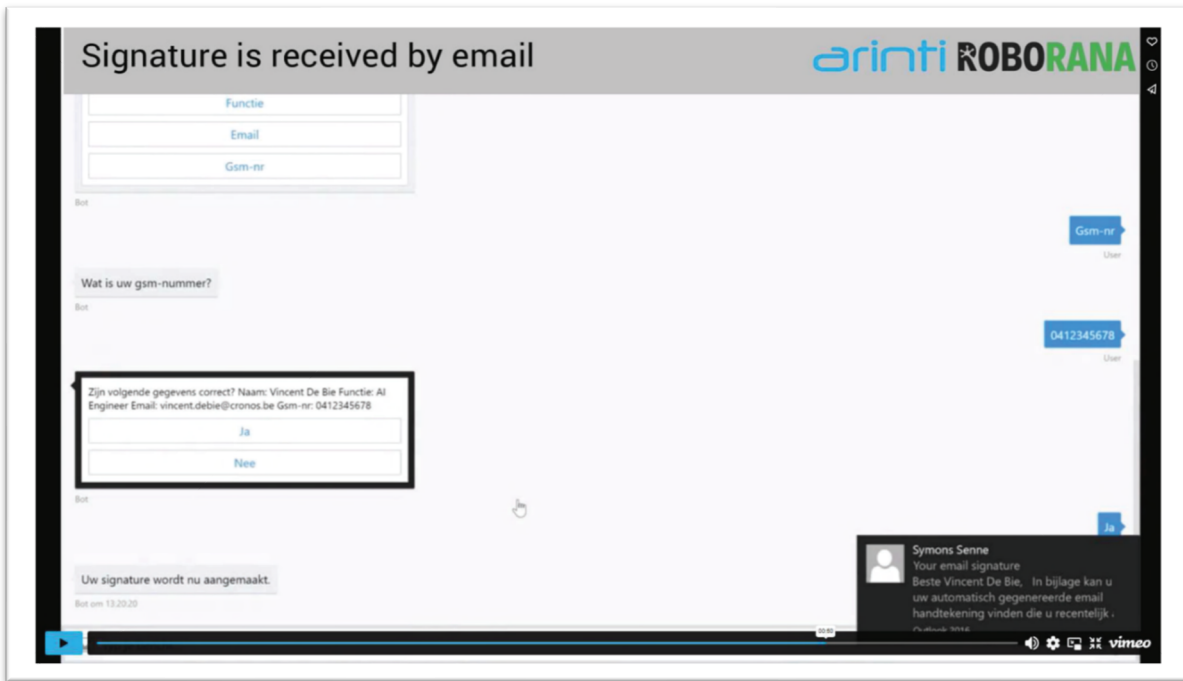
186. Dr. Beigi asserts that Symons discloses these claims because Symons shows an automation performed using a “computer screen of a personal computer”, which is a “client device used by a user”. (Ex1003, ¶ 123). However, the client device cannot be used by just any user as Dr. Beigi appears to posit. In my opinion, a POSITA as of November 5, 2017, would understand that because “the user” derives its antecedent basis from element [a] (“... a natural language conversation **between the natural language interface and the user**” (Ex1001, Claim 1, 25:29-30)), the “client device” must be “used by” the “user” having a conversation with the “natural language interface” Accordingly, in my opinion, a POSITA as of November 5, 2017 would understand that from element [a] of Claim 1, from which Claim 12 depends, that the user in Claim 12 is the user interacting with the “natural language interface” in a “natural language conversation”.

187. However, as I discuss above (*see* pars. 110-111, *supra*), in my opinion, a POSITA would understand that Symons does not disclose that the process is performed on a device of the user of the natural language interface.

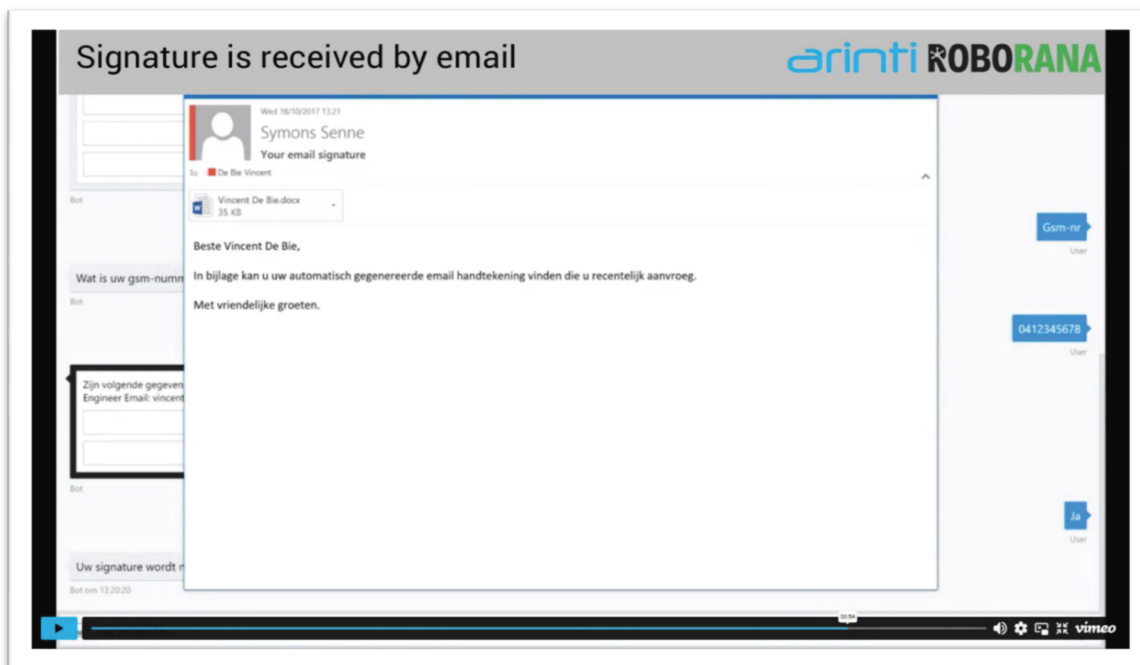
188. In accord with that discussion, I understand that the “user” in the Chat Bot in the Symons Video is purportedly Vincent De Bie, as reflected in the conversation, where he provides his name and where the email is sent back to him:



(Ex1005, at 6).



(Ex1005, at 17; *see also* Ex1005, at 18).



(Ex1005, Page 19).

189. Based on his deposition testimony, I understand Dr. Beigi agrees that Vincent De Bie is the “user ... we are led to believe” in the chat on page 5 (Ex2003, 134:6-12) and that Vincent De Bie “is interfacing with a chatbot”. (*Id.*, 217:6-218:15).

190. However, in my opinion, a POSITA as of November 5, 2017 would understand that the automation process as shown in the Symons Video appears to be running on a different computer, presumably, the computer of Semmes Symons, rather than the computer of Vincent De Bie which “is interfacing with the chatbot”. (Ex2003, 217:6-218:15). This conclusion is supported by several factors including that: it is Mr. Symons’ version of Word being shown on page 15 of Ex1005, Mr. Symons sends the email with the Word document to Mr. De Bie (as indicated in the header “The RPA Bot automatically mails the Word file to the requester” as shown on pages 16 of Ex1005 and confirmed in the email as received on page 19 of Ex1005), and the email document is then received by Mr. De Bie on the same computer as the chat conversation was presented, as shown on pages 17-18 of Ex1005.

191. Thus, as I discussed above (*see* par. 118, *supra*), a POSITA as of November 5, 2017 would understand that the video does not demonstrate that the automated process was run on the same device as the chatbot conversation, and in my opinion, would in fact conclude the opposite. At his deposition, even Dr. Beigi

conceded that he could not definitively conclude that the automated process shown on Pages 10 to 17 of Ex1005 and Ex1006 were on the same computer as the chatbot conversation on Pages 2 to 9 and 18-19 of Ex1005 and Ex1006. As he explained, “[t]hat’s a conjecture because – I am not sure where this Windows software is running because it could be running on a remote device.” (Ex2003, 219:24-220:5, *see also* Ex2003 217:6-220:9)

192. In my opinion, Dr. Beigi has not established that the automated process of generating an email signature and shown in the Symons Video is in fact conducted on the same client device as the chatbot. To the contrary, in my opinion, a POSITA as of November 5, 2017 would understand that in fact, the chatbot conversation was intended to be showcased as being Mr. Vicent De Bie’s computer, while the automated process was being showcased on being on Mr. Semmes Symons computer as interacting with the Cronos email signature generator, Internet Explorer for its permission to copy, Word and email client, and thus would not meet Claim 12 of the ’664 Patent.

193. Accordingly, because Symons Video is illustrating an automation process that is executed on a different client device than the “chabot” asserted to be the natural language interface, in my opinion, a POSITA would understand that the Symons Video does not disclose the additional elements set forth in Claim 12.

8. Claim 13 – “wherein the natural language interface is a voice-based service, wherein the voice-based service is configured to receive vocal commands from a human user.”

194. Claim 13 requires that the natural language interface is “a voice-based service” which “is configured to receive vocal commands from a human user.” (Ex1001, Claim 13, 26:45-48).

195. Dr. Beigi asserts that Symons discloses using a “voice-based service” (Ex1003, ¶ 124). However, Dr. Beigi points to no express disclosure, instead merely arguing that “Symons’ system is executed on a personal computer” and that microphones are common on personal computers. (*Id.*). This does not mean that Symons is configured to receive vocal commands.

196. Dr. Beigi also it would have been obvious to use a “microphone that receives vocal commands from a human user” (Ex1003, ¶ 124) because they “[purportedly] may be a more convenient way for a human user to input information for, e.g., the conversation with the natural language interface, and thus it would have been obvious to receive vocal commands”. (*Id.*) Dr. Beigi points to the call centers in Williams as an example. (*Id.*).

197. I disagree with Dr. Beigi’s conclusion and rationale for modifying the natural language interface in Symons to utilize a “microphone that receives vocal commands from a human user”. In my opinion, a POSITA in 2017 (and even 2018) would have understood the type of information which the natural language interface

in Symons was seeking (a user's name, job role, email address, and mobile phone number, Ex1006, at 5) was most conveniently obtained by having a user type (e.g., with a keyboard). Often, at that time (and even today), voice to text systems were notoriously poorly suited to enable a user to provide name, job role and email address information in particular. As Dr. Beigi acknowledged, even his call center speaker recognition made "mistakes". (Ex2003, 79:17-80:2).

198. Instead, in my opinion, a POSITA as of November 5, 2017 would have understood that using a voice-based service as the natural language interface would have added significant complexity over the text-based interface while also not making the process more convenient for users. In my experience, call centers at the time used voice and language recognition to select from among predefined options (and thus only needed to distinguish between a set number of commands), but did not employ voice recognition technology that could successfully differentiate, without making significant errors, between different names or email addresses—the information collected by Symons. In my opinion, a POSITA as of November 5, 2017 would understand that employing a voice-based service as a the user interface in the context of Symons would not have been more convenient for users, as it would have been significantly error prone.

199. Accordingly, in my opinion, because a POSITA as of November 5, 2017 would not have been motivated to use a voice-based service instead of the text-based

interface shown in the Symons video, and thus, Claim 13 would not have been obvious as of the priority date of the '368 Patent.

9. Claim 16, Claim 26, Claim 31 – “wherein the displayed user interface of the computer program is presented to the user.”

200. Claims 16, 26 and 31 require that the “displayed user interface of the computer program is presented to the user”. (Ex1001, Claim 16, 26:60-61; Claim 26, 28:4-6; Claim 31:28:48-49).

201. As discussed with respect to Claim 12, in my opinion, a POSITA as of November 5, 2017 would understand that from element [a] of Claims 1, 19 and 29, from which Claims 16, 26 and 31 depend, that the “user” in Claims 16, 26 and 31 would be the user interacting with the “natural language interface” in a “natural language conversation”.

202. Also as discussed with Claim 12, that user would presumably be Mr. Vincent De Bie for the same reasons as already discussed.

203. But Dr. Beigi asserts that the “displayed user interface” is the screen shot from page 11 of Ex1005 and Ex1006 (*see* Ex1003, ¶ 25). This browser, as discussed above, however, is not on the same computer as the chat bot conversation with Mr. De Bie.

204. In my opinion, a POSITA as of November 5, 2017 would have not HADreason to believe that Mr. Vincent De Bie, nor whoever is presenting him or

herself as him in the conversation on pages 2-8 of Ex1005, would have actually had the screen shot on page 11 of Ex1005 or Ex1006 presented to him or her as the user.

10. Dependents Claims 2-8, 12-13 and 16 (for Claim 1), Claims 20-23 and 26 (for Claim 19) and Claim 31 (for Claim 29) are Also Not Obvious For At Least The Same Reason as Claims 1, 19 and 29

205. I understand that to the extent a claim is found not to be anticipated or rendered obvious by a particular reference or combination of reference, then claims which depend from such claim would also not be anticipated or rendered obvious.

206. With respect to each of the dependent claims in Ground 1, to the extent that Symonds and Williams do not render obvious Claims 1, 19 and 29, then by definition they also do not render obvious their dependent claims, i.e., Claims 2-8, 12-13 and 16 (for Claim 1), Claims 20-23 and 26 (for Claim 19) and Claim 31 (for Claim 29).

B. GROUND 2: Allen (Ex1014) does not anticipate or render obvious Claims 1-8, 12-16, 18-23, 25, 26, 28-31 and 33 of the '664 Patent

207. In support of Ground 2 of the Petition, Dr. Beigi asserts Claims 1-8, 12-16, 18-23, 25, 26, 28-31 and 33 are “obvious” in view of U.S. Patent 7,983,997, granted on July 19, 2011 to James F. Allen, et al. (Ex1014, “Allen”) by itself. (Ex1003, ¶¶150-229).

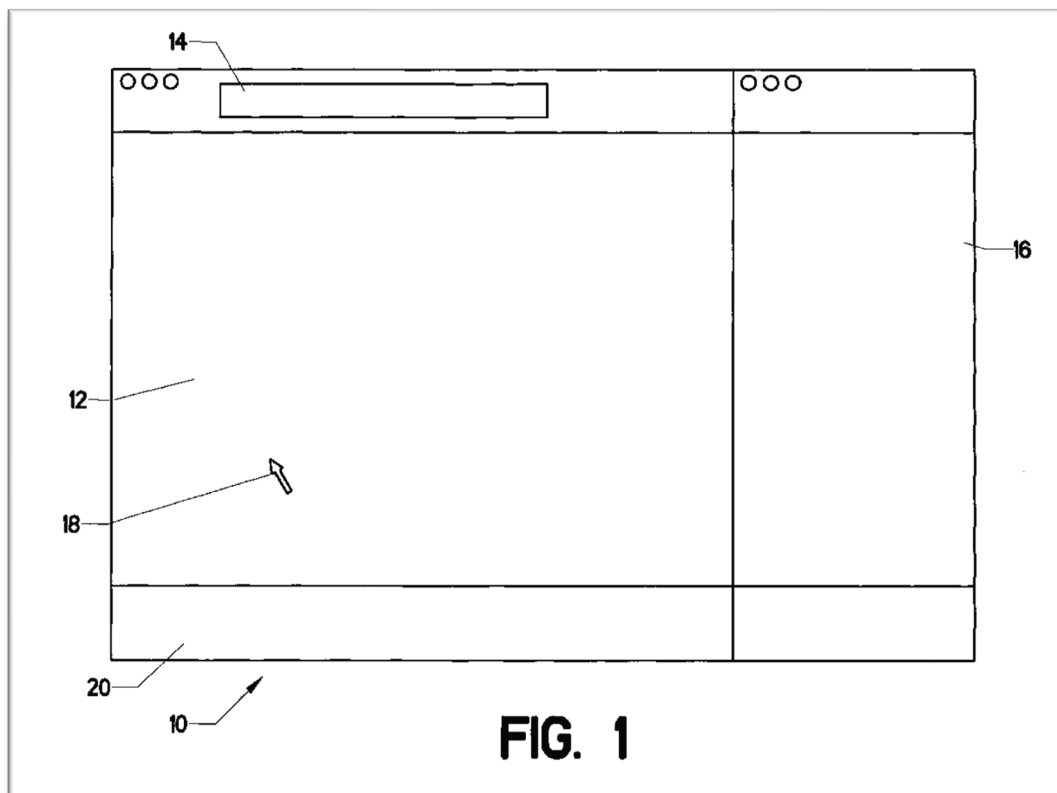
208. In my opinion, as I discuss further below, Dr. Beigi’s analysis with respect to Allen fails at least because he has not identified “a natural language conversation” which uses a “natural language interface” as required by elements [a] and [b] of the independent claims. Separately and independently, Dr. Beigi’s analysis also fails in that he had not identified, a “displayed user interface of a computer program” for which an automation process performs “an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions with the displayed user interface of the computer program” as required by element [c]-[f].

1. Summary of Allen

209. Allen is directed towards teaching a computer, the “**Procedural Learning on the Web**” System (known as “PLOW”) to learn an automated process on the internet. As Dr. Beigi recognizes (Ex1003, ¶150), PLOW is “[a] system which allows a user to **teach a computational device how to perform complex, repetitive tasks** that the user usually would perform using the device’s graphical user interface

(GUI) often but not limited to being a browser.” (Ex1014, Abstract). In Allen, “the user ‘teaches’ task steps by inputting natural language and demonstrating actions with the GUI.” (Ex1014, Abstract).

210. The cornerstone of Dr. Beigi’s analysis is that PLOW has a GUI 10, which he concludes practices the challenged claims of the ’664 Patent. (*See, e.g.*, Ex2003, 264:18-265:16). FIG. 1 of Allen provides a blank GUI of the learning system, while FIGS. 2 and 3 of Allen illustrate how a user would go about teaching the system how to buy a book.

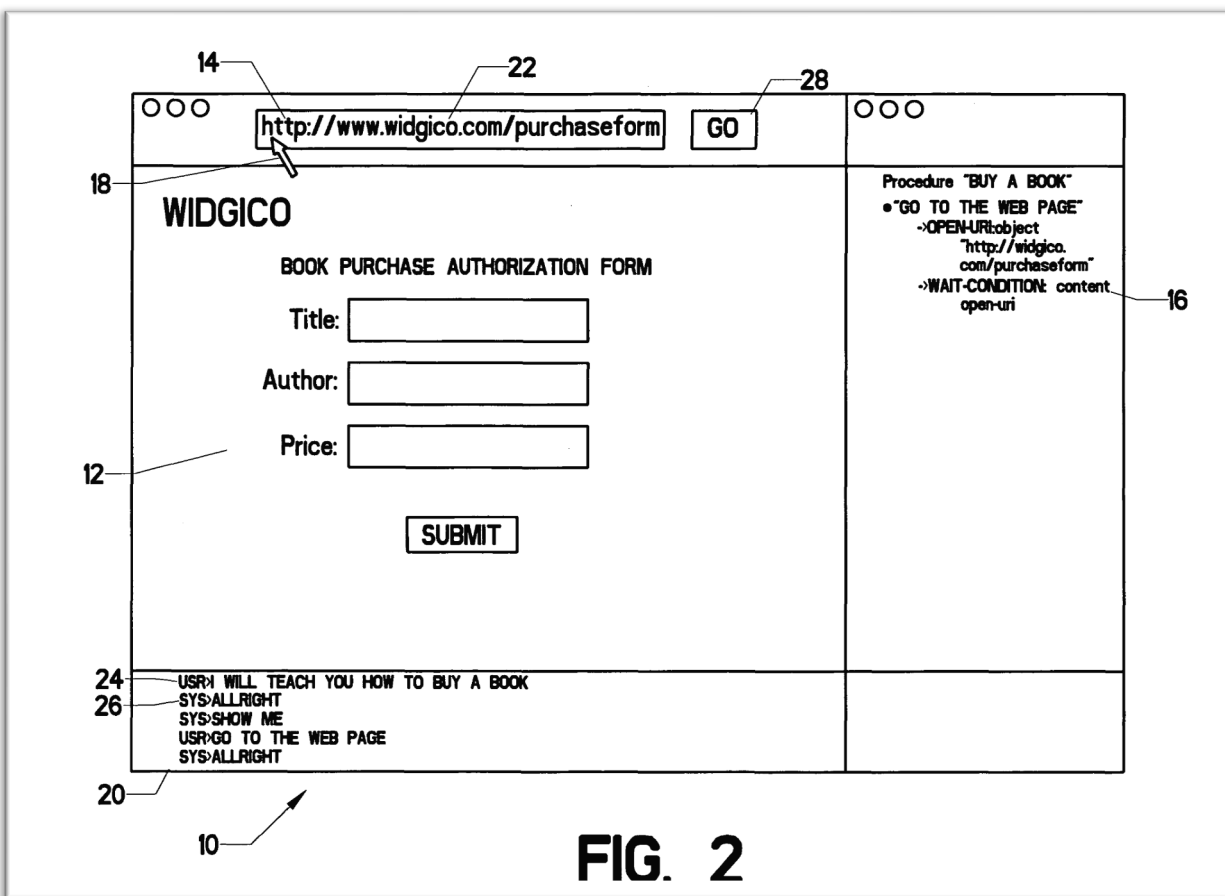


(Ex1014, FIG. 1)

211. “FIG. 1 shows a representative graphical user interface 10” with a “[b]rowser display 12,” a “URI entry box 14” (allowing for URLs to be input), a “movable cursor 18”, a “task log 16” on the right side which “shows the tasks that have been learned so far **in the learning** sessions”, and a “speech interface display 20” on the “bottom of the display area” which allows “the user to monitor his or her interaction with PLOW”. (Ex1014, 5:6-20).

212. Allen’s disclosure is primarily directed to explaining out PLOW is trained to perform an automated process using the GUI of FIG. 1.

213. To illustrate, the text depicted in the “speech interface display 20” in FIG. 2 relates directly to a learning process of PLOW. As the first message, PLOW “displays the message [uttered by the user] ‘USR>I WILL TEACH YOU HOW TO BUY A BOOK.’ The label ‘USR>’ indicates that this is the speech uttered by the user, as understood by the software.” (Ex1014, 5:36-39). PLOW then prints out “Alright. Show me.” with the label “SYS>”. (Ex1014, 5:44-49).



(FIG. 2 of Allen, Ex1014).

214. As indicated in FIG. 2, PLOW “creates a title for the new process it is about to learn and displays the title in task log 16” (in FIG. 2, “Procedure ‘BUY A BOOK’”) (Ex1014, 5:56-60). Because the tasks are displayed in the learning GUI and the task log, “[t]he reader can thereby monitor whether PLOW has correctly understood the present objective.” (Ex1014, 5:60-62).

215. Dr. Beigi asserts that “[i]t would have been obvious that in order for the user to easily monitor the system’s actions, the system’s actions would have to be displayed” (Ex1003, ¶164). I disagree. Allen is teaching the user is monitoring the

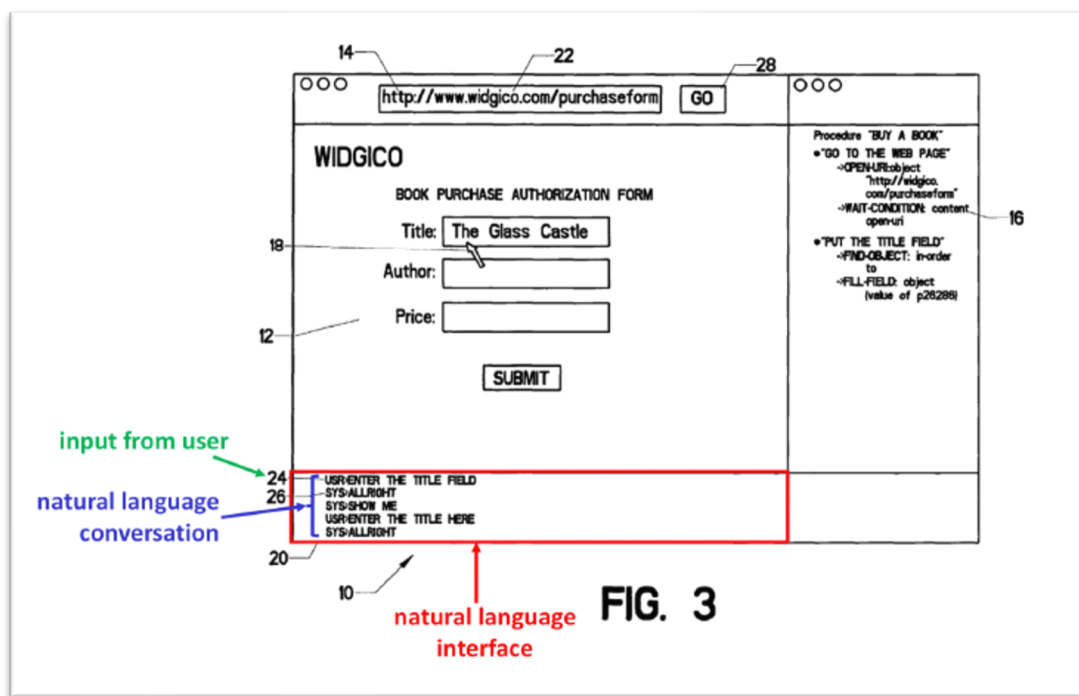
training process, not the implementation of the automated process after training.

Thus, the teaching of Allen would not inform a POSITA as of November 5, 2017 on how the system's actions would be displayed (or not displayed) when invoked.

216. As a step in the process of buying a book from Widgico website, the user also instructs PLOW to “Go to this web page” (displayed as “USR>GO TO THE WEB PAGE”), and PLOW responding, again “Alright. Show me” (displayed as “SYS> ALLRIGHT”), prompting further user input. (Ex1014, 5:63-6:3).

217. Accordingly, all of the text in the “speech interface display 20” of FIG. 2 relates to teaching the procedural learning system.

218. As for FIG. 3, Dr. Beigi provides the following markup, which incorrectly labels the conversation presented in the speech interface display 20 as a “conversation implemented by a natural language interface”:



(Ex1003, ¶154, annotating FIG. 3 of Allen, Ex1014).

219. As FIG. 3 demonstrates, the “conversation” identified by Dr. Beigi in this markup is discussing teaching an automatic task, not implementing an automated task after being trained. The user gives instructions to “Enter the title field” (shown as “USR>ENTER THE TITLE FIELD”) (Ex1014, 6:24-31). The PLOW system then displays “ALLRIGHT” and “SHOW ME”, prompting the user to show the title field. (Ex1014, 6:31-35). The user, while using the cursor to hover over the title field, says “Enter the title here” (shown as “USR> ENTR THE TITLE HERE”), resulting in PLOW capturing the action and stating “All right” to indicate that it has done so. (Ex1014, 6:34-37). Significantly, when referencing the conversation which PLOW has after being trained with a user, “ENTER THE TITLE

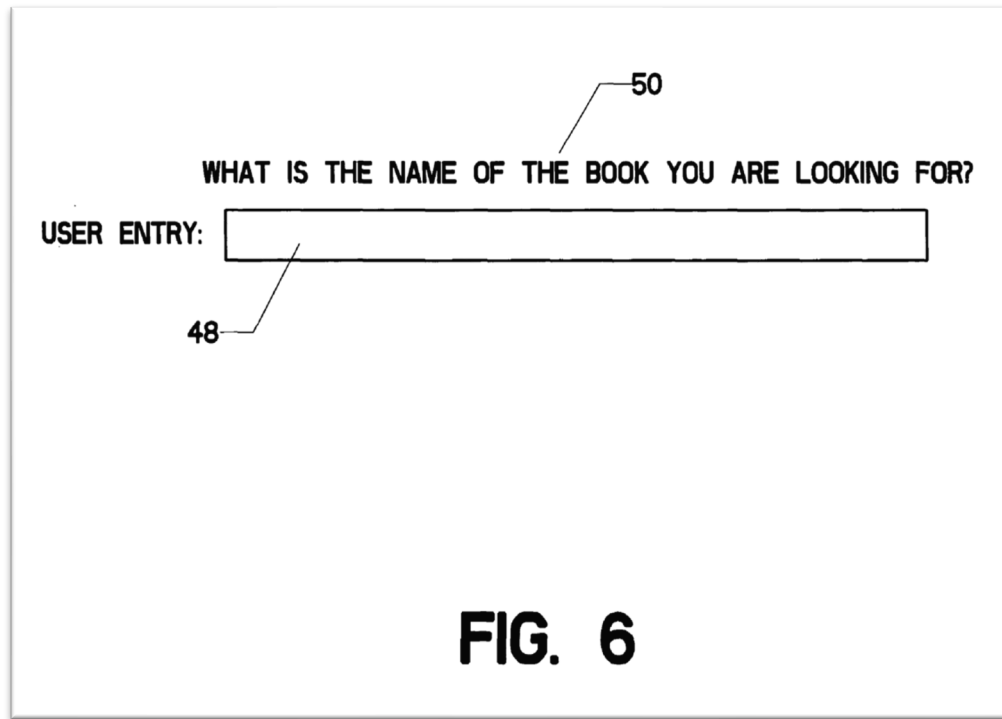
FIELD” and “ENTER THE TITLE HERE” are not part of that conversation shown in FIG. 3. (Cf. Ex1014, 12:64-13:5, discussed below, *see* pars. 228-234).

220. To demonstrate that Allen teaches a “natural language conversation” as required in Claim 1, Dr. Beigi relies upon the discussion outlined starting in Col. 12, line 62 which states:

Once the complete task is learned, the user can employ PLOW's task database the next time he or she wishes to order a book. The user would only need to say something like “I want to buy a book.” The system would then ask, “What is the title of the book?” Once that information is provided, PLOW would then perform the steps it was previously taught and complete the transaction.

(Ex1014, 12:62-13:1).

221. With respect to asking the question “What is the title of the book”, as Dr. Beigi recognized during his deposition, “What is the title of the book?” is presented to the user using a form like the one shown in FIG. 6 (Ex2003, 257:20-24):



(Ex1014, FIG. 6).

222. Additionally, while Allen teaches that the system can “perform the steps it was previously taught”, it provides little detail on how the system executes such steps. (Ex1014, 12:66-13:1). For example, Allen does not disclose simulating a sequence of interactions with the displayed user interface using PLOW.

2. Allen does not disclose nor render obvious Claims 1, 19 or 29 (and by extension their dependent claims)

223. In asserting that Allen renders the 1-8, 12-16, 18-23, 25, 26, 28-31 and 33 of '664 Patent obvious, Dr. Beigi states that each of the elements of the independent claims are “disclosed” in Allen (Ex1003, ¶¶ 153-167, 203-209, 218-226), and so appears to assert that Allen anticipates the claims of the '664 Patent.

Only with respect to elements 1[c], 19[c] and 29[c] does Dr. Beigi present any sort of obviousness analysis, and then in the alternative. (Ex1003, ¶164).

224. In the Institution Decision, the Board “determine[d] that Petitioner has sufficiently shown at this stage of the proceeding that Allen teaches each of the elements of claim 1 and that the information presented in the Petition demonstrates a reasonable likelihood that claim 1 is unpatentable under 35 U.S.C. § 103 over Allen.” (Paper 12, Institution Decision, at 21). While the Board summarized Petitioner’s obviousness combination in element 1[c], it did not appear to expressly adopt the obviousness rationale provided therein. (Paper 12 at 20).

225. Given the ambiguity present in Dr. Beigi’s analysis, I treat Dr. Beigi’s analysis as arguing both that Allen discloses and renders obvious the claims of the ’664 Patent.

226. I disagree with Dr. Beigi’s (and hence, the Board’s) conclusion. The claims of the ’664 Patent are not disclosed, either expressly or inherently, nor rendered obvious by, Allen. Dr. Beigi has not identified “a natural language conversation” as required by elements [a] and [b] of the independent claims, nor has he identified a “displayed user **interface** of a computer program” for which an automation process performs “an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions

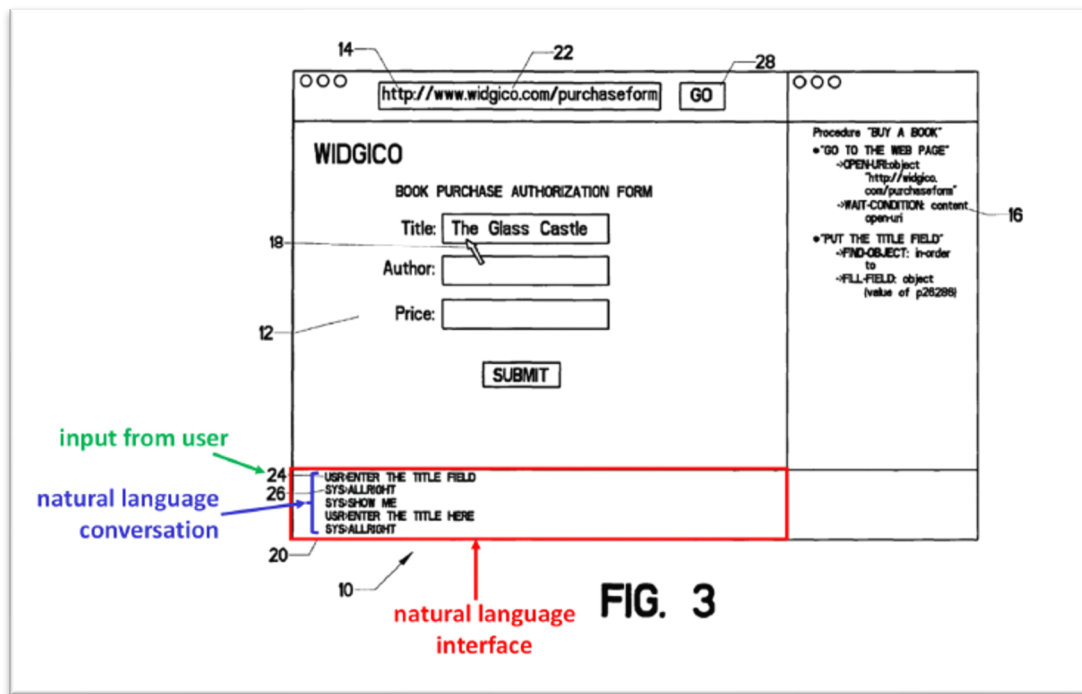
with the displayed user interface of the computer program” as required by element [c]-[f].

a. Element [a] – “using a natural language interface, receiving input from a user as part of a natural language conversation between the natural language interface and the user,”

Element[b] – “wherein the conversation comprises a first natural language input from the user, a natural language feedback on the first natural language input from the natural language interface, and a second natural language input from the user in response to the natural language feedback”

227. Claim elements 1[a] & [b], 19[a] & [b] and 29[a] & [b] each require “using a natural language interface, receiving input from a user as part of the natural language conversation between the natural language interface and the user”, and further confirm that “the natural language conversation comprises” two “natural language input[s]”, and “a natural language feedback on the first natural language input from the natural language interface”. (Ex1001, Claim 1, 25:15-23; Claim 19, 27:8-16; Claim 29, 28:20-28).

228. However, Dr. Beigi’s analysis does not identify “a natural language conversation” in a “natural language interface” as required by elements [a] and [b] of the independent claims. As to element [a], Dr. Beigi points to the training conversation to disclose a “natural language conversation” and “speech interface display 20” in Figure 3 to disclose the “claimed natural language interface”:



(Ex1003, ¶154, annotating FIG. 3 of Allen, Ex1014).

229. However, as I noted in my summary of Allen (*see* pars. 209-222, *supra*), the “input from user”, “natural language conversation” and “natural language interface” identified by Dr. Beigi are used to train the PLOW system, not to conduct a natural language conversation which seeks to invoke performing a task.

230. With respect to element [b], which requires the conversation to include a “first natural language input”, a “natural language feedback”, and a “second natural language input”, Dr. Beigi relies upon the discussion outlined starting in Col. 12, line 62 which states:

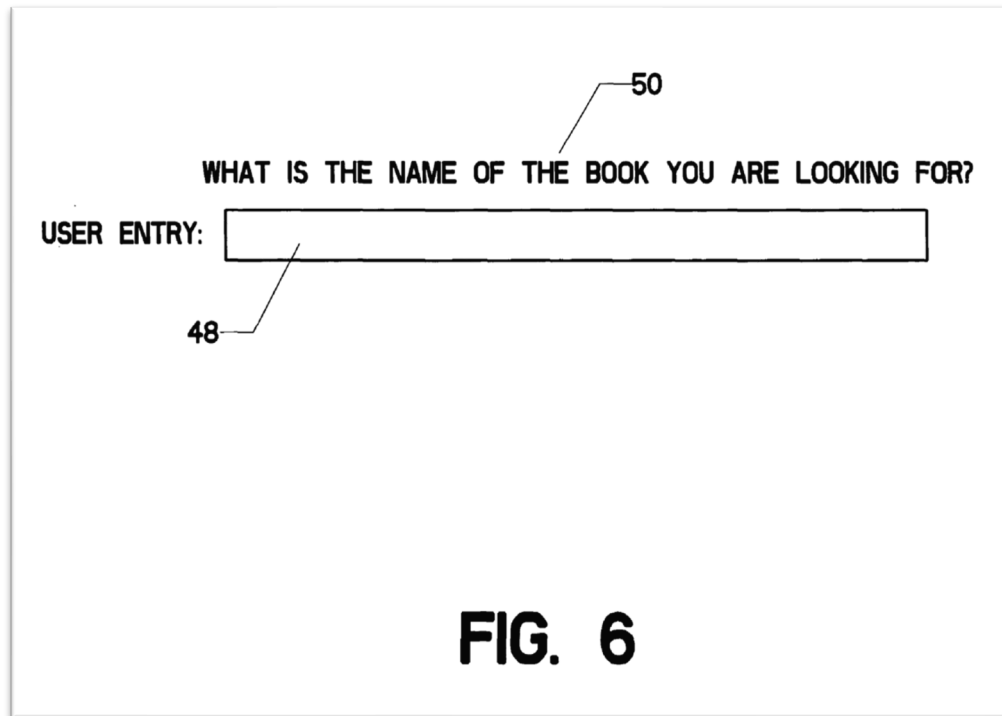
Once the complete task is learned, the user can employ PLOW's task database the next time he or she wishes to order a book. The user would only need to say something like “I want to buy a book.” The system

would then ask, “What is the title of the book?” Once that information is provided, PLOW would then perform the steps it was previously taught and complete the transaction.

(Ex1014, 12:62-13:1) (cited by Dr. Beigi at Ex1003, ¶ 155).

231. Per Dr. Beigi, “I want to buy a book” is the “first natural language input from the user”, the “system’s response is natural language feedback on the first natural language input from the natural language interface”, and “the user’s answer [the title of the book] is a second natural language input from the user.” (Ex1003, ¶ 155). Notably, Dr. Beigi contends only that the natural language interface is used to obtain the first input (e.g., the command to begin the book buying process), and does not argue that it is used provide the first natural language feedback or obtain the second natural language input as part of the same conversation, as the claims require.

232. Instead, as Dr. Beigi confirmed in his deposition, in Allen, “What is the title of the book?”, is presented to the user using a form like the one shown in FIG. 6 (Ex2003, 257:20-24):



(Ex1014, FIG. 6). As shown in FIG. 6, the user entry field in the form would be used to obtain the title of the book (and other information obtained by PLOW). As Dr. Beigi conceded, however, a form is not a natural language conversation. (*See* Ex2003, 60:24-61:3).

233. Thus, to the extent Dr. Beigi is relying upon the conversation in Allen, set out at Col. 12, starting at line 64 as being the “natural language conversation” (*see* Ex1003, ¶¶155, 156), in my opinion a POSITA as of November 5, 2017 would understand that the question “What is the title of the book?” would be asked, and answered, using a form as shown in FIG. 6. Dr. Beigi and I both recognize that this is not a “natural language conversation” as required by the claims, nor is it a “natural language interface.”

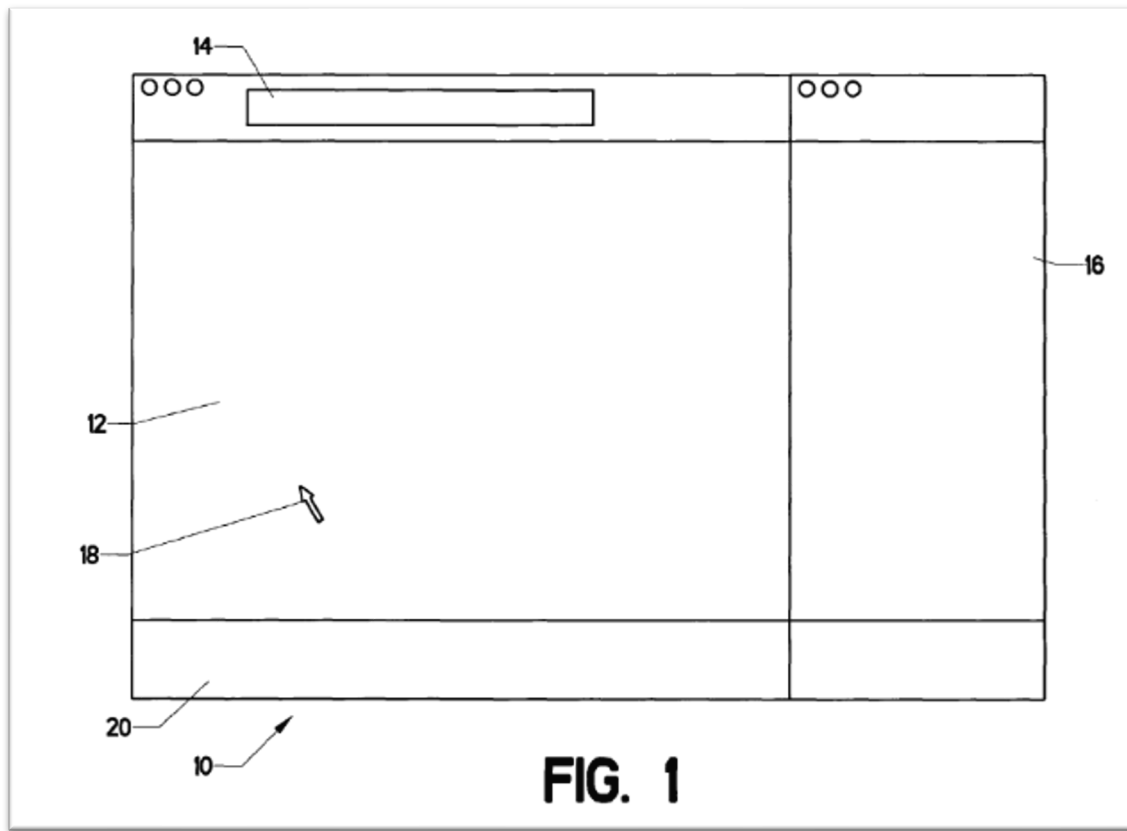
234. Additionally, regardless of whether FIG. 6 is considered to be a “conversation” or “natural language interface”, it is separate from the conversation used to obtain the input of “I would like to buy a book”, and occurs in a different “interface”, and thus does not meet the claim elements which requires the input to be received from the same “natural language interface” as part of the same “natural language conversation”.

235. Accordingly, because Dr. Beigi fails to identify a natural language conversation comprising both a first and second natural language input taking place on a single natural language interface, Dr. Beigi fails to show that Allen teaches the elements of Claim 1 **[a]** and **[b]**.

- b. Element [c] – “determining, based on the first and second natural language inputs from the user, an automation process configured to perform an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions with the displayed user interface of the computer program,”**
Element [d] – “wherein the user interface of the computer program is configured to be displayed on a screen”
Element [e] – “wherein each interaction of the sequence of interactions comprises an action selected from a group consisting of inputting data to the displayed user interface and executing a functionality of the displayed user interface; and”
Element [f] – “executing the automation process, wherein said executing comprises utilizing the displayed user interface of the computer program to perform the sequence of interactions.”

236. The claims of the '644 Patent require “executing” an “automation process configured to perform an automation of a sequence of interactions with a displayed user interface of a computer program” “on a screen” “and to simulate user interactions with the displayed user interface of the computer program”. (Ex1001, Claim 1, 25:24-39; Claim 19, 27:17-32, Claim 29, 28:28-43).

237. Dr. Beigi in his declaration identifies the “displayed UI of the computer program” as “browser display 12, which is part of the GUI 10 (displayed UI) ... as shown in Fig. 1 (below)”:



(Ex1003, ¶ 162; *see also* ¶ 164 (“As discussed above, the system's actions are performed in browser display 12 (displayed UI).”). The Board similarly adopted this construction. (Paper 12 at 20).

238. Dr. Beigi confirmed during his deposition that he is reading the “computer program” on PLOW, and the “user interface of the computer program” on PLOW's GUI 10 as shown in FIG. 1. (Ex1003, ¶ 162; Ex2003, 265:3-16 (“in Element 1C ... [Dr. Beigi’s read] is that ... the computer program is PLOW, and the displayed user interface is the interface shown in Figure 1”, “That’s what I use on Page 86. I use Figure 1”).

239. A problem with Dr. Beigi's analysis is that FIG. 1 of PLOW is not "a computer program" within the meaning of the '664 Patent, and the browser display 12 (displayed UI) is not a "displayed user interface" of the computer program. As I discuss with respect to my proposed claim construction (*see* pars. 94-95, *supra*), the term "computer program" is used in the specification of the '664 patent to "refer[] to" the "target system". (Ex1001, 8:9-14). The claimed sequence of interactions must "activate the functionalities of the target system". (Ex1001, 8:13-16).

240. In my opinion, a POSITA as of November 5, 2017 would understand that PLOW is not a target system which has a functionality that is executed by interaction with the displayed user interface. The browser 12 simply provides a means to display the user interface of various websites during training in accordance with HTML code transmitted by the websites. The process of "buying a book" relied upon by Dr. Beigi for elements [b] and [c] at Par. 155-164, is performed at the website, not by PLOW.

241. This is illustrated by the automation processes Dr. Beigi points to. In particular, Dr. Beigi identifies two automation processes: a "book buying task", where "the system uses the title of the book ... to complete the transaction", as well as "'a search on the website known as MAPQUEST.COM'" (Ex1003, ¶¶ 157, 158). No books are bought, or any searches performed, at PLOW (the "computer program" identified by Dr. Beigi). Instead, Allen discloses that the user teaches PLOW to

purchase books at Widgico.com (Ex1014, FIG. 3) and Amazon.com (Ex1014, FIG.

6) and to perform MapQuest searches on “MapQuest.com”. Indeed, as Dr. Beigi recognizes, “[f]or the book buying task, the system learns how to execute the steps of buying a book” where “[T]he user [] instructed the system to Enter the title here” in “title entry box 30”² of Widgico. (Ex1003, ¶ 160, citing Ex1014, 12:12-14, 12:19-25):

The screenshot shows a web form titled "WIDGICO BOOK PURCHASE AUTHORIZATION FORM". It has three input fields: "Title:" containing the text "The Glass Castle", "Author:", and "Price:". A cursor, indicated by a line and the number "18", is at the end of the "Title:" field. Another line and the number "12" point to the "Price:" field. A "SUBMIT" button is at the bottom.

(Ex1014, Fig. 3).

242. Dr. Beigi implicitly (if not explicitly) recognizes in IPR2024-00065, that PLOW is not a target system, as he does not attempt to read that the element on

² Allen does not label in FIG. 3 the “title entry box 30”, but Allen makes it clear that “movable cursor 18” (which is labelled in FIG. 3) is pointing “to title entry box 30”, and that the “desired book title (‘the Glass Castle’)” is typed in “title entry box 30”. (Ex1014, 6:32-39).

PLOW in his analysis of U.S. Patent No. 11,558,317. (IPR2024-00065, Ex1003, ¶¶ 170, 171, 181).

243. I note that at his deposition, Dr. Beigi confirmed that he is not asserting that Widgico is the “computer program” for purposes of his analysis. (Ex2003, 261:23-11; 264:8-17).

244. In view of the above, Dr. Beigi has not identified a “computer program” (a target system) with “a displayed user interface” with which the automation process performs the “sequence of interactions”. His analysis thus fails for all of the challenged claims of the ’664 Patent.

3. Claim 2 – “wherein the natural language interface is a chat bot service operable to converse with the user in natural language”

Claim 3, Claim 20 – “wherein the automation process is a parameterized automation process having a parameter, wherein the chat bot service is configured to prompt the user to provide a value for the parameter, wherein said executing comprises utilizing the value of the parameter”

245. In addition to the reasons set forth above with respect to Claim 1 from which Claims 2 and 3 (via Claim 2) depend, and Claim 19, from which Claim 20 depends, each of Claims 2, 3 and 20 require that the “natural language interface” is a “chat bot service”. (Ex1001, Claims 2-3, 25:40-47; Claim 20, 27:33-38).

246. As pertinent here, Claim 2 requires that the natural language interface is a chat bot service. As detailed in the ’664 Patent, the chat bot service is a third party

service such as WHATSAPP™, and SLACK™ and TELEGRAM™, and other similar third party messaging services. (Ex1001, 13:24-32; 8:24-27).

247. Dr. Beigi in his analysis fails to identify any “chat bot service” being disclosed in Allen. (Ex1003, ¶¶150-242). Instead, he relies upon the “speech interface display 20” as a natural language interface. (Ex1003, ¶¶ 154, 169 (markup of Ex1014, Fig. 3)).

248. Dr. Beigi does not provide any evidence or explanation, in the context of either claim 2 or claim 3, to show that the speech interface display 20 disclosed in Allen is a “chat-bot service” such as a third-party service. To the contrary, as he makes clear in his deposition, “Box 20 is Allen’s proprietary chat engine”. (Ex2003, 306:9-11).

249. Further, with respect to the combination of Allen and Ben-Itzhak in IPR-2023-01379, he admits that Allen would have to be modified to have “the conversation agent, natural language part -- natural language interface [to be] implemented by a third-party messaging service such as Kik, Telegram, Wipr, WhatsApp, Apple Messages” (Ex2003, 311:18-312:18). This only reinforces that Allen does not disclose use a chat-bot service.

250. Nor would such a combination make any since, given that the proposed “third-party messaging service[s] such as Kik, Telegram, Wipr, WhatsApp, AppleMessage” would not be enabled for training the system of Allen and defeat the

specialized system of Allen using ontological properties. It would also not “expand [Allen’s] realm” to other customers as Dr. Beigi suggested during his deposition (Ex2003, 303:8-13, 312:5-7), since Allen’s overall interface would still be used in Dr. Beigi’s proposed combination.

251. Accordingly, since Dr. Beigi fails to even identify a “chat-bot service”, he fails to show that Claims 2 and 3 are anticipated by or rendered obvious by Allen.

4. Claim 4, Claim 21– “wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more input fields, wherein said utilizing the displayed user interface comprises inputting data received by the natural language interface to the one or more input fields.”

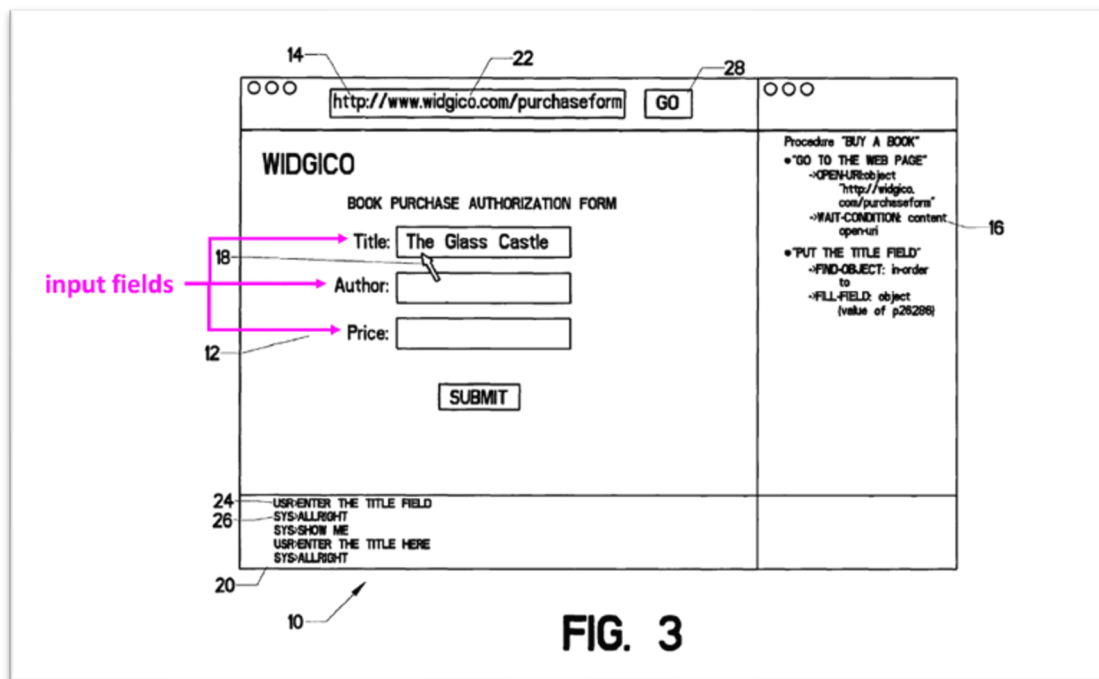
Claim 5, Claim 22 – “wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more interactable GUI elements, wherein said utilizing the displayed user interface comprises performing interface interaction with the one or more interactable GUI elements”

252. Claims 4 (dependent on Claim 1) and 21 (dependent on Claim 19) require that “the displayed user interface is a Graphical User Interface **comprising one or more input fields**” and that “utilizing the displayed user interface comprises inputting data received by the natural language interface to the one or more input fields.” (Ex1001, Claim 4, 25:48-52; Claim 21, 27:39-44) (emphasis added).

253. Claims 5 (dependent on Claim 1) and Claim 22 (dependent on Claim 19) require, in close parallel with Claims 4 and 21, that “the displayed user interface is a Graphical User Interface (GUI) **comprising one or more interactable GUI**

elements, wherein said utilizing the displayed user interface comprises **performing interface interaction with the one or more interactable GUI elements**". (Ex1001, Claim 5, 25:53-57; Claim 22, 27:45-50) (emphasis added).

254. With respect to Claim 4, Dr. Beigi identifies the "one or more input fields, such as title, author, and price input fields (title entry box, author entry box...)" (Ex1003, ¶ 173) as shown in the annotated version of FIG. 3:

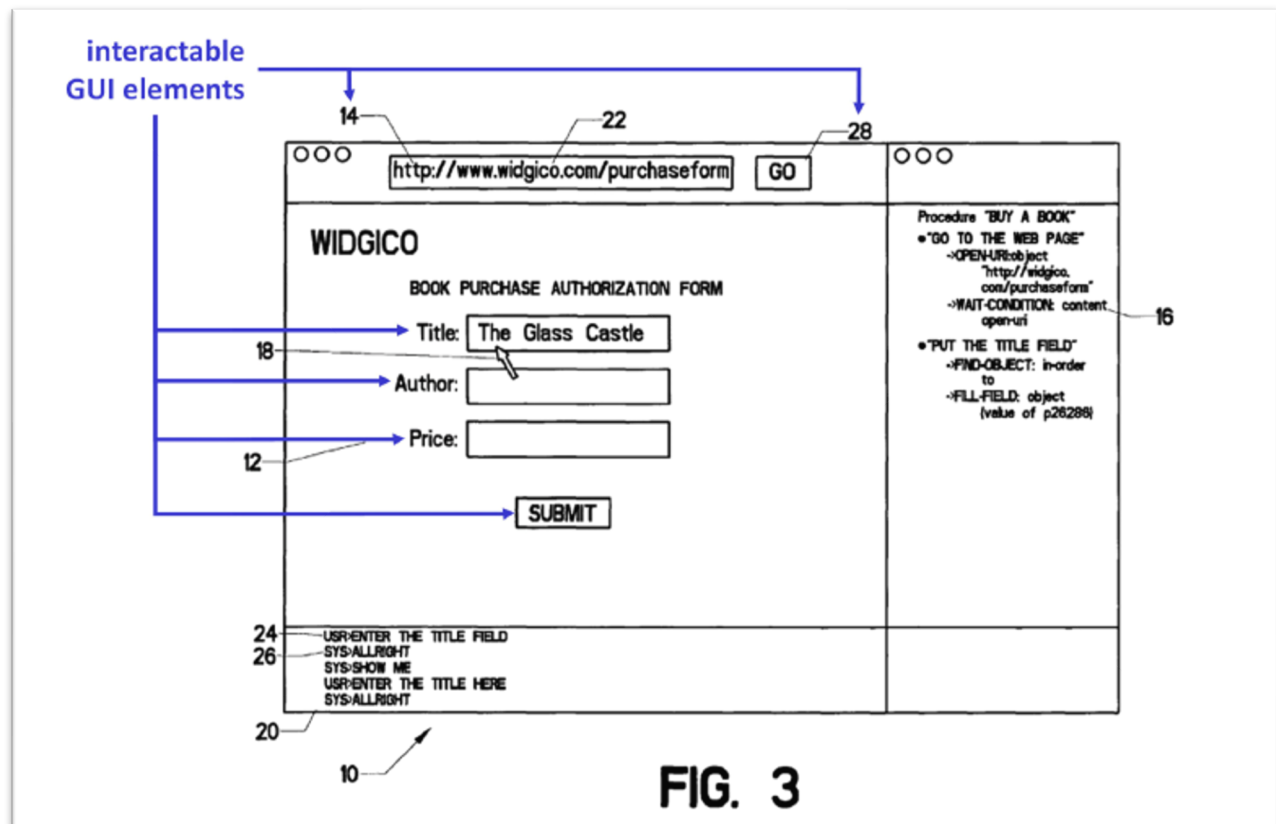


(Ex1003, ¶ 173, annotating FIG. 3 of Ex1014).

255. The issue with Dr. Beigi's analysis is that it is not consistent with his analysis in FIG. 1. As discussed with respect to Claim 1, he identifies the GUI 10 as the "displayed user interface", and PLOW as the "computer program", *see* par. 238, *supra*. Thus, in order to meet the claim element, Dr. Beigi must show an input field

of GUI 10 of PLOW. He has not done so, instead he is pointing to input fields in Widgico.com (“Title”, “Author”, Price”). (Ex1003, ¶ 173).

256. The same issue applies to Dr. Beigi’s analysis with respect to Claims 5 and 22, where he provides another annotation of FIG. 3 which identifies “the one or more interactable GUI elements” as including “URI entry box 14”, “input fields”, ““Submit UI’ button”, ““GO’ transmit button 28” (Ex1003, ¶ 174) as shown below:



(Ex1003, ¶ 175, annotating FIG. 3 of Ex1014).

257. Because the “one or more interactable GUI elements” identified by Dr. Beigi include the “Title”, “Author”, and “Price” input fields, as well as the “Submit” button, which are from the displayed user interface of Widgico, in my opinion, a

POSITA as of November 5, 2017 would understand that the one or more interactable GUI elements are not all part of GUI 10 of PLOW, and thus Dr. Beigi fails to show that Allen discloses or renders obvious Claims 5 and 22.

5. Claim 8 – “[a] wherein said determining comprises selecting the automation process from a database retaining a plurality of user-defined automation processes; [b] wherein the database is updatable by one or more users via a Graphical User Interface (GUI) capable of defining new automation processes and updating existing automation processes retained therein.”

258. Claim 8 requires that “determining” an automation process comprises “selecting the automation process from a database” which is “updatable by one or more users via a Graphical User Interface capable of defining new processes and updating existing automation processes” and which “retain[s] a plurality of user-defined automation processes”. (Ex1001, 26:6-12).

259. Dr. Beigi argues that Allen discloses a “task database” which includes a plurality of user-defined automation process. (Ex1003, ¶ 185). However, Dr. Beigi then fails to identify any disclosure in Allen that supports his contention that the tasks stored in the task database **can be updated after they are defined**. (Ex1003, ¶¶ 187-188).

260. Rather, the disclosure relied on by Dr. Beigi relates directly to the process of defining an automated process, not updating an existing one. In particular, Dr. Beigi points to Allen’s disclosure “[a]s an example, the intent recognition module

may discern the intent to add a new step to the process of buying a book . . .” (Ex1003, ¶ 188, citing Ex1014, 8:18-20) to argue that “[t]he book buying task is an existing automation process retained in the database, so Allen discloses updating existing automation processes retained in the database” (Ex1003, ¶ 188). However, the passage Dr. Beigi cites does not demonstrate an “example” of updating **an existing task** in PLOW, but rather of how the intent recognition module works **during the learning process**. Indeed, the example of “adding a new step” continues, “...such as going to a particular web page”, which is the first step that the user teaches PLOW in the process of buying a book. (Ex1014, 8:18-21; FIG. 2, 5:63-6-3). As Allen notes, “[g]iven the user utterance ‘Go this web page,’ the intent recognition module understands that the user is attempt to **add a step into the task currently being learned**.” (Ex1014, 8:5-7).

261. In my opinion, a POSITA as of November 5, 2017 would understand that “add[ing] a step into the task currently being learned” constitutes “defining new automation processes” but does not constitute “updating existing automation processes retained” in the PLOW task database. Since Dr. Beigi only identifies a step in defining a new automation process, not updating an existing one, he fails to show that Allen anticipates Claim 8.

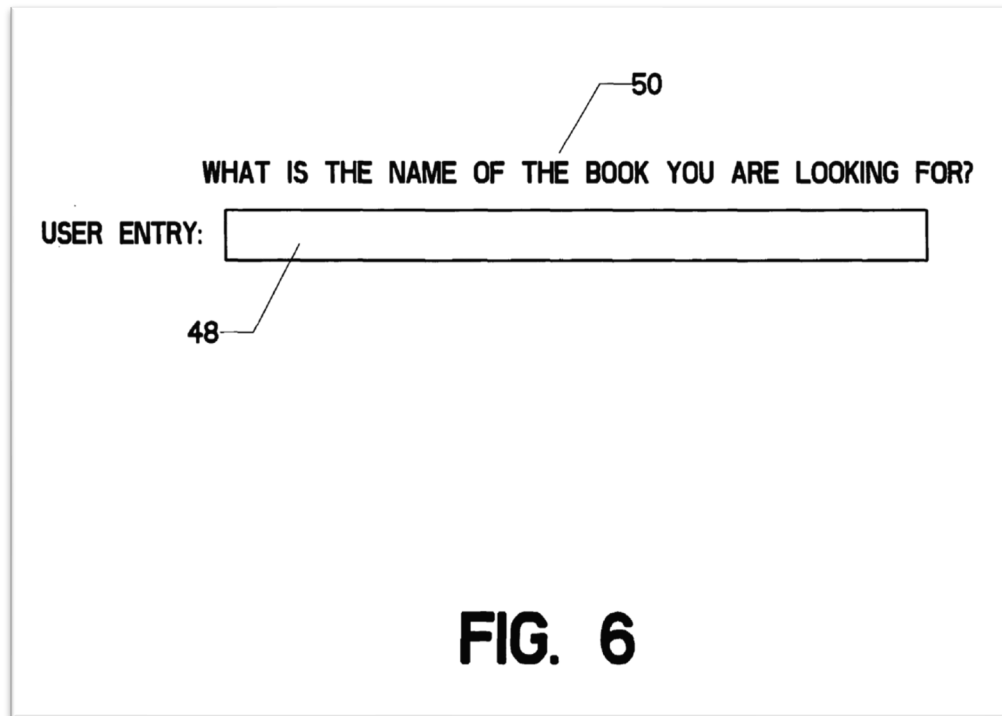
6. Claim 14 – [a] “wherein said determining the automation process comprises: selecting the sequence of interactions from a plurality of sequences based on the first natural language input;

and [b] determining a parameter to be used in an interaction of the sequence of interactions based on the second natural language input.”

262. Claim 14 requires that [a] “determining the automation process comprises: selecting the sequence of interactions from a plurality of sequences based on the first natural language input; and [b] **determining a parameter to be used in an interaction of the sequence of interactions based on the second natural language input.”**

263. Dr. Beigi asserts that the sequence of interactions in Allen is determined by the user stating “I want to buy a book” (the asserted first natural language input), and “submitting the title of the book” (the asserted second natural language input) is “an interaction of the sequence of interactions based on the second natural language input” (Ex1003, ¶¶ 192, 194).

264. Dr. Beigi’s analysis suffers from the same core problem as it does in claim 1. Claim 1 requires the “second natural language input” to be part of the “natural language conversation” of the “natural language interface”. (Ex1001, 25:15-23). As Dr. Beigi confirmed in his deposition, however, in Allen, “What is the title of the book?”, is presented to the user using a form like the one shown in FIG. 6 (Ex2003, 257:20-24):



(Ex1014, FIG. 6). As shown in FIG. 6, the user entry field in the form would be used to obtain the title of the book (and other information obtained by PLOW). As Dr. Beigi conceded, however, a form is not a natural language conversation. (*See* Ex2003, 60:24-61:3). And, it is not the same interface as the asserted natural language interface.

265. Accordingly, because Dr. Beigi fails to show that the “second natural language input” is part of the asserted conversation, he fails to show that Dependent Claim 14, which requires “determining a parameter to be used in an interaction of the sequence of interactions **based on the second natural language input**” is met.

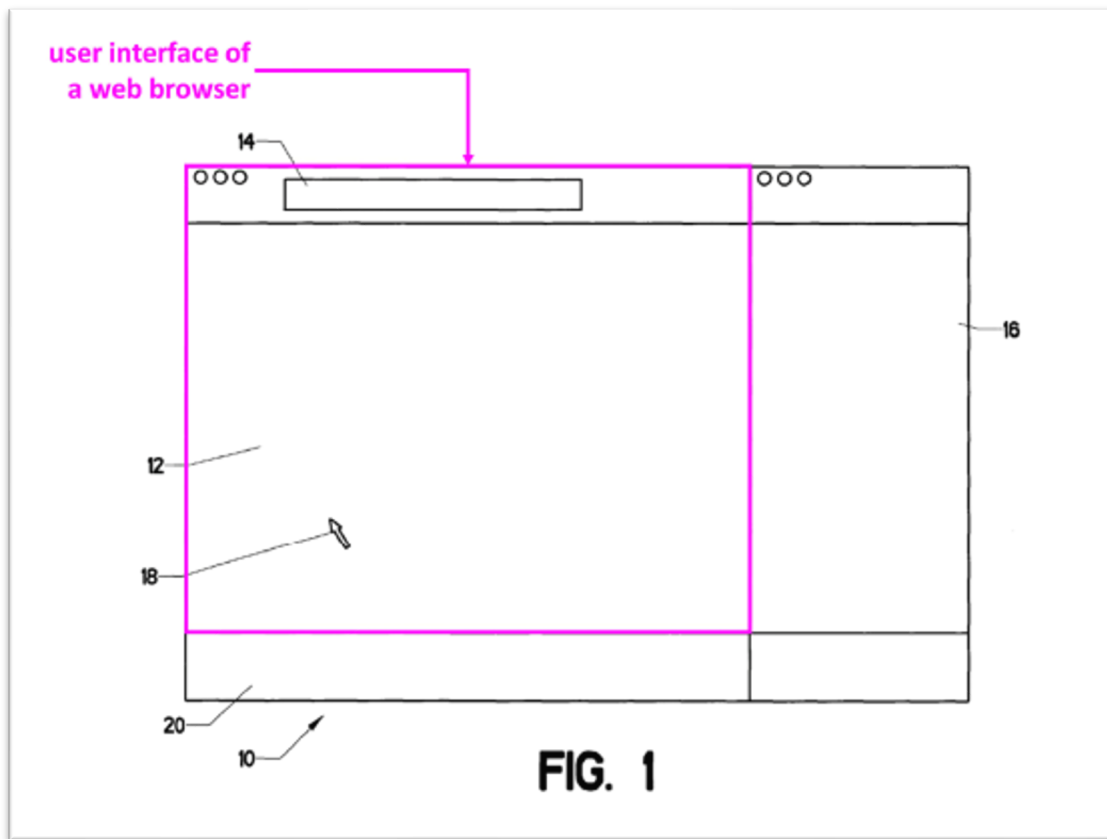
7. Claim 18, Claim 28, Claim 33 – “wherein the displayed user interface of the computer program is a user interface of a web browser, wherein said executing the automation process comprises

activating the web browser to cause the displayed user interface to be displayed, wherein the sequence of interactions is performed with respect to the user interface of the web browser.”

266. Claim 15 requires that “the displayed user interface of the computer program is **displayed prior to the natural language conversation between the natural language interface and the user.**” (Ex1001, 26:56-59). Dr. Beigi argues this element is met because “[s]ince browser display 12 is part of GUI 10 and GUI 10 is displayed prior to the natural language conversation, browser display 12 is displayed prior to the natural language conversation. Thus, **the displayed UI is displayed prior to the natural language conversation**, and Allen discloses claim 15.” (Ex1003, ¶ 197).

267. Nevertheless, Dr. Beigi adopts an incomplete and contradictory read with respect to claim 18 (dependent on Claim 1), Claim 28 (dependent on Claim 19), and Claim 33 (dependent on Claim 29), which all require that “executing the automation process” (which occurs after the conversation takes place) “comprises activating the web browser **to cause the displayed user interface to be displayed...**” (Ex1001, Claim 18, 26:65-27:4; Claim 28, 28:10-16, Claim 33, 26:53-59).

268. Dr. Beigi again points to GUI 10 and browser displayed 12 as the displayed user interface:



(Ex1003, ¶ 200).

269. While Dr. Beigi asserts that “causing the web browser to navigate to the URI means the web browser is activated”, Dr. Beigi fails to show that navigating to a webpage “**cause[s] the displayed user interface to be displayed**” (i.e., causes the browser itself to be displayed). (Ex1003, ¶201). Instead, Dr. Beigi merely states that “[t]he GUI 10 includes a browser 12 for displaying a web page.” (*Id.*, ¶201).

270. Moreover, as discussed, in Dr. Beigi’s read of Claim 15, the GUI 10 and browser 12 are “**displayed prior to the natural language conversation.**” (Ex1003, ¶ 197). Accordingly, Dr. Beigi fails to show that Allen discloses that “the automation

process comprises activating the web browser to cause the displayed user to be de displayed” as required by Claims 18, 28, and 33.

8. Dependents Claims 2-8, 12-16 and 18 (for Claim 1), Claims 20-23, 25-26 and 28 (for Claim 19) and Claim 31 and 33 (for Claim 29) are Also Not Obvious For At Least The Same Reason as Claims 1, 19 and 29

271. I understand that to the extent a claim is found not to be anticipated or rendered obvious by a particular reference or combination of reference, then claims which depend from such claim would also not be anticipated or rendered obvious.

272. With respect to each of the dependent claims in Ground 1, to the extent that Allen does not anticipate or render obvious Claims 1, 19 and 29, then by definition it also does not anticipate nor render obvious their dependent claims, i.e., Claims 2-8, 12-16, and 18 (for Claim 1), Claims 20-23, 25-26 and 28 (for Claim 19) and Claim 31 and 33 (for Claim 29).

C. GROUND 3: Allen (Ex1014) and Dayanandan (Ex1015) do not render obvious Claim 9 of the '664 Patent

273. In support of Ground 3 of the Petition, Dr. Beigi asserts Claim 9 of the '664 Patent is rendered obvious by U.S. Patent No. 10,838,699, to Dayanandan et al. (“Dayanandan”, Ex1015) (Petition at 58-62; Ex1003, ¶¶ 230-242).

274. As I discuss below, not only does Dr. Beigi’s proposed combination fail to teach the claim elements, but Dayanandan is not analogous art to the '644 Patent and a POSITA would not have been motivated to combine the two.

1. Summary of Dayanandan

275. Dayanandan, as Dr. Beigi recognizes, is directed towards “automating application development” (Ex1003, ¶ 230, citing Ex1015, Abstract). Dayanandan is a continuation-in-part of a non-provisional patent application titled “GENERATING A GRAPHICAL USER INTERFACE MODEL FROM AN IMAGE”, and it also claims priority from an Indian patent application entitled “GENERATING MAPPINGS BETWEEN USER INTERFACE COMPONENTS AND DATA OBJECTS” (Ex1015, 1:8-24), which focuses on the ability to generate an application model based on images and pre-defined data objects. Dayanandan teaches doing so based on “requirements information” which can include “**mockup images** of GUI screens for the application, text information, and other information”, and then generating a model based on this requirements information. (Ex1015, Abstract). Dayanandan teaches that “[f]or a screen, the mapping of a data object to that screen

identifies a source data object from which is to be displayed by that screen” (Ex1015, 8:17-19). “Vector matching is used to determine the best match” (Ex1015, 22:15-16). Specifically, similarity score is computed between each data object vector and a GUI screen vector (Ex1003, 22:15-44).

2. Dayanandan is Not Analogous Art

276. I understand that, in order for a reference to be considered in an obviousness inquiry, the reference (here, Dayanandan, Ex1015), must be analogous art to the claimed invention. In other words, I understand that the asserted reference must either be from the same field of endeavor as the claimed invention, or reasonably pertinent to the problem faced by the invention. However, Dayanandan is neither in the same field of endeavor or reasonably pertinent to the problem faced in the '644 Patent.

277. In my opinion, a POSITA as of November 5, 2017 would have understood the claimed invention and Radhakrishnan to be in different fields, and would have understood that the problem to be solved by Radhakrishnan was very different from the problem to be solved by the claimed invention.

i. Dayanandan is directed to a different field of endeavor than the '664 Patent

278. In the first place, the claimed invention in the '664 Patent is directed to the method of determining and executing an automation process comprising a sequence of interactions based on natural language inputs received from a user from

a natural language interface. (Ex1001, Claim 1, 25:14-39, Claim 19, 27:5-32, Claim 29, 28:17-44).

279. As the '664 Patent explains, this provides a “technical solution” to the problems with “defining functionality of chatbots” and allowing “definition of the automation process [to] be defined by non-programmers” (Ex1001, 8:65-9:5).

One technical solution provided by the disclosed subject matter may be to use **a natural language interface to receive input from the user, and based thereon, select an automation process to be executed.** The automation process may be executed in a manner that manipulates the GUI of the target system, in a similar manner to the manner in which the user operates. As a result, definition of the automation process may be defined by non-programmers.

Defining the automation process based on performing actions in the GUI enables the automation process to perform any functionality that the user can perform, without relying on dedicated APIs and without requiring any line of code. The parameters of the conversation, as well as the flow of the automation process, may be defined using a point and click editor, or other user interface that can be used by any non-programmer users.

(Ex1001, 8:65-9:13) (emphasis added).

280. The '664 Patent assumes the existence of the target system, and avoids relying on its internal implementation, but rather utilizes its GUI when executing the automation process on the target system.

281. Dayanandan is in a different field than the claimed invention in the '664 Patent, and does not deal with automation processes at all. Instead, Dayanandan, in marked contrast, is directed towards “application development”. (Ex1015, Abstract). Rather than provide ways of invoking automation processes based on natural language input, Dayanandan is “related to application development, and more particularly, to techniques for automating the development of an application from requirements information for the application” (Ex1015, 2:10-14). Dayanandan does not relate to utilizing a pre-existing target system, but rather to the automating the development of a new target system based on given requirements.

282. Accordingly, in my opinion, a POSITA as of November 5, 2017 would understand that Dayanandan and the '644 Patent are not in the same field of endeavor.

ii. Dayanandan is not reasonably pertinent to the problems faced by the inventors of the '664 Patent claims

283. Nor is Dayanandan reasonably pertinent to the problems faced by the claims of the '664 Patent. As taught by the '664 Patent, its claims are meant to address difficulties relating to improving chatbots and automated processes, including by “simplify[ying] the end-user experience by collecting data from him and executing a predefined automation flow on the target system”, for example, by “implement[ing] a natural language interface, such as a text-based conversation, an

oral conversation, or the like”. (Ex1001, 8:4-8). There is no discussion in the ’664 Patent about using the claimed technology to develop applications.

284. Dayanandan does not provide disclosure which is pertinent to the problems sought to be addressed by the patented claims, but instead is oriented towards improving the “typical application development life cycle”. (Ex1015, 1:28-2:6). Indeed, the disclosure on finding a “similarity score” which Dr. Beigi refers to is in the context of application development, matching data object types to a GUI screen. (Ex1015, 21:21-22:59).

285. Accordingly, in my opinion, a POSITA as of November 5, 2017 would understand that the techniques disclosed by Dayanandan are not pertinent to the problems sought to be tackled in the ’664 Patent.

286. Finally, I note that while Dr. Beigi relies on Dayanandan to assert that the claims of the ’664 Patent are obvious, he provided no analysis in his report to suggest that Dayanandan is analogous art to the ’664 Patent or any other reasoning in his report to support the idea that a POSITA as of November 5, 2017 would have considered Dayanandan in addressing the problems addressed by the ’664 Patent.

287. Accordingly, in my opinion, because Dayanandan is in a distinct field from the ’664 Patent, and is not reasonably pertinent to the problems attempted to be solved by the ’664 Patent, it is non-analogous art to the ’664 Patent. Dr. Beigi’s

obviousness analysis which relies on Allen in combination with Dayanandan accordingly fails for this reason.

3. Claim 9 - [a] The method of claim 1, wherein the automation process defines an operation to be performed with respect to an element in the displayed user interface, wherein the automation process identifies the element based on a plurality of parameters of the element; [b] wherein said executing the automation process comprises identifying the element in the displayed user interface, [c] wherein said identifying the element comprises computing a similarity score for each element in the displayed user interface using the plurality of parameters of the element, and [d] selecting a selected element having a highest similarity score, wherein the highest similarity score is at least above a predetermined threshold.

288. Claim 9 requires that “the automation process identifies the element based on a plurality of parameters of the element” (9[a]), “said executing the automation process comprises identifying the element in the displayed user interface” (9[b]), and “said identifying the element comprises computing a similarity score for each element in the displayed user interface using the plurality of parameters of the element” (9[c]).

289. The elements discussed, as recognized by Dr. Beigi are GUI elements. (Ex1003, ¶¶232, 239-240). So, Claim 9 relates to comparing potential elements within a GUI to a target element with which the interaction is to be performed. This claim relates to the technical problem identified in the ’664 description:

Another technical problem may be to enable defining automation processes in a manner that enables them to be implemented even if changes are performed to the underlying platform. For example, it may be desired that the automation process will continue working even in the face of layout modifications of the front-end of the program or website. In some cases, it may be desired to be able to identify elements selected during the definition of the automation process during execution thereof. The identification may be a non-trivial task if no unique identifier exists, as may be the case in many instances. Still, it may be desired to be able to identify such element correctly so as to apply the actions defined by the automation process.

(Ex1001, 8:52-64).

290. The '664 patent elaborates on the proposed solution to this problem:

In some exemplary embodiments, the identification may be performed in a probabilistic manner. Each widget of the same target type appearing in the relevant screen of the GUI may be examined. Each of the parameters used for identifying the widget-of-interest is compared to the parameter of the examined widget and a similarity score may be computed. The examined widget having the highest similarity score may be determined to be the widget-of-interest.

(Ex1001, 10:33-40).

291. In contrast, Dayanandan never attempts to provide any solution to this problem and in fact is addressing a different issue, and is silent as to teaching or suggesting “wherein the automation process **identifies the element based on a**

plurality of parameters of the element; wherein said executing the automation process comprises **identifying the element in the displayed user interface,** wherein **said identifying the element comprises computing a similarity score for each element in the displayed user interface using the plurality of parameters of the element,** and [d] **selecting a selected element having a highest similarity score,** wherein the highest similarity score is at least above a predetermined threshold” as required by Claim 9.

292. In his analysis, Dr. Beigi never argues that Dayanandan teaches “said executing the automation process comprises identifying the element in the displayed user interface”, and instead relies on Allen for this element (Ex1003, ¶¶ 236-237).

293. Dr. Beigi also contends that Dayanandan completes Allen’s deficiency in teaching “wherein said identifying the element comprises computing a similarity score for each element in the displayed user interface using the plurality of parameters of the element” based on Dayanandan’s disclosure at EX1015, 22:33-38 (Ex1003, ¶239). Dr. Beigi explains:

The UI elements may not be similar in all aspects, so a POSITA would be motivated to represent all (or at least multiple) aspects of a UI element. Computing a similarity score is one way to represent multiple aspects of a UI element. Multiple parameters may be represented by computing a similarity score, as taught by Dayanandan. As discussed

for element 9[a], it would have been obvious to combine Allen and Dayanandan. Thus, Allen-Dayanandan renders obvious element 9[c].

(Ex1003, ¶240).

294. However, Dr. Beigi misreads Dayanandan's disclosure. Dayanandan teaches "a GUI screen for the application is determined based upon the requirements information for the application". (Ex1015, 19:24-27) This is done based on "[b]oth the image and text portions of the requirements information" (Ex1015, 19:25-28). "[I]nformation related to available data objects is accessed. The available data objects may include standard data objects provided by one or more applications [...] or may include customized data objects." (Ex1015, 20:53-57). Then, "a particular data object is identified to be mapped to the GUI screen determined [...] [T]he data object to be mapped to the GUI screen [can be identified using] a matching technique [that] is used to match features determined for the GUI screen from the requirements information to information accessed in 308 for the available data objects and to find the best fitting data object based upon the matching. The "best fit" data object is then mapped to the GUI screen." (Ex.1015, 21:51-60). Dayanandan explains this is done using "vector matching": "The screen vector may then be compared to available data object vectors to find a data object vector that is the closest match to the screen vector" (Ex1015, 22:33-35). Dayanandan explains explicitly that the two vectors involved are the screen vector, which "[represents] different aspects of the GUI

screen” (Ex1015, 22: 16-18), and the data object vector, which “represents different aspects of the data object” (Ex1015, 22:23-26).

295. Dr. Beigi confuses these teachings and erroneously assumes that Dayanandan teaches “data object vector” that represent GUI elements, and not abstract data objects. Dr. Beigi also misreads this aspect of Dayanandan and assumes that it compares elements to elements, while in fact it compares a data object with a potential screen. Dayanandan explains this is done to allow to “fetch the data to be displayed by the GUI screen from the data object” (Ex1015: 24:6-8).

296. In view of the above, it is clear that Dr. Beigi’s analysis is erroneous and that Allen and in view of Dayanandan fail to teach or suggest at least “the automation process identifies the element based on a plurality of parameters of the element; wherein said executing the automation process comprises identifying the element in the displayed user interface, wherein said identifying the element comprises computing a similarity score for each element in the displayed user interface using the plurality of parameters of the element, and selecting a selected element having a highest similarity score, wherein the highest similarity score is at least above a predetermined threshold”.

4. Dependent Claim 9 is Also Not Obvious For At Least The Same Reason as Claims 1,

297. I understand that to the extent a claim is found not to be anticipated or rendered obvious by a particular reference or combination of reference, then claims which depend from such claim would also not be anticipated or rendered obvious.

298. With respect to Claim 9, to the extent that Allen does not anticipate or render obvious Claims 1, then by definition it also does not render disclose or render obvious dependent Claim 9 in combination with Dayanandan. Accordingly, even if Dayanandan is considered to be analogous to the '664 Patent, in my opinion, a POSITA would understand that it does not render obvious Claim 9 of the '664 Patent.

D. GROUND 4: Krishnan (Ex1016/Ex1017) and Radhakrishnan (Ex1018) do not render obvious Claims 1-8, 12-14, 16, 18-23, 26, 28-29, 31 and 33 of the '664 Patent

299. In support of Ground 4 of the Petition, Dr. Beigi asserts that Claims 1-4, 6, 7, 9-12, 14, 16-18 of the '664 Patent are rendered obvious by U.S. Patent No. 10,839,798, to Krishnan et al. ("Krishnan", Ex1016) (and related references discussed below) and U.S. Patent No. 10,503,627, to Radhakrishnan et. al ("Radhakrishnan", Ex1018). (Pet. at 62-85; Ex1003, ¶¶ 243-327). For the reasons set forth herein, I disagree.

1. Summary of Krishnan

300. In support of Ground 4 of the Petition, Dr. Beigi also identifies U.S. Patent No. 10,839,798, to Krishnan et. al ("Krishnan", Ex1016), which was filed on January 30, 2018, after the priority date of the '646 Patent.

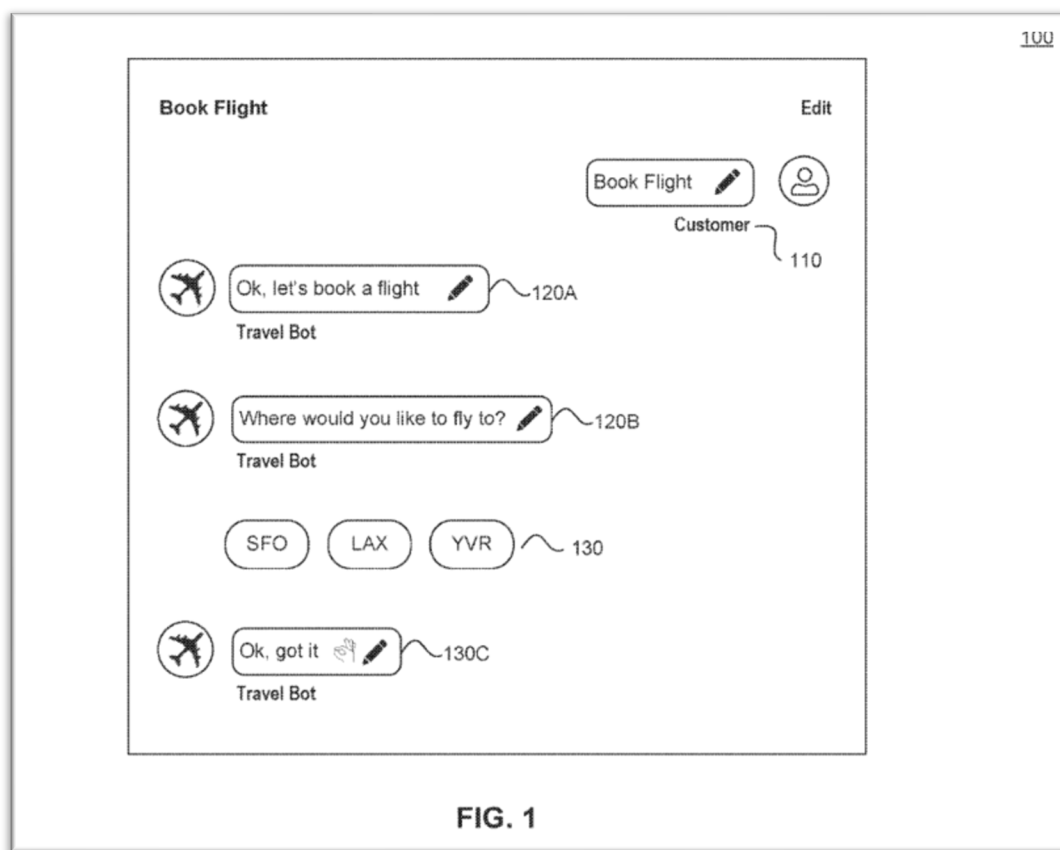
301. Krishnan claims priority to U.S. App. No. 62/581,550 ("'550 Application", Ex1017), which was filed on November 3, 2017. While Dr. Beigi sets forth what he asserts is support for the issued claims in Krishnan from the '550 Application (Ex1003, Table 1, at 136-139) as well as some specific subject matter. (Ex1003, Table 2, at 140-142). I understand that this analysis does not address the relevant question for this proceeding. Rather, I understand that to determine what portions of the issued patent (Ex1016) is prior art, the proper inquiry is whether a POSITA reading such passages would understand that the passages relied upon by

Dr. Beigi from Ex1016 were supported in the '550 Application (Ex1017). I understand if such material is not supported then it would not be considered prior art for purposes of this proceeding. Dr. Beigi does not appear to have performed the correct analysis. In my opinion, Dr. Beigi failure to provide the correct analysis is significant, as I discuss here, at least some of the key portions that Dr. Beigi relies upon, in my opinion, are not taught in the '550 Application, and thus would not constitute prior art for purposes of this IPR.

302. Most notably, the key passage from Krishnan (Ex1016, 2:7-11) which Dr. Beigi relies upon provides support for the alleged motivation to combine is absent from the provisional '550 Application. In particular, Dr. Beigi states that “Krishnan [] use[s] bots for the advantages that they offer: ‘greater convenience for users and lower costs for an organization (relative to having a live person interact with the user and handle the requests’” (Ex1003, ¶ 257, citing Ex1016, 2:5-11). However, the '550 Application contains no passage corresponding to Col 2, lines 7-11 of Krishnan, nor does Dr. Beigi assert that this passage is covered by the specific subject matter in the '550 Application. (*See, e.g.*, Ex1003, Table 2, at 140-142). Separately, as discussed below in paragraph 352, this alleged motivation to combine is based on an incomplete and commingled understanding of the belated teaching in Krishnan and Radhakrishnan.

303. As for what is supported by the provisional application, as Dr. Beigi notes, Krishnan generally discloses a visual chat bot builder which enables a chat bot to execute a selected dialog, including performing an action. (Ex1003, ¶ 244).

304. For example, as Dr. Beigi points out (Ex1003, ¶ 244), Krishnan discloses that a “Travel Bot” may enable a conversation with a customer “110” to book a flight, as shown in the interface of FIG. 1 of Krishnan:



(Ex1016, FIG. 1).

305. Additionally, while the '550 Application generally provides support for the idea that this dialog can be used to “request additional information from the user”

and “process[] the request to book the flight”, it does not, despite Dr. Beigi’s reliance (Ex1003, ¶ 249) on such disclosure, provide the specific examples of “dates of travel, seat preferences, and credit card information, and then processes the request to book the flight.” (*Compare* Ex1017, [0004] *with* Ex1016, 2:67-3:3).

306. Krishnan explains that the chatbot is used to provide “customer service” and teaches that the chatbot “serve[s] as an interface between the customer and one or more backend database, information, or other processing systems.” (Ex1016, 2:27-35; Ex1017, [0002]). In this passage, Krishnan is using the term “backend” (which does not include a GUI) as opposed to “frontend” or other similar term. In my opinion, a POSITA as of November 5, 2017 would understand the term “backend” to modify collectively the phrase “databases, information, or other processing systems”, which are associated with a chatbot, but not visible to a user of the chatbot. For example, in the context of the example given by FIG. 1, a POSITA as of November 5, 2017 would understand that the backend systems would enable the user to book a flight by, for example, changing values in databases relating to reservations and ticket availability, but would not display the operations associated with such changes to the user of the chatbot.

307. Moreover, in my opinion, a POSITA as of November 5, 2017 would also understand that the chatbot is tied to the backend systems; it either calls, or interacts with a program that calls, the information requested directly from the databases

without needing to interact using a displayed user interface. Further, in my opinion, a POSITA as of November 5, 2017 would understand since Krishnan has direct access to the backend databases etc., it would make no sense and be less efficient to access such system through a graphical user interface (as required in the patented claims at issue). Thus, given this direct integration with the backend, in my opinion, a POSITA would understand not only that there would be no reason to use automation processes that involve using the displayed user interface, since data can be manipulated directly in the backend by the chatbot, but it would in fact be undesirable as a more costly and less efficient means to update the database.

308. In short, Krishnan fails to teach an automated process that, when executed, uses a displayed user interface to perform a sequence of interactions with the displayed user interface of the computer program. Similarly, a POSITA as of November 5, 2017 would understand that it also fails to teach determining that automated process based upon inputs received via a natural language interface.

2. Summary of Radhakrishnan

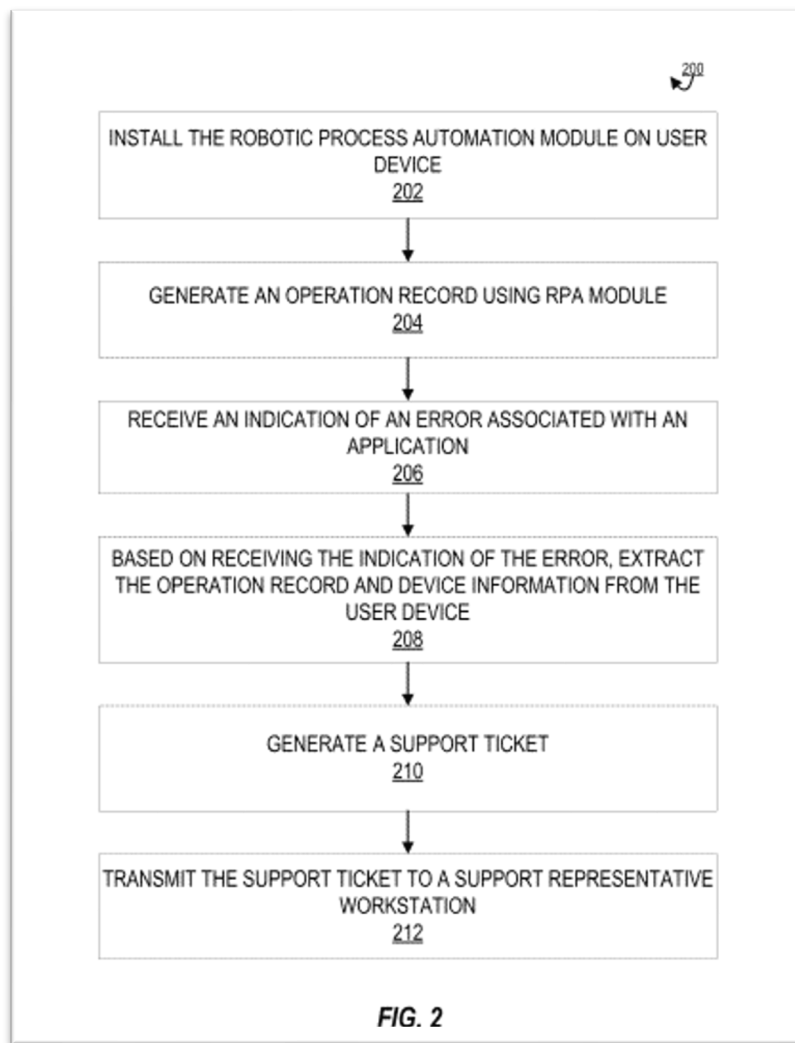
309. In further support of Ground 4 of the Petition, Dr. Beigi also identifies U.S. Patent No. 10,503,627, to Radhakrishnan et. al (“Radhakrishnan”, Ex1018), which is based on U.S. Application Serial No. 15/798,095 that was filed on Oct. 30, 2017, and issued on December 10, 2019.

310. I understand that although Radhakrishnan was published after the priority date for the '664 Patent of November 5, 2017, since the application it is based on was filed prior to that date, for purposes of this proceeding, it is considered prior art. I am not offering any opinions on the prior art status of Radhakrishnan, but assume for purposes of my analysis that it is prior art.

311. The abstract in Radhakrishnan, which Dr. Beigi relies upon, confirms that the invention is directed to “providing a robotic process automation” which “generate[s] an operation record for automatically generating and transmitting a diagnosis and correction request to a workstation.” (Ex1018, Abstract, cited and discussed in Ex1003, ¶ 245). As Dr. Beigi confirmed in his deposition, Radhakrishnan is “reporting” related to “error diagnosis and correction” (Ex2003, 267:24-268:5). Unlike the '664 Patent, the robotic process disclosed in Radhakrishnan would not, in the context of a system for booking a hotel or flight, be used to book the hotel or flight, but rather monitor whether there are system errors in how the user interface interacts with a user, simulate the user interactions in a virtual environment and seek to diagnose and correct such errors based on the simulation. (Cf. Ex2003, 269:19-270:18). This is a very different process than the claimed invention, which requires the automation process to “perform an **automation** of a sequence of interactions with a displayed user interface of the computer program” which is “**configured to be displayed on a screen**”, as well as

actually “**executing the automation process**” by “**utilizing the displayed user interface** of the computer program to perform the sequence of interactions.” (Ex1001, Claim 1, 25:24-39). In my opinion, a POSITA as of November 5, 2017 would not understand that the “robotic process automation” disclosed and discussed in Radhakrishnan is relevant to the claimed “automation process” in the ’664 Patent.

312. As shown in FIG. 2 of Radhakrishnan, relied upon by Dr. Beigi (Ex1003, p. 145), Radhakrishnan discloses using a robotic process automation (RPA) module to “generate an operation record” (step 204), which, after an “indication of an error associated with an application” is received (step 206), is “extract[ed] . . . from the user device” (step 208), and then used to “generate[] a support ticket” (step 210) which can be sent to a “support representative workstation” (step 212):



(Ex1018, FIG. 2 (Described at Ex1018, 9:57-12:46)).

313. Dr. Beigi asserts that the RPA bot disclosed is “an automation process configured to perform an automation of a sequence of interactions with a displayed UI of a computer program” (Ex1003, ¶ 256) that “are displayed on a screen”. (*Id.*, ¶ 260). Dr. Beigi’s assertion is misleading and inaccurate. The RPA bot in Radhakrishnan serves a different and irrelevant purposes. In my opinion, a POSITA as of November 5, 2017 would understand that the bot disclosed in Radhakrishnan,

as illustrated, is focused on capturing user action for error reporting, in contrast to performing automated processes using a displayed user interface. As Radhakrishnan explains, “[i]n general, the RPA module detects one or more operations of the user within an application on the user device” and “may operate **in the background** of another application without interrupting the normal operating routine of the user within an application.” (Ex1018, 10:33-34, 10:43-46). The fact that it can ‘mirror’ the user’s operations in a virtual environment to generate an “operation record” does not, despite Dr. Beigi’s assertions, mean that the RPA bot’s actions are displayed on a screen, or even act as an automation process to be determined to be invoked. As Radhakrishnan explains, “[i]n one example, the RPA module is configured in real-time on the user device while monitoring the user input operations of the user on the user device.” (Ex1018, 10:4-6).

314. In other words, a POSITA as of November 5, 2017 would understand that Radhakrishnan is directed towards capturing user input and execution of process for purposes of reporting an error, and not for the purposes of later performing them in response to a user command or conversation.

315. In this vein, while Radhakrishnan discloses that, “[i]n some embodiments, the RPA module interacts directly with a presentation layer of the application within a virtual environment”, (Ex1018, 11:41-43), Radhakrishnan does not disclose using a displayed user interface to perform a captured automated

process, only to generate an operation record. The “operation record” is simply a “list of executed commands or input data detected by the RPA module such as in a text file, .csv file, or the like” (Ex1018, 11:6-9), which is then “extracted” and used to “generate[] a support ticket”, not to perform the automated process. (Ex1018, 12:24-46).

316. In accordance with the above, and Paragraphs 335348 below, I note that Dr. Beigi fails to show that Radhakrishnan teaches performing an automated process using a displayed user interface, or a user interface that is configured to be displayed on a screen. Radhakrishnan likewise does not teach an automation process that can be selected from (i.e., as part of a “determining” step), since the automation process is created during the user’s activity. And, of course, Radhakrishnan discloses nothing regarding a conversation, including obtaining first and second natural language inputs, providing natural language feedback, or determining an automation process based on the natural language feedback. Indeed, the whole point of Radhakrishnan is that the RPA module is not intended to be invoked in response to particular user commands or conversations, but that it was always active in the background, in order to capture errors in automated processes as they occurred, without needing to be invoked first.

317. In short, Radhakrishnan only teaches capturing an automated process for use in error detection and correction, not for invocation by a conversation using natural language inputs obtained during the conversation.

3. Krishnan and Radhakrishnan do not disclose or render obvious Claims 1, 11 or 18 (and by extension their dependent claims)

318. Dr. Beigi asserts Krishnan (Ex1016) and Radhakrishnan (Ex1018) , render obvious Claims 1, 11 and 18 of the '664 Patent. (Ex1003, ¶¶242-267, 277-285, 290-301). I disagree.

319. In particular, Dr. Beigi offers Krishnan for its disclosure relating to using a “chatbot to ‘provide customer service to users’” and is using Radhakrishnan for its disclosure related to using an “RPA bot that helps diagnose computer software-related errors . . .” (Ex1003, ¶ 257). As Dr. Beigi explains, “[a] POSITA would have been motivated to fulfil [Krishnan’s] customer service request by an RPA bot” (Ex1003, ¶ 259). In short, Dr. Beigi appears to suggest combining the chatbot of Krishnan with the RPA module disclosed by Radhakrishnan.

320. First, in my opinion, a POSITA as of November 5, 2017, would have understood that Radhakrishnan relates to a different field of endeavor than the '664 Patent and is not reasonably pertinent to problems addressed in the '664 Patent. As such, in my opinion, a POSITA as of November 5, 2017 would not conclude that

Radhakrishnan is analogous art, and thus, a POSITA would have no reason to look at Radhakrishnan. (*See* pars. 324-334, *infra*).

321. Second, Dr. Beigi's proposed combination is not well-defined and would not meet the limitations of the '664 Patent claims. Specifically, Dr. Beigi asserts "[a] POSITA would have been motivated to fulfil [Krishnan's] customer service request by an RPA bot" (Ex1003, ¶ 259). Thus, I understand that Dr. Beigi appears to suggest combining the chatbot of Krishnan with the RPA module disclosed by Radhakrishnan. I note that Dr. Beigi does not clearly identify what proposed modification he would make to Krishnan using Radhakrishnan. Rather, in the context of each element, he merely cites passages of disclosure in each, and then has a general (and I submit unsupported) conclusion. (Ex1003, ¶¶ 246-267).

322. In my opinion, a POSITA as of November 5, 2017 would understand that at best a combination of Krishnan's "customer service request" with Radhakrishnan's teachings about "RPA bot[s]" as Dr. Beigi proposes (Ex1003, ¶ 259) would merely have the same conversation as implemented in Krishnan (Fig. 3) being monitored by the RPA module of Radhakrishnan to determine if there are system errors, with user activity being simulated in parallel in a virtual environment by an RPA module. As discussed herein, even if Radhakrishnan were considered analogous art for purposes of the '664 Patent (which it is not, as I discuss in pars. 324-334, *infra*), the combination would not teach or suggest obtaining a second

natural language input (elements [a], [b]) or making a determination to implement, and implementing, an automation process which performs a series of interactions with a GUI and is displayed on a screen (elements [c]/[d]/[f]). As discussed herein, the combination would not fill the large gaps in Krishnan's disclosure, putting aside the non-analogous nature of Radhakrishnan to the problems being addressed by the '664 Patent. (*See* pars. 335-348, *infra*).

323. Finally, Dr. Beigi has not established a proper motivation to combine Krishnan and Radhakrishnan in relevant manner. His proposed motivations make no sense. (*See* pars. 350-354, *infra*).

(a) Radhakrishnan is Non-Analogous Art with Respect to the Claimed Invention

324. I understand that, in order for a reference to be considered in an obviousness inquiry, the reference (here, Radhakrishnan, Ex1018), must be analogous art to the claimed invention. In particular, Dr. Beigi needs to establish that Radhakrishnan (Ex1018) must either be from the same field of endeavor as the claimed invention of the '664 Patent, or reasonably pertinent to the problem faced by the invention of the '664 Patent.

325. In my opinion, a POSITA as of November 5, 2017 would have understood the claimed invention and Radhakrishnan to be in different fields, and would have understood that the problem to be solved by Radhakrishnan was very different from the problem to be solved by the claimed invention. Since neither is

the case here, in my opinion, a POSITA as of November 5, 2018 would not have considered Radhakrishnan (Ex1018) analogous art to the claimed invention of the '664 Patent.

i. Radhakrishnan is directed to a different field of endeavor than the '664 Patent

326. In the first place, the claimed invention in the '664 Patent is directed to the method of determining and executing an automation process comprising a sequence of interactions based on natural language inputs received from a user from a natural language interface. (Ex1001, Claim 1, 25:14-39, Claim 19, 27:5-32, Claim 29, 28:17-44).

327. In particular, the '664 Patent claims “[o]ne technical solution” of using **“a natural language interface to receive input from the user, and based thereon, select an automation process to be executed”** and “[t]he automation process may be executed in a manner that manipulates the GUI of the target system, in a similar manner to the manner in which the user operates.” (Ex1001, 8:65-9:5).

328. Radhakrishnan is in a different field than the claimed invention in the '664 Patent. Rather than provide ways of invoking automation processes based on natural language input, as Dr. Beigi recognizes (Ex1003, ¶ 245), Radhakrishnan is “directed to providing a robotic process automation enabled **file diagnosis and correction.**” (Ex1018, Abstract; *see also* Ex1018, 6:43-61 (providing an “automated

error diagnosis and correction system and environment” (FIG. 1) and flows “for automated error diagnoses and correction” (FIGs. 2 and 3)).

329. Indeed, Radhakrishnan sought to overcome problems specifically relating to diagnosis of system problems, not gathering information in a natural language conversation to implement an automated process:

With an increasing dependence on technology, computer systems are relied upon to complete various tasks and increase user and/or process efficiency. However, difficulties such as program crashes, file corruption, and operating errors can present themselves and interrupt typical operation of a system or device. Further these errors can be extremely technical in nature requiring expert knowledge or specialized tools outside the realm of a typical user in order to repair. Due to the complex nature of computer system and device errors and the level of technical detail required for proper correction, a tool for efficient diagnosis and rectification of said errors is required.

(Ex1018, 1:7-18).

330. Accordingly, in my opinion, a POSITA as of November 5, 2017 would understand that Radhakrishnan and the '664 Patent are not in the same field of endeavor.

ii. Radhakrishnan is not reasonably pertinent to the problems faced by the inventors of the '644 Patent claims

331. Nor is Radhakrishnan reasonably pertinent to the problems faced by the claims of the '664 Patent. As taught by the '664 Patent, its claims are meant to address difficulties relating to improving chatbots and automated processes, including by “simplify[ying] the end-user experience by collecting data from him and executing a predefined automation flow on the target system”, for example, by “implement[ing] a natural language interface, such as a text-based conversation, an oral conversation, or the like”. (Ex1001, 8:4-8). There is no discussion in the '664 Patent about using the claimed technology to diagnose system problems that occur during operation by a user.

332. Radhakrishnan does not provide disclosure which is pertinent to the problems sought to be addressed by the patented claims, which revolve around invoking automated processes using a natural language interface. Instead, as discussed, Radhakrishnan is focused on providing “a tool for efficient diagnosis and rectification” of computer errors. (Ex1018, 1:17-18). Indeed, Radhakrishnan does not implement an automation process according to information provided from a user. Dr. Beigi also agreed during his deposition that “Radhakrishnan does not address chatbots” and that “Radhakrishnan does not address automation processes that would be invoked by a chatbot”. (Ex2003, 278:15-24). Accordingly, in my opinion,

a POSITA as of November 5, 2017 would understand that the techniques disclosed by Radhakrishnan are not pertinent to the problems sought to be tackled in the '664 Patent.

333. Finally, I note that while Dr. Beigi relies on Radhakrishnan to assert that the claims of the '664 Patent are obvious, he provides no analysis to suggest that Radhakrishnan is analogous art to the '664 Patent or any other reasoning to support the idea that a POSITA as of November 5, 2017 would have considered Radhakrishnan in addressing the problems addressed by the '664 Patent.

334. Accordingly, in my opinion, because Radhakrishnan is in a distinct field from the '664 Patent, and is not reasonably pertinent to the problems attempted to be solved by the '664 Patent, it is non-analogous art to the '664 Patent. Dr. Beigi's obviousness analysis which relies on Krishnan in combination with Radhakrishnan accordingly fails for this reason.

(b) Neither Krishnan nor Radhakrishnan, either Alone or in Combination, Teach or Suggest Using a Displayed User Interface of a Computer Program to Simulate a Sequence of Interactions and Execute a Functionality of the Computer Program

335. A review of Dr. Beigi's analysis of the independent claims also reflects that he was not able to identify any teachings in either Krishnan or Radhakrishnan that teach:

- A “natural language conversation” with two “natural language input[s]” as required by elements [a] and [b]; or
- “executing” an “automation process configured to perform an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions with the displayed user interface of the computer program” by “utilizing the displayed user interface of the computer program to perform the sequence of interactions” as required by elements [c] and [f] of Claims 1, 19 and 29. (Ex1001, Claim 1, 25:14-39; Claim 19, 27:5-32; Claim 29, 17-43).

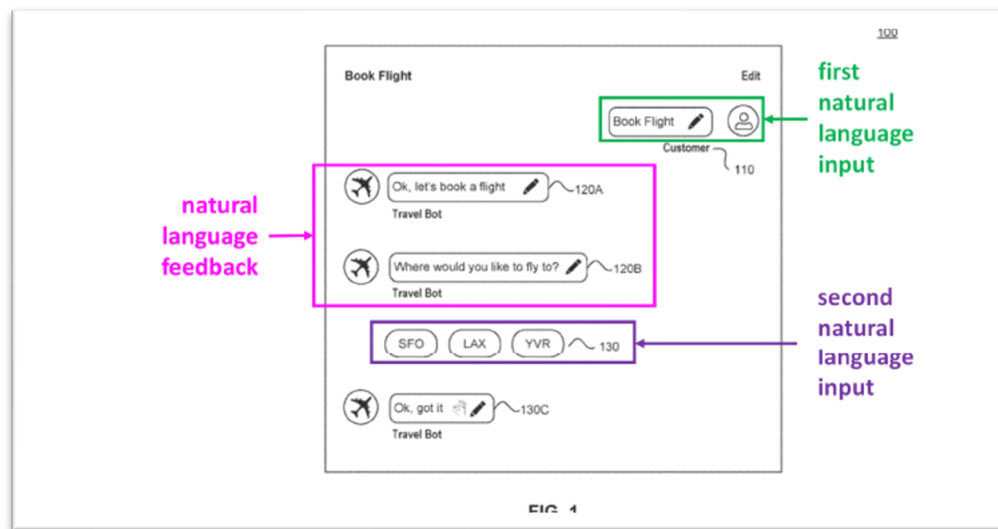
336. Accordingly, as I discuss below, this means that Dr. Beigi’s combination fails to teach the elements of the claims.

i. Element [a] – “using a natural language interface, receiving input from a user as part of a natural language conversation between the natural language interface and the user,”
Element [b] “wherein the natural language conversation comprises a first natural language input from the user, a natural language feedback on the first natural language input from the natural language interface, and a second natural language input from the user in response to the natural language feedback:”

337. Elements [a]/[b] of Claims 1, 19, and 29 require that the natural language interface “receives input from a user as part of a natural language conversation” which “comprises a first natural language input from the user, a natural language

feedback on the first natural language input from the natural language interface, and a second natural language input from the user in response to the natural language feedback.” (Ex1001, Claim 1, 25:15-23; Claim 19, 27:8-16; Claim 29, 28:19-27).

338. Dr. Beigi asserts that Krishnan teaches this natural language conversation, with a “first natural language input” and a “second natural language input” as shown in FIG. 1 of Krishnan:



(Ex1003, ¶ 251, annotating FIG. 1 of Krishnan, Ex1016).

339. The issue with Dr. Beigi’s read is that, even assuming that “Book Flight” (which is identified as a “command” in Krishnan, Ex1016, 2:62) is a “first natural language input”, Dr. Beigi fails to identify a proper “second natural language input.”

340. In my opinion, a POSITA as of November 5, 2017 would understand that presenting the user with the options “SFO” “LAX” and “YVR” is not a “second

natural language input” as required by the claims. Instead, as Krishnan explains, these are buttons which may be selected by the user:

In providing a response to the bot inquiry, the user may select one of the provided options for a destination 130 (e.g., by clicking on a button), and the chat bot may confirm the selection 130C.

(Ex1016, 3:3-7).

341. In my opinion, a POSITA as of November 5, 2017 would understand that “clicking on a button” is not a natural language input. Dr. Beigi gave a similar explanation during his deposition, where he contrasted a “chatbot” with a “form”. In his opinion, if “bots use buttons, then I would say it’s a form” and if “you click yes or no or you select something and then you say next ... that is just a form” as opposed to natural language. (Ex2003, 199:11-200:25; *id.*, 336:5-337:3 (“[L]ike I said, filling in a form is not human natural language unless the form is asking you to type in something that it would understand, which would be free form”).

342. Dr. Beigi offers no alternative beyond this Figure to show a “natural language conversation” with two “natural language inputs” (Ex1003, ¶¶ 251-252).

343. Thus, in my opinion, a POSITA as of November 5, 2017 would understand that the buttons identified by Dr. Beigi are not a “second natural language input” as Dr. Beigi asserts, and thus the read does not teach a conversation that

“comprises a first natural language input” and “a second natural language input” as required by elements [a]/[b] of Claims 1, 19 and 29.

ii. Element [c] – “determining, based on the first and second natural language inputs from the user, an automation process configured to perform an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions with the displayed user interface of the computer program,”

Element [d] – “wherein the user interface of the computer program is configured to be displayed on a screen”

Element [f] – “executing the automation process, wherein said executing comprises utilizing the displayed user interface of the computer program to perform the sequence of interactions.”

344. Elements [c]/[d]/[f] of claims 1, 19 and 29 require “determining” [c] and “executing” [f] an “automation process configured to perform an automation of a sequence of interactions” by “utilizing” [f] a “displayed user interface of a computer program” [c] & [f] which is “configured to be displayed on the screen” [d] and “to simulate user interactions with the displayed user interface of the computer program” [c]. (Ex1001, Claim 1[c]-[d], [f], 25:24-31, 36-39; 19[c]-[d], [f], 27:17-24, 29-32; and 29[c]-[d], [f], 28:28-36, 41-44).

345. To demonstrate “determining an automation process...”, Dr. Beigi points to Krishnan’s “flight booking task (automation process)” as if Krishnan taught using the conversation to invoke an automation process. (Ex1003, ¶¶ 253-254). But the “flight booking task” is not an automation in Krishnan in the same sense as the

“automation process” is in the ’644 Patent claims. Rather, in my opinion, a POSITA as of November 5, 2017 would understand Krishnan implements the flight booking task, as well as the other tasks it calls out, in the same way that it obtains information—by directly accessing “one or more backend databases or other information processing systems” and updating such “backend databases and other information processing systems.” (Ex1016, 2:33-35). This is a mere script execution and does not disclose invoking an “automation process” that uses a displayed user interface to simulate user activity and execute computer program functionality. It simply discloses another way of gathering information from a user to carry out system functionality (flight booking).

346. Setting aside whether Krishnan even determines an automated process, Dr. Beigi goes on to acknowledge that “Krishnan is silent regarding whether or not its automation process is configured to perform an automation of a sequence of interactions with a displayed UI” (Ex1003, ¶ 255) and attempts to use Radhakrishnan to fill this, and related gaps between Krishnan and the claims of the ’664 Patent. (Ex1003, ¶¶ 256-267).

347. Not only does Krishnan, by pointing to the use of “backend” systems, teach against using a displayed UI on a screen, but Radhakrishnan does not teach the remaining elements of Claims 1, 19 or 29. While, as Dr. Beigi points out, Radhakrishnan discusses “simulat[ing] user operations with the user device”

(Ex1003, ¶ 256), it does so in order to “generate an operation record for automatically generating and transmitting a diagnosis” (Ex1018, Abstract), not in order to perform an automation process again or to later be invoked by a natural language conversation. Instead, the end use of the recorded operations is for inclusion in a “support ticket”. (Ex1018, 12:37-46).

348. By the same token, Dr. Beigi does not show that the RPA module in Radhakrishnan is “configured to be displayed on a screen” [d] or comprises automated processes to be executed using the displayed user interface [f], as the claims require. (Ex1001, Claim 1 [d]&[f], 25:30-31, 36-39, 19[d]&[f], 27:23-24, 29-32, 29 [d]&[f], 28:35-36, 41-44). To show these elements are met, Dr. Beigi cites to the disclosure in Radhakrishnan which explains how the RPA module can “mimic” the user activity and “may act as a mirror of the actual user operations” (Ex1003, ¶¶ 260, 266, citing Ex1018, 5:49-56, 11:29-36). Notably, while Dr. Beigi concludes that “[M]irroring means the RPA module are performing the same operations as the use’s operations, which means the RPA module’s operations are displayed on a screen” (Ex1003, ¶ 260), this is not supported by Radhakrishnan, which goes on to explain that the RPA module works “within a virtual environment”:

In some embodiments, the RPA module interacts directly with a presentation layer of the application **within a virtual environment**. In this way, the RPA module can execute an operation while simulating a

user interaction with the application. In some embodiments, the RPA module may transmit an input signal to the application that simulates a user interaction with a user interface.

(Ex1018, 11:41-47).

349. Accordingly, in my opinion, a POSITA would understand that neither Krishnan nor Radhakrishnan, either in alone or in combination, disclose elements [c]/[d]/[f] of claims 1, 19 and 29.

b. A POSITA Would Not Have Been Motivated to Combine Krishnan and Radhakrishnan

350. In my opinion, a POSITA as of November 5, 2017 would not have had a motivation or other reason to combine Krishnan and Radhakrishnan in the manner suggested by Dr. Beigi.

351. As evidence of the motivation to combine, Dr. Beigi asserts that a POSITA would be motivated to have the automation process in Krishnan be configured to simulate interactions with the displayed user interface of the computer program (which, I note, Dr. Beigi does not fully identify), asserting that

“[b]oth Krishnan and Radhakrishnan use bots for the advantages that they offer: ‘greater convenience for users and lower costs for an organization (relative to having a live person interact with the user and handle the requests’ [Ex1016, 2:7-11] and ‘reduce[d] [] amount of computing resources required to execute tasks when compared with

executing the same tasks using a traditional application programming interface (API).’ (... EX1018, 6:21-34.)”

(Ex1003, ¶ 257).

352. Dr. Beigi’s citation to Krishnan, however, is unsupported by the ’550 Application, which does not include the cited disclosure. (Ex1017). And Dr. Beigi’s reference to reducing “computing resources” in Radhakrishnan is in the context of the “invention” disclosed therein, i.e., error detection, where a universal, non-application specific RPA bot has advantages over types of automation which would otherwise require integration. (*See, e.g.*, Ex1018, 6:20-38). In my opinion, a POSITA as of November 5, 2017 would understand that a reduction in computing resources is not a normal advantage of RPA bots in other contexts, such as automating processes in backend systems, which are typically more resource-intensive than API calls. Accordingly, in my opinion, a POSITA as of November 5, 2017 would not have been motivated to modify Krishnan with Radhakrishnan based on the reasons provided by Dr. Beigi.

353. Moreover, in my opinion, a POSITA as of November 5, 2017 would have no reason to combine Krishnan with Radhakrishnan. Krishnan’s system of interacting directly with “one or more backend databases or other information processing systems” already worked (Ex1016, 2:34-35), and a POSITA would understand that it would ordinarily be able to retrieve, and edit values from, those

databases using database calls. In such a system, a POSITA would understand that it would be more cost effective, and take fewer computing resources, to simply directly call a database or provide a computer instruction to change a value, rather than simulate a task to be performed on a displayed user interface. There would be few challenges associated with this approach - obtaining permissions poses no issues in Krishnan (unlike some embodiments of the claimed invention), since the chatbot has direct access to the backend systems which it seeks to perform an automation action upon.

354. By a similar token, to the extent a POSITA as of November 5, 2017 would have been motivated to combine Radhakrishnan with Krishnan, it would not, as discussed above, result in a combination which uses a simulation on a displayed user interface to perform automation processes which is displayed on a screen. Radhakrishnan discloses how to improve error collection using RPA bots, and does not provide a motivation to cause execution of an automation process using a displayed user interface of a computer program. (Ex1018, 6:50-51). A POSITA as of November 5, 2017 would not have been motivated to make a combination resulting in the elements of the claimed invention.

4. Claim 3, 19 – “wherein the automation process is a parameterized automation process having a parameter, wherein the chat bot service is configured to prompt the user to provide a

**value for the parameter, wherein said executing comprises
utilizing the value of the parameter”**

355. Dependent Claim 3 (dependent on Claim 2) and Dependent Claim 20 (dependent on Claim 19) require that “the automation process is a parameterized automation process having a parameter, wherein the chat bot service is configured to prompt the user to provide a value for the parameter, wherein said executing comprises utilizing the value of the parameter.” (Ex1001, Claim 3, 25:43-47; Claim 21, 27:33-37),

356. Significantly, for purposes of Claims 3 and 19, Dr. Beigi points to no teaching in Radhakrishnan which suggests the RPA module is configured to utilize values of parameters during execution, instead pointing entirely to Krishnan. (Ex1003, ¶¶ 270). But Dr. Beigi’s proposed combination relies on Radhakrishnan for implementing the automation process in the claimed manner (which, as discussed, it does not do). Radhakrishnan is not designed to substitute in alternative inputs, but is instead directed towards generate “a recording of said one or more operations executed on the user device” for error detection and correction. (Ex1018, 10:57-59). Radhakrishnan does not teach later performing a completed automation process in response to a parameter, let alone substituting the recorded values based on other input entered by the user, as part of a conversation with a chatbot or otherwise.

357. Accordingly, In my opinion, a POSITA as of November 5, 2017 would understand that the proposed combination would not “comprise utilizing the value of the parameter”.

5. Claim 4, Claim 21– “wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more input fields, wherein said utilizing the displayed user interface comprises inputting data received by the natural language interface to the one or more input fields”

Claim 5, Claim 22 – “wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more interactable GUI elements, wherein said utilizing the displayed user interface comprises performing interface interaction with the one or more interactable GUI elements”

358. Claims 4 (dependent on Claim 1) and 21 (dependent on Claim 19) require that the “displayed user interface” is a “GUI”, and that “utilizing the displayed user interface comprises inputting data received by the natural language interface to the one or more input fields”. (Ex1001, Claim 4, 25:48-52; Claim 21, 27:39-44). Claims 5 (dependent on Claim 1) and 22 (dependent on Claim 19) are similar but require that “utilizing the displayed user interface comprises performing interface interaction with” “one or more interactable GUI elements”. (*Id.*, Claim 5, 25:53-57; Claim 22, 27:45-50).

359. For Claims 4 and 21, Dr. Beigi asserts a proposed combination where “[t]he combination would receive data by the natural language interface, as taught by Krishnan, and input the received data to one or more input fields of the GUI, as

taught by Radhakrishnan”. (Ex1003, ¶ 273). In support, Dr. Beigi points to language suggesting that the RPA bot “mirrors” the user’s activity (*Id.*, ¶ 272). To show that Claims 5 and 22 are taught by Radhakrishnan, Dr. Beigi makes the same argument. (*Id.*, ¶ 274). However, this suffers from the same problems as Radhakrishnan with respect to Claims 1 and 19, as I discuss above, including that it does not teach executing an automation process in response to user instructions, or using an interface configured to be displayed on a screen, but instead teaches observing user activity to generate an operation record. (*See* pars. 344-348).

360. More significantly, for purposes of Claims 4 and 21, Dr. Beigi points to no teaching in Radhakrishnan which suggests the RPA module should obtain values to the input fields based on user input prior to observing or simulating the automation process itself. (Ex1003, ¶¶ 271-273). While Radhakrishnan does teach observing the “information entered by the user interface of the application” (Ex1018, 11:4-6), it does so in the context of generating “a recording of said one or more operations executed on the user device”. (Ex1018, 10:57-59). Radhakrishnan does not teach later performing a completed automation process in response to the user’s command, let alone substituting the recorded values based on other input entered by the user, as part of a conversation with a chatbot or otherwise.

361. Moreover, Dr. Beigi provides no independent motivation to combine Krishnan and Radhakrishnan (Ex1003, ¶¶ 273-275), and, as I discuss above (*see*

pars. 350-354, *supra*), a POSITA would not have been motivated to combine the two references.

362. Accordingly, in my opinion, a POSITA as of November 5, 2017 would understand that Radhakrishnan does not teach “utilizing the displayed user interface” to perform an automation process in the manner required by Claims 4 and 21 as well as 5 and 22. Additionally, a POSITA would understand that Radhakrishnan does not teach inputting data received by a natural language conversation (or otherwise) in one or more input fields in the GUI as required by Claims 4 and 21.

6. Claim 8 – “wherein said determining comprises selecting the automation process from a database retaining a plurality of user-defined automation processes; wherein the database is updatable by one or more users via a Graphical User Interface (GUI) capable of defining new automation processes and updating existing automation processes retained therein.”

363. Claim 8 requires that “determining the automation process” comprises “selecting the automation process from a database retaining a plurality of user-defined automation processes; **wherein the database is updatable by one or more users via a Graphical User Interface (GUI) capable of defining new automation processes and updating existing automation processes retained therein.**” (Ex1001, 26:6-12).

364. Dr. Beigi incorrectly asserts that Krishnan and Radhakrishnan meet this claim.

365. First, while Dr. Beigi suggests that “the database is updatable by one or more users via a Graphical User Interface”, he fails to point to any teaching in Krishnan or Radhakrishnan to suggest a graphical user interface is used to update a database of automated processes (as opposed to, for example, conversations). Instead, he simply argues that “the automation processes are retained in a database” and can be updated. (Ex1003, ¶ 283, 284). Dr. Beigi failure to provide any reasoned explanation for how this element defeats his analysis.

366. Next, while Dr. Beigi argues that “Radhakrishnan also discloses ‘[b]ots may further comprise a process recorder for capturing and recording a sequence of user actions for further training or completing tasks[]’ ([Ex1018, 5:64-6:8)” (Ex1003, ¶ 284), this does **not** teach or suggest updating **an already-trained task**, but this only explains how bots can capture tasks **during training**. This is consistent with the actual embodiments disclosed by Radhakrishnan, which uses the RPA module to observe user activity for error correction and to “generate[] a support ticket”, and does not teach later modifying the observed activity. (Ex1018, ¶ 12:24-46). In my opinion, a POSITA as of November 5, 2017 would have understood that the captured “operation record” in Radhakrishnan would not be later modified (and then selected or invoked from), as doing so would not aid in error detection or correction.

367. Moreover, Dr. Beigi provides no independent motivation to combine Krishnan and Radhakrishnan (Ex1003, ¶¶ 281-284), and, as I discuss above (*see* pars. 350-354, *supra*), a POSITA would not have been motivated to combine the two references.

368. Accordingly, because Dr. Beigi has not shown that Krishnan or Radhakrishnan teach updating a database with a graphical user interface, or that Radhakrishnan teaches updating existing operating records, he has not shown that Claim 8 would have been obvious in view of Krishnan and Radhakrishnan.

7. Claim 12 – “wherein said executing is performed on a client device of the user.”

369. Claim 12 (dependent on Claim 1) requires that the “executing [of the automation process] is performed on a client device of the user”. (Ex1001, Claim 12, 26:43-44).

370. As I discuss with respect to Ground 1 (*see* par. 186, *supra*) in my opinion, a POSITA as of November 5, 2017 would understand from element [a] of Claim 1, from which Claim 12 depends, that the user in Claim 12 is the user interacting with the “natural language interface” in a “natural language conversation”.

371. I understand the user identified by Dr. Beigi is the “Customer 110” attempting to book a flight. (Ex1003, ¶ 249). Dr. Beigi suggests that because Radhakrishnan teaches that the disclosed “RPA system 130 may be part of the user

device”, Radhakrishnan discloses (ostensibly in combination with Krishnan, given that Claim 12 requires all elements of Claim 1 to be met) claim 12.

372. In my opinion, a POSITA as of November 5, 2017 would not have been motivated to make this combination. Krishnan explains that the chatbot is used to provide “customer service” and “serve[s] as an interface between the customer and one or more backend database, information, or other processing systems.” (Ex1016, 2:27-35; Ex1017, [0002]). Performing an automation process on a client device would go against this explicit teaching in Krishnan, and, in my opinion, a POSITA as of November 5, 2017 would not have been motivated to modify Krishnan to perform an automated process on a client device (which would not have access to the backend databases).

**8. Claim 16, Claim 26, Claim 31 – “wherein the displayed user interface of the computer program is presented to the user.”
Claim 18, Claim 28, Claim 33 – “wherein the displayed user interface of the computer program is a user interface of a web browser, wherein said executing the automation process comprises activating the web browser to cause the displayed user interface to be displayed, wherein the sequence of interactions is performed with respect to the user interface of the web browser.”**

373. Claims 16 (dependent on Claim 1), 26 (dependent on Claim 19), and 31 (dependent on Claim 29), require the “displayed user interface of the computer program” to be “presented to the user”. (Ex1001, Claim 16, 26:60-61; Claim 26, 28:4-6; Claim 31, 28:48-49). Claims 18 (dependent on Claim 1), 28 (dependent on

Claim 19), and 33 (dependent on Claim 29) require the “displayed user interface” to be of a “web browser”, and similarly require that “activating the web browser” “cause[s] the displayed user interface to be displayed”. (Ex1001, Claim 18, 26:65-67; Claim 28, 28:10-16; Claim 33, 28:53-59).

374. Dr. Beigi’s analysis with respect to these claims fail for similar reasons. Radhakrishnan does not teach “mirror[ing] the user’s operations” on a displayed GUI as Dr. Beigi suggests, or on an “activated” and “displayed” web browser as Dr. Beigi asserts. (Ex1003, ¶¶ 293, 295). Instead, as discussed, the RPA module “reproduce[s] the first operation **in parallel** with execution” by the user, and does so “within a virtual environment” (Ex1018, 11:29-47). In my opinion, a POSITA as of November 5, 2017 would understand this to mean that the RPA module, while tracking what the user does on a displayed user interface (for example, on a browser or as presented to the user), does not actually perform an automated process that is shown to the user, but is instead in a “virtual environment”.

375. I separately note that, for claims 18, 28, and 31, Dr. Beigi fails to point to any disclosure in Krishnan and Radhakrishnan to suggest that “executing the automation process” includes “activating the web browser to cause the displayed user interface to be displayed” as required by the claims. (Ex1003, ¶ 295). Instead, Dr. Beigi asserts that “[i]n order for the user to perform operations on the UI of the web browser, the web browser **would need** to be activated to cause the displayed UI

to be displayed”. (*Id.*) In my opinion, however, a POSITA as of November 5, 2017 would understand that an automation process using a browser need not inherently begin by opening the browser, and thus Dr. Beigi’s inherency argument, unsupported by any evidentiary foundation, fails. For example, the browser may already be open (or may be opened by the user) when the automation process begins.

376. Moreover, Dr. Beigi provides no independent motivation to combine Krishnan and Radhakrishnan (Ex1003, ¶¶ 281-284), and, as I discuss above (*see* pars. 350-354, *supra*), a POSITA would not have been motivated to combine the two references.

377. Accordingly, because Dr. Beigi fails to show that Radhakrishnan teaches actually displaying a displayed user interface, or activating a web browser, as well as because a POSITA as of November 5, 2017 would not have been motivated to combine Krishnan and Radhakrishnan as suggested by Dr. Beigi, Dr. Beigi’s conclusion that Radhakrishnan discloses (and thus renders obvious) Claims 16, 18, 26, 28, 31 and 33 fails.

9. Dependents Claims 2-8, 12-16 and 18 (for Claim 1), Claims 20-23, 25-26 and 28 (for Claim 19) and Claim 31 and 33 (for

Claim 29) are Also Not Obvious For At Least The Same Reason as Claims 1, 19 and 29

378. I understand that to the extent a claim is found not to be anticipated or rendered obvious by a particular reference or combination of reference, then claims which depend from such claim would also not be anticipated or rendered obvious.

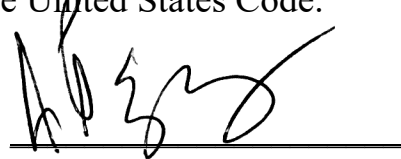
379. With respect to each of the dependent claims in Ground 1, to the extent that Krishnan and Radhakrishnan do not render obvious Claims 1, 19 and 29, then by definition they also do not anticipate nor render obvious their dependent claims, obvious their dependent claims, i.e., Claims 2-8, 12-16, and 18 (for Claim 1), Claims 20-23, 25-26 and 28 (for Claim 19) and Claim 31 and 33 (for Claim 29).

VIII. Conclusion

380. For the foregoing reasons, it is my opinion that each of the challenged claims (Claims 1-9, 12-16, 18-23, 25-26, 28-31 and 33) of the '664 Patent are not invalid in view of any of the grounds set forth in the Petition, and the support declaration of Dr. Beigi. (Ex1003).

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

Dated: July 8, 2024

By: 

Ivan Zatkovich

APPENDIX A

(Listing of Claims of U.S. Patent No. 10,819,664 (Ex1001) at Issue In

IPR2023-01368)

1. A method comprising:

[a] using a natural language interface, receiving input from a user as part of a natural language conversation between the natural language interface and the user, [b] wherein the natural language conversation comprises a first natural language input from the user, a natural language feedback on the first natural language input from the natural language interface, and a second natural language input from the user in response to the natural language feedback:

[c] determining, based on the first and second natural language inputs from the user, an automation process configured to perform an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions with the displayed user interface of the computer program, [d] wherein the user interface of the computer program is configured to be displayed on a screen, [e] wherein each interaction of the sequence of interactions comprises an action selected from a group consisting of inputting data

to the displayed user interface and executing a functionality of the displayed user interface; and

[f] executing the automation process, wherein said executing comprises utilizing the displayed user interface of the computer program to perform the sequence of interactions.

2. The method of claim 1, wherein the natural language interface is a chat bot service operable to converse with the user in natural language.

3. The method of claim 2, wherein the automation process is a parameterized automation process having a parameter, wherein the chat bot service is configured to prompt the user to provide a value for the parameter, wherein said executing comprises utilizing the value of the parameter.

4. The method of claim 1, wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more input fields, wherein said utilizing the displayed user interface comprises inputting data received by the natural language interface to the one or more input fields.

5. The method of claim 1, wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more interactable GUI elements, wherein said utilizing the displayed user interface comprises performing interface interaction with the one or more interactable GUI elements.

6. The method of claim 1, wherein said executing is performed without utilizing an Application Programming Interface (API) of the computer program.

7. The method of claim 1, wherein the sequence of interactions comprises a sequence of steps, wherein each step is selected from a group consisting of:

- a page redirect step;
- a click element step;
- a hovering over element step;
- a set focus to element step;
- a select value from list step;
- a fill input field with value step;
- a prompt user step;
- a time-wait step; and
- a condition-wait step.

8. [a] The method of claim 1, wherein said determining comprises selecting the automation process from a database retaining a plurality of user-defined automation processes; [b] wherein the database is updatable by one or more users via a Graphical User Interface (GUI) capable of defining new automation processes and updating existing automation processes retained therein.

9. [a] The method of claim 1, wherein the automation process defines an operation to be performed with respect to an element in the displayed user

interface, wherein the automation process identifies the element based on a plurality of parameters of the element; [b] wherein said executing the automation process comprises identifying the element in the displayed user interface, [c] wherein said identifying the element comprises computing a similarity score for each element in the displayed user interface using the plurality of parameters of the element, and [d] selecting a selected element having a highest similarity score, wherein the highest similarity score is at least above a predetermined threshold.

10. **[Not Challenged]** The method of claim 1 further comprises: generating a link, wherein the link is configured to cause said executing upon clicking thereon, wherein the natural language interface provides the link to the user.

11. **[Not Challenged]** The method of claim 10, wherein the link comprises a conversation identifier of the natural language conversation between the user and the natural language interface, wherein the natural language interface is configured to store one or more values of parameters obtained from the user during the natural language conversation in a database in a manner associated with the conversation identifier, wherein said executing comprises retrieving, using the conversation identifier passed by the link, the one or more values of parameters from the database, wherein said utilizing the displayed user interface is performed using the one or more values of the parameters.

12. The method of claim 1, wherein said executing is performed on a client device of the user.
13. The method of claim 1, wherein the natural language interface is a voice-based service, wherein the voice-based service is configured to receive vocal commands from a human user.
14. [a] The method of claim 1, wherein said determining the automation process comprises:
- selecting the sequence of interactions from a plurality of sequences based on the first natural language input; and
 - [b] determining a parameter to be used in an interaction of the sequence of interactions based on the second natural language input.
15. The method of claim 1, wherein the displayed user interface of the computer program is displayed prior to the natural language conversation between the natural language interface and the user.
16. The method of claim 1, wherein the displayed user interface of the computer program is presented to the user.
17. **[Not Challenged]** The method of claim 1, wherein the displayed user interface of the computer program is presented on a screen of a remote server.
18. [a] The method of claim 1, wherein the displayed user interface of the computer program is a user interface of a web browser, [b] wherein said executing

the automation process comprises activating the web browser to cause the displayed user interface to be displayed, [c] the sequence of interactions is performed with respect to the user interface of the web browser.

19. A non-transitory computer readable medium retaining program instructions, which program instructions when read by a processor, cause the processor to perform:

[a] using a natural language interface, receiving input from a user as part of a natural language conversation between the natural language interface and the user, [b] wherein the natural language conversation comprises a first natural language input from the user, a natural language feedback on the first natural language input from the natural language interface, and a second natural language input from the user in response to the natural language feedback:

[c] determining, based on the first and second natural language inputs from the user, an automation process configured to perform an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions with the displayed user interface of the computer program, [d] wherein the user interface of the computer program is configured to be displayed on a screen, [e] wherein each interaction of the sequence of interactions comprises an action selected from a group consisting of inputting data to the displayed user interface and executing a functionality of the displayed user interface; and

[f] executing the automation process, wherein said executing comprises utilizing the displayed user interface of the computer program to perform the sequence of interactions.

20. The non-transitory computer readable medium of claim 19, wherein the automation process is a parameterized automation process having a parameter, wherein the natural language interface is configured to prompt the user to provide a value for the parameter, wherein said executing comprises utilizing the value of the parameter.

21. The non-transitory computer readable medium of claim 19, wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more input fields, wherein said utilizing the displayed user interface comprises inputting data received by the natural language interface to the one or more input fields.

22. The non-transitory computer readable medium of claim 19, wherein the displayed user interface is a Graphical User Interface (GUI) comprising one or more interactable GUI elements, wherein said utilizing the displayed user interface comprises performing interface interaction with the one or more interactable GUI elements.

23. The non-transitory computer readable medium of claim 19, wherein said executing is performed without utilizing an Application Programming Interface (API) of the computer program.

24. **[Not Challenged]** The non-transitory computer readable medium of claim 19, wherein the program instructions further cause the processor to generate a link, wherein the link is configured to cause said executing upon clicking thereon, wherein the natural language interface provides the link to the user.

25. The non-transitory computer readable medium of claim 19, wherein the displayed user interface of the computer program is displayed prior to the natural language conversation between the natural language interface and the user.

26. The non-transitory computer readable medium of claim 19, wherein the displayed user interface of the computer program is presented to the user.

27. **[Not Challenged]** The non-transitory computer readable medium of claim 19, wherein the displayed user interface of the computer program is presented on a screen of a remote server.

28. The non-transitory computer readable medium of claim 19, wherein the displayed user interface of the computer program is a user interface of a web browser, wherein said executing the automation process comprises activating the web browser to cause the displayed user interface to be displayed, wherein the

sequence of interactions is performed with respect to the user interface of the web browser.

29. A system comprising: **[a]** a processor and coupled memory, **[b]** wherein the processor is configured to perform:

using a natural language interface, receiving input from a user as part of a natural language conversation between the natural language interface and the user, **[c]** wherein the natural language conversation comprises a first natural language input from the user, a natural language feedback on the first natural language input from the natural language interface, and a second natural language input from the user in response to the natural language feedback;

[d] determining, based on the first and second natural language inputs from the user, an automation process configured to perform an automation of a sequence of interactions with a displayed user interface of a computer program and to simulate user interactions with the displayed user interface of the computer program, **[e]** wherein the user interface of the computer program is configured to be displayed on a screen, **[f]** wherein each interaction of the sequence of interactions comprises an action selected from a group consisting of inputting data to the displayed user interface and executing a functionality of the displayed user interface; and

[g] executing the automation process, wherein said executing comprises utilizing the displayed user interface of the computer program to perform the sequence of interactions.

30. The system of claim 29, wherein the displayed user interface of the computer program is displayed prior to the natural language conversation between the natural language interface and the user.

31. The system of claim 29, wherein the displayed user interface of the computer program is presented to the user.

32. **[Not Challenged]** The system of claim 29, wherein the displayed user interface of the computer program is presented on a screen of a remote server.

33. The system of claim 29, wherein the displayed user interface of the computer program is a user interface of a web browser, wherein said executing the automation process comprises activating the web browser to cause the displayed user interface to be displayed, wherein the sequence of interactions is performed with respect to the user interface of the web browser.